HPS-P-069

CEFEPIME-INDUCED SEVERE NEUTROPENIA: A CASE REPORT

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Cefepime , a forth-generation cephalosporin antibiotics, has been used clinically in severe infections caused by a wide range of gram-positive and gram-negative microbes. Although the product information clams that less than 1% of patients have a decrease in neutrophils, prolong use of cefepime had been founded to have a high rate of drug-related neutropenia in recent years. We report here a case of severe neutropenia after 26 days of cefepime therapy.

Our patient, a 54-year-old woman with non-small cell lung cancer, admitted to our hospital because of acute renal failure caused by tumor lysis syndrome after receiving second line chemotherapy agent docetaxel. During hospitalization, she got nonsocomial pneumonia complicated with hypoxic respiratory failure. Cefepime 1 g daily was prescribed for this severe infection and dose was adjusted to 2 g every 12 hours according to the rate of creatinine clearance. Her condition improved. Unfortunately, on the 25th day of cefepime therapy, fever occurred and laboratory data showed severe neutropenia (WBC 2.1 x 103/mm3 with segmented neutrophils 2.0%, and band neutrophils 2.0%). Cefepime was discontinued immediately, and she was sent to isolation room for prevention of infection. WBC improved gradually and returned to normal 5 days after discontinuation of cefepime (WBC 12.2 x 103/mm3 with segmented neutrophils 64.0%, and band neutrophils 2.0%). The patient recovered well without receiving filgrastin.

Pharmacist should be aware of the risk of cefepime-induced neutropenia and closely monitored the potentially dangerous adverse effect during long-term use of cefepime

HPS-P-070

A CASE REPORT OF SUSPECTED VALSARTAN-INDUCED ACUTE RENAL FAILURE

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Objective: We presented a case of acute renal failure that might be induced by low dose of valsartan.

Case summary: A 90-year-old man with non-ST elevation myocardial infarction and LVEF(left ventricular ejection fraction) 48% was treated with valsartan 40mg/d, bumetanide 2mg/d, clopidogrel 75mg/d and enoxaparin 60mg/d.Valsartan was stopped after 12 days due to renal function deterioration. Serum creatinine dramatically increased from 2.9 to 9.6 mg/dl within 9days.He was in status of dehydration. His systolic blood pressure was in range of 95-150 mmHg.

Discussion: Valsartan, angiotensin II receptor blocker(ARB), modulate renin-angiotensin-aldosterone system by directly blocking the angiotensin II type I receptor. It block angiotensin II-mediated vasocontriction and aldosterone release. The patient with chronic kidney disease and volume depletion might be more prone to progression of renal dysfunction even if low dosage of valsartan used

Conclusion : Low dose of valsartan may induce acute renal failure in chronic kidney disease with dehydration.

Key word: valsartan, acute renal failure

HPS-P-071

AZATHIOPRINE INDUCED PANCYTOPENIA

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Azathioprine(AZA)is an imidazolyl derivative of 6-mercaptopurine that impairs DNA and RNA synthesis, it is shown to decrease the relapse rate in multiple sclerosis. AZA induced bone marrow toxicity may be dose related or well known thiopurine methyltransferase (TPMT) deficiency resulting in intracellular accumulation of cytotoxic thioguanine neucleotides.

A 33-year old woman was diagnosed with multiple sclerosis (MS) in November 2003. Four episodes of attack were noted over next two-year period. As the disease progression, she developed numbness and weakness in the right leg and right arm since January 2006. Azathioprine 75 mg bid po (3mg/kg/day) was prescribed since January 3, 2006. She developed general weakness and fever two weeks later. Her white blood cell count was 700/mm3, absolute neutrophil count 0%, hemoglobin 8.5 g/dl, platelet count 55000/uL. The bone marrow biopsy showed severe hypocellular marrow. After careful review of her medication, the other concomitant drugs (prednisolone, magnesium oxide, zolpidem) was unlikely to be the cause of myelosuppression because of long term use for more than one year. It is a probable case of AZA induced pancytopenia. AZA and prednisolone were discontinued. The patient was treated through blood transfusion, G-CSF with empirical antibiotics (ceftazidime and teicoplanin) were used for neutropenic fever. Until Mar 14, her blood cell count returned to previous baseline.

Severe myelosuppression is linked to the TPMT deficiency and its genetic polymorphism. AZA induced myelosuppression can be avoided by adjusting dosage according to TPMT activity and genotype. To decrease drug related morbidity and hospitalization, TPMT activity and genotype should be evaluated prior to AZA treatment. However, since TPMT tests are not available in most hospitals, treatment with AZA should be started at a lower dosage. Frequent monitoring of blood cell counts is necessary to early detect its cytotoxic effects.

HPS-P-072

CASE REPORT: DRUG THERAPY PROBLEMS EXPERIENCING IN AN HIV PATIENT

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AIM: To evidence Drug Therapy Problems (DTP) in a patient with HIV. METHODS: Patient care process consisted of the following steps: 1) assess drug-related needs, in order to assure an indicated, effective, safe and convenient drug therapy; 2) identify and categorize DTP; 3) develop care plan with the necessary interventions to achieve therapeutic outcomes and solve DTP; 4) follow-up evaluation. The DTP categorization followed the Pharmacotherapy Work-up® format. CASE DESCRIPTION: Man, 55 years, HIV, viral load 180 copies/mL3, CD4 198 cells/mL3, under anti-retroviral (ARV) therapy; using Sulphadiazine 500 mg 6/6, Pirimetamine 25 mg/day and Folinic Acid 15 mg/day as secondary prophylaxis for Toxoplasmosis; prophylaxis for P. carinii (PC) with SMT+TMP 800/160 mg in alternating days; coexisting use of Fluoxetine and Paroxetine for Depression; and using ferrous sulfate for Iron Deficiency Anaemia. RESULTS: Identified DTP: 1) unnecessary drug therapy: antidepressants duplication; 2) unnecessary drug therapy: ferrous sulfate maintenance after normalized haemogram; 3) unnecessary drug therapy: duplicated sulfa therapy for PC and Toxoplasmosis, it's recommended to chose only one of them; 4) potential noncompliance due to insufficient comprehension about ARV and HIV. Interventions were taken place to solve and prevent the identified DTP in order to achieve therapeutic goals (TG) for each condition. CONCLUSION: Morbidity and mortality due to drug therapy has been well documented and Pharmaceutical Care practice impact reveals positive outcomes. Compliance problems within HIV patients are significant and one of the reasons is multiple-drug use. Pharmaceutical Care practice is important to conquer and maintain TG and resolution of patients' DTP.

HPS-P-073

LESS MEDICATION ERRORS, MORE COST SAVINGS--IMPROVE THE QUALITY OF CARE BY PHARMACIST COGNITIVE SERVICE

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Aims: Cognitive service is a component of pharmaceutical care that primarily focus on optimizing a patient's drug therapy and ensuring appropriateness, safety, and efficacy. Many studies showed that it might reduce the total healthcare costs.

Methods: There were 1602 reported errors collected from October to December of 2005 through the Medication Error Reporting System (MERS) retrospectively. 1519 of these were different in drug costs after the practitioners have corrected the prescriptions. The daily drug cost saving was the indicator in our study to evaluate the effectiveness of pharmacist cognitive service. The types of errors would be classified as well.

Results: In those 1519 reported errors collected from the three months, there were 556 cases and saved USD 4121 daily drug cost in October (average USD 7.4 /day/case), 465 cases and saved USD 3475 in November (average USD 7.5 /day/case), 498 cases and saved USD 2234 in December (average USD 4.5 /day/case). We found that the most of the errors included overdoses (18.5%), renal impairments (18.2%), wrong dosing frequency (11.1%), sub-therapeutic dose (10.5%) and contraindication (8.6%).

Conclusion: The results of our study showed that the drug cost reduced apparently by executing pharmacist cognitive service. We believe the service are not only save the costs, but also prevent the drug-related problems and shorten the length of stay, in order to promote the quality of care and decrease the preventable medical waste. The role of pharmacists being 'product dispensers' has shifted to one of 'medication therapy experts' and should collaborate with other healthcare professionals to provide high quality of care.

HPS-P-074

GUIDELINES VALIDATION FOR THE USE OF EXTENDED-INTERVAL DOSAGE REGIMENS OF GENTAMICIN IN NEONATES

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Aims: Development and validation of guidelines for gentamicin dosing in neonates using extended-interval dosage regimens.
Methods: With the base of our population pharmacokinetic parameters (JM Lanao. JAC 48:1038-48,2004), dosing guidelines were designed to achieve serum gentamicin concentrations (SGCs) within the ranges considered therapeutic in adults for extended-interval dosing (peak 15-20 mg/L and trough <;0.5 mg/L). These guidelines were adopted as the dosing practice at our Institution.
The validation population comprised 81 neonates dosed according to the proposed guidelines, routinely monitored, with the following clinical characteristics: gestational age (GA) 24 - 40 weeks (mean (SD); 33.48 (4.42)), and postnatal ages of 1 - 11 days (2.80 (1.52)). C-reactive protein (CRP) and serum creatinine were measured at the start and end of treatment.
Results: In term newborns and premature babies with GA between 31 – 38 weeks, extended-interval dosage regimens with initial gentamicin doses of 10-12 mg/kg and dosage intervals of 36-48 h are recommended. Owing to their high distribution volumes and prolonged half-lives, for premature babies of GA <;31 weeks we recommend initial doses of 5 mg/kg and dosage intervals of 36-48 h to reach SGCs between 0.5-10 mg/L. A linear relationship between the guideline-predicted (GPD) and individualized dose after SGCs monitoring (ID) was obtained: GPD=2.017+0.950.ID, r=0.948. A statistically significant difference (p<;0.05) was found between initial and final CRP levels in patients with sepsis (2.45 (1.38) vs 1.29 (1.56)mg/dl) or suspected infections (2.04(1.85) vs 0.87 (0.56) mg/dl). A statistically significant decrease in the serum creatinine concentration was also observed (p<;0.01).

Conclusions: The pharmacokinetic and clinical validation of the guidelines developed suggests that they are efficient and safe for the initial dosing of gentaminicin in term and premature babies.

HPS-P-075

INDIVIDUALIZED DRUG MANUFACTURING

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Aim

To produce individualized drugs with quality in different scales in an effective way. The pharmaceuticals are needed by health care but not provided by the pharmaceutical companies.

Method

Each prescribed drug is produced in order to fulfil the special need for each patient, i.e. pharmaceuticals without preservatives or raw materials which cause allergic reactions, with a special strength or in a special mixture of different active ingredients. The batch sizes differ from production for the treatment of one patient to the treatment of many patients. For the smallest batch sizes there are several controls, before, during and at the end of production, by the responsible pharmacist but no laboratory controls. At a certain batch size, depending on the type of dosage form, laboratory tests are made before release. At batch sizes of more than about 200 packages the products are produced as a small scale industrial production according to the Eudralex (European legislation) with release of QP, Qualified Person.

Results

By applying different controls at different batch sizes it is possible to produce individualized drugs in a cost efficient and secure way mostly at very short time of delivery.

HPS-P-076

DOCUMENTED SHELF LIFE FOR EXTEMPORANEOUS PRODUCTS

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Aim
To ensure that any pharmaceutical dosage form produced have sufficient shelf life during delivery and treatment.
Background
Due to the doctors unlimited right to prescribe, the range of products is very huge. The products are not developed at R&D department like commercial products and the shelf life of the products must be decided in another way.
Method
Generally the shelf life is 6 month for extemporaneous products. When products are more frequently prescribed the manufacture of small series will be introduced which require extended shelf lives.
The products are to small to bear the costs of stability studies according to ICH. Extemporaneous products are mostly produced with active ingredient off patent and information on the chemical stability may be found in the literature. Concerning the microbiological stability, the information mostly concerns the antimicrobial effect of the active ingredient. The microbiological stability is decided on results from environmental tests and validation of aseptic processing at an individual level.

In order to prolong the shelf life an increased program at retests is implemented on the produced batches. The shelf life will gradually be prolonged until the wished shelf life has been properly documented with real time data. If any doubt arises, stability studies according to ICH will be performed although the costs are high.

Results

The shelf life is founded on information from the literature and real time studies. Different tests will be thoroughly reviewed in order to assure the quality of the products during the shelf life of the product.

HPS-P-077

EVALUATION OF ANTINEOPLASTIC AGENTS USING SACCHAROMYCES CEREVISIAE ATCC 9763

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The effect of some antineoplastic drugs has been evaluated using Saccharomyces cerevisiae ATCC 9763 as a model of an eukaryotic organism. For the toxicity assay, inoculum of Saccharomyces cerevisiae was transferred to a tube containing drug and incubated for another 4 hours, having its survival determined by the pour plate technique after dilutions in saline. The cell survival rates are expressed as percentage of colonies from treated samples versus untreated samples. Each culture was observed under the light of microscope and the cells subsequently photographed. Both the cytotocidal effect and the median effective concentration (EC50) were then determined to each drug tested. The S. cerevisiae was sensitive to all agents tested and the results suggested a correlation with tests using mammalian cells. These tests aim at suggesting the use of yeasts as an alternative to research on new antineoplastic agents concerning their security and toxicity evaluation and also as a contribution to understand the mechanisms of cancer.

HPS-P-078

TITLE: TO SETUP A SAFE ADMINISTRATION PROTOCOL FOR CORTICOSTEROID IN PATIENTS WITH AUTOIMMUNE DISEASE.

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Objective: In order to increase the compliance of patients taking corticosteroids , recognize the importance of corticosteroids therapy , and reduce the side effects of corticosteroids. We try to setup a safe use of protocol for oral corticosteroids in patients with autoimmune disease.

Method: The patients with autoimmune disease were investigated, who were followed up at our AIR- OPD (Allergy, Immunology, Rheumatology) or admitted to ward during the period of April to October in 2005. A total of 316 valid questionnaires were obtained for analysis.

Results: Most of patients (81%) complied with the steroids use, but there were 60 patients without compliance. The main reasons for non-adherence were concerning the side effects of corticosteroids. (33%) and without getting clear explanations from medical stuffs (51.6%). Only 30% of patients had the right recognition about side effects of corticosteroids.Therefore we designed some educational tools and methods to improve medication non-adherence, including One-on-One oral intervention by physicians, pharmacists or nurses, written medication sheets, videotape, and group education.After these educational interventions were performed, we found that the patient compliance revealed an increase of 13.2%, and the recognition of side effects of steroid had an increase of 56%.

Conclusion:This study show that the educational interventions can improve patients compliance and corticosteroids safety in patients with autoimmune disease.

HPS-P-079

THE IMPACT OF EDUCATION PROGRAM ON SMOKING CESSATION

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PURPOSE: Regardless of the fact that smoking is an important risk factor of many diseases, it is a common practice among high students in Taiwan. The purpose of the study was to provide an education program to intervene the senior high students' attitude, knowledge and behavior regarding to the importance of smoking cessation.

METHODS: Senior high school students of Wan-Fang, Zhong-Lun, Lih-Ren and Blessed Imelda's school in Taipei were enrolled. An education program including an acting performance and an education lecture presented by a pharmacist was introduced to the high school students. The physical influence of smoking, the disadvantages of smoking and the importance of smoking cessation were demonstrated objectively. The students were asked to finish a questionnaire including 10 attitude questions in a 5-point scale, 10 knowledge questions in a dichotomous scale and 10 behavior questions in a 5-point scale. The attitude scores and knowledge scores were compared before and after the program.

RESULTS: Three hundred and fifty-four high school students were recruited on September 28, October 5, October 27, and November 14 in 2005. Thirty-nine students (12.2%) had smoking experience without smoking habits. Only 4 students (1.3%) had smoking habits. After the education program, the total attitude scores were significantly increased from 41.06 to 42.75 (P= 0.001), and the total knowledge scores were also significantly increased from 6.28 to 8.12 (P<; 0.001).

CONCLUSION: The education program conducted by the acting performance and the pharmacist was associated with a change in attitude and knowledge toward smoking cessation. The change might provide further insight into behavioral adjustment.

HPS-P-080

TREATMENT FOR PIGMENTATION WITH TRETINOIN GEL AND HYDROQUINONE OINTMENT

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*Aims*Treatment with tretinoin gel and hydroquinone or hydroquinone lactic acid ointment are effective in pigmentation. This study compared the example of prevention of recurrence after the treatment is compared.

*Methods*Eight patients with pigmentation were done to treatment the combined of toretinoin gel and hydroquinone lactic acid ointment. Two patients(A) ended treatment. Afterwards, 2 patients(B) applied only the hydroquinone ointment. 2 patients(C) applied the hydroquinone lactic acid ointment and vitamin C lotion. 2 patients(D) applied hydroquinone lactic acid ointment, vitamin C lotion, and took vitamin C. These pigmentation are compared between these groups.

*Results*Senile pigmentation recurred gradually in 4 patients(A and B). 4 patients(C and D) doesn't have pigment deposition?

*Conclusion*The treatment of continuation by combination of the hydroquinone lactic acid ointment and vitamin C lotion are necessary for prevention of recurrence after the treatment.

HPS-P-081

THE INFLUENCE OF HOSPITAL OUTPATIENTS FOR PATIENT DRUG PROFILE AND DISEASE IMPROVEMENT IN PHARMACEUTICAL CARE

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Aims:
The purpose of this study is to develop a model for pharmacist to provide pharmaceutical care in hospital outpatients.
Methods:
There was 4 type disease patients (pts) in this study: 1. Asthma, 2. pts with anticoagulants treatment, 3. Diabetes, 4. pts with multiple drug therapy (>; 5 drugs). In this study, the experimental groups were the pts who pharmacists provide the clinical care plans and disease state management; the control groups are the pts who pharmacists just give drug consultant only. The outcome was measured by the questionnaire of patients for quality of life (EQ5D, SF-36, and disease-specific questionnaire), patient's satisfaction investigation for the pharmacist service, and patient's lab data monitoring disease prognosis.
Results:
201 patients were included during the 3 months (from the Sep., 2005 to Dec., 2005), including 116 patients (pts) in experimental group (EP) and 85 patients in control group (CP): groups 1 - 13 pts (EP), 12 pts (CP); groups 2 - 33 pts (EP), 39 pts (CP); groups 3 - 37 pts (EP), 34 pts (CP), and groups 4 - 33 pts (EP) only.
The results of life-quality questionnaires by the patients, Lab data for monitoring disease and satisfaction investigation for the pharmacist's service between EP and CP were not found significant difference. But there was one dimension in patient's satisfaction investigation for the pharmacist service, re-clinic willing to visit pharmacist (n=102) were positive attitude due to the pharmacists service compared to control group (n=78) (20.59 vs. 19.69, p=0.043,<0.05).

Conclusions:
Although the influence of out-patient clinic in hospital for patient drug profile and disease improvement in pharmaceutical care could not be found in this short period time (only three months), but re-clinic willing to visit pharmacist were positive attitude due to the pharmacists service. We think that it is need to take a long time for providing pharmacy care to improve in the disease controlled, especially in patients with chronic diseases.

HPS-P-082

STUDY ON THE VALIDITY OF THE ADMINISTRATION OF LYSOZYME HYDROCHLORIDE PREPARATIONS TO INFANTS

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Aims:
Lysozyme hydrochloride (LSZ) preparations produced from egg white are administered for expectoration and antiinflammation in our country, but LSZ is contraindicated to the allergic patients with egg white. Because it is difficult to decide allergic or not to egg white in infants, there might be any possibility LSZ is administered for the contraindicated infants. We surveyed the present situation of LSZ administration and egg white allergy, and studied the validity of the administration of LSZ to infants.
Methods:
We surveyed the prescriptions, in which LSZ syrup and 10% LSZ granule were prescribed, issued by the department of pediatrics of our medical center from August 2004 till January 2005. After this survey, we informed the result to pediatric physicians and emphasized the danger of LSZ administration to infants. About six months later, we surveyed again from August till Sepember 2005 and evaluated the outcome of our study. And, we conducted the literature study about the food allergy and family history of allergy.
Results:
From results of first survey, the number of prescriptions in which LSZ syrup and 10% LSZ granule were written for infants was 53 in two months. But, the second survey conducted about six months later the number of the prescriptions was markedly reduced to 5.

Conclusions:

According to the literature study, it was made clear food allergy was most observed in infants, and frequency of food allergy by hen's eggs was the highest in Japan. And it was reported frequency of food allergy in atopic infants was very high, and there might be good relation between atopic reagin and food allergy in infants. Additionally, the relation between family history about the allergy and atopic patients is not so clear, it may be difficult to estimate possibility of food allergy in infants. From these results, physicians should avoid the administration of LSZ to infants, because there might be any possibility to cause hypersensitivity including anaphylaxis and shock.

HPS-P-083

COMBINATION OF LOW PENETRANCE ALLELS WITH PROTECTIVE EFFECT ON THE DEVELOPMENT OF COLORECTAL CANCER IN MACEDONIA

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Most genetic and pharmacogenetic strategies have focused on the role of single genes in the predisposition for development of some cancers and regulation of drug activity and have made important steps towards the goal of optimizing therapy for individual patients. Several low-penetrance alleles were implicated in the genetic predisposition to colorectal cancer (CRC) such as sulfotransferases (SULTs), Cyclin D1 and MTHFR gene.

The SULT1A1 His213Arg polymorphism was implicated as a predisposition factor for the development of several common malignances (breast, colon, endometrial, urothelial), as factor responsible for variable response to therapy with several drugs and as a genetic factor involved in ageing. 5,10-methylenetetrahydrofolate reductase (MTHFR) plays a central role in folate metabolism, irreversibly converting 5,10-methylenetetrahydrofolate to 5-methylenetetrahydrofolate. Several studies recent studies reported a significantly decreased risk of colorectal cancer associated with the 677TT genotype which was correlated with low folate intakes or serum levels. The CCND1 gene encodes cyclin D1, which is a key regulatory protein in the transition from the G1 to S phase of the cell cycle. There are conflicting reports about the influence of the G870A polymorphism in the CCND1 gene on colorectal carcinogenesis.

We determined the allelic frequencies and genotype distributions of SULT, MTHFR and CCND1 gene variants in colorectal cancer patients from the Republic of Macedonia. Genotypes were obtained by PCR-RFLP analysis on DNA samples isolated from peripheral blood. We will present data on combination effect of these low penetrance variants on CCA risk in Macedonian population. Our data indicate that homozygosity for at least two of the above mentioned variants has a significant protective effect for the development of CRC in our population. A possible correlation of these data with specific local environmental influences will be discussed.

HPS-P-084

EVALUATION OF MEDICATION SAFETY USE FROM STOP ORDERS OF TOTAL PARENTERAL NUTRITION

-EXPERIENCES FROM A REGIONAL HOSPITAL IN TAIWAN

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Background: In order to achieve safe and effective services, pharmacists in nutrition-support team require understanding the principles of parenteral nutrition care, such as treatment outcome monitoring for preventing unnecessary adverse events to patients. In this study, we tried to evaluate the efficacy and safety of TPN from the cases of stop orders. In addition, we further investigated whether there was any unusual contributing factors exist to cause TPN orders suspended or terminated.
Methods: We performed a retrospective study to evaluate TPN services of hospitalized patients by chart review from May 2005 to December 2005. Based on the A.S.P.E.N standards of practice , the appropriateness of discontinuing TPN orders were assessed. Besides, the converting rates from TPN to EN, mortality and complications were also evaluated.
Results: In this study, total 33 patients received adult TPN and 9 were pediatrics. The average length of TPN treatment was 14.1 days (max.33 days, min.1 day). In 42 patients with TPN discontinuation, 20 (47.6%) were switched TPN to EN, 1 was shifted to home PN, 2 were transferred to other hospitals, and 19 (45.2%) died in hospital, respectively. For 9 pediatrics patients, 8 (88.9%) were switched TPN to EN. The reasons for causing death among 19 patients were because of cancer (8 patients), operative failures (6 patients), and drowning (1 patient). There was no any mechanical, metabolic or septic complication occurrence. Therefore, death resulted from complications of TPN can be excluded.

Conclusion: Approximately 50% of patients with TPN were successfully switched to EN, and pediatric patients were 88.9%. No patient developed complications. However, there was one case of TPN preparation still made even after patient had died. It is also important to achieving effective communication between the members of nutrition-support team such as physicians, nurses, and pharmacists. Moreover, to establish a reasonable reimbursement system and improve quality assurances for TPN services are necessary to promote patient safety.

HPS-P-085

COST OF MEDICINE FOR THERAPEUTIC CLASS

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INTRODUCTION: The consumption and the expenses were analyzed with medicines by therapeutic class. Is possible to elaborate the curve consumption ABC, looking to optimize the requests of buy. OBJECTIVE: To Identify and to intensify the control in the supply of the items that demostrate larger economical impact. MATERIAL AND METHODS: The information were obtained, in the period of January to December of 2005, questionnaire a denominated form: Record of Evaluation of Consumption of Medicines. Containing the following information: name of the medicine, presentation, monthly consumption, unitary value, value monthly, consummate and annual total cost and medium consummate monthly of each item, used at the Regional Hospital of the Agreste/Caruaru-PE, for the same ones for therapeutic class, according to RENAME. RESULTS: 90% of the items were responsible for only 20% of the total costs; 10% of the items were responsible for 80% of the total costs. The medicines for replacement eletrolitic veined have costs with great representative, due to the high consumption and a deficient control. The item Nourishment veined represents 8,13% of the total costs and the antimicrobial they represent 31,25%. DISCUSSION: Flaw was observed in the process of supply of the antimicrobial and medicines for replacement veined eletrolitic, owing the revision of the procedures to be accomplished together by the drugstore, CCIH and nursing, for the rational use of the medicines and appropriate use of the financial resources. CONCLUSION: It is done necessary an appropriate control of the suplly, for rationalization of the costs and otimização of the therapy with medicines.

HPS-P-086

THE PHARMACIST'S ROLE IN PANDEMIC FLU PREPAREDNESS IN A HOSPITAL SETTING

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One of the primary functions of a pharmacist is the procurement, storage and distribution of medications. In the past several years the shortages of critical medications has made this primary function a difficult challenge. Vaccine for influenza prevention was in significant short supply two years ago due to manufacturing problems. Many pharmacies received less than half and some received no supplies for the flu season. Priorities were developed by each hospital pharmacy on distribution of the flu vaccine. Many patients and healthcare workers did not receive vaccine and were at risk during the flu season.

Currently there is great concern in the United States about the possibility of an outbreak of pandemic 'avian flu.' As of March 2006 there have been 105 deaths and 186 cases of avian influenza (H5N1) confirmed by the World Health Organization (WHO). Since there is currently no vaccine developed for the H5N1 influenza, alternative medications have been explored for both prevention and treatment. Medications such as amantadine and rimantadine have been determined to be of no value and only oseltamivir phosphate has shown some value if used within 48 hours.

In the United States, there was no central plan developing a national strategic stockpile as we have for 'anti-terrorism' medications. Individual hospitals have had to decide what or if any action should be taken. As a result, The Ohio State University Medical Center created a multidisciplinary committee to develop a preparedness plan. The Department of Pharmacy was responsible for creating the treatment priorities for health care workers and the estimated number of doses needed. The pharmacy also determined plan recommendations for the treatment of patients with either suspected or confirmed 'avian flu' as well as seasonal influenza and the proper storage and security of medications. These recommendations enacted by the committee and approved by the Medical Director of the hospital as well as the Provost of the University.

HPS-P-087

SATISFACTION DEGREE OF THE PATIENTS IN TREATMENT OF HEPATITIS C WITH THE SERVICE OF FARMACY OF CENTER OF REFERENCE IN THE SUS - BAHIA.

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Aims: To evaluate the degree of satisfaction of the patients in treatment of chronic Hepatitis C virus - HCV that they receive Pharmaceutical Care and attended application of drugs in the Pharmacy of the Hospital Geral Manoel Victorino (HGMV). Methods: A research was become fullfilled with carrying patients of HCV in use of the drugs Peginterferon and Ribavirin attended at the Pharmacy of the HGMV, between April and May of 2005. An instrument with closed and opened questions was elaborated to evaluate the satisfaction of the patients with the pharmacy service. The participation was voluntary, and preserved the anonymity of the participants in the research. Results: 57% of the patients in use of the drugs Peginterferon and Ribavirin, 62% of them were of the masculine sex. In relation to the age, we found the percentage of 44% of the patients at the age between 42 and 49 years old, followed by 57% between 50 and 57 years old. From the total of patients who had answered, 51% were in the middle of antiviral treatment. When questioned about the performance of the pharmacy in the treatment of HCV, 66% of the patients had classified as excellent the service, and 83% had considered excellent the receptivity of the employees front to the attendance to the patients. Conclusions: The strategy of attendance to the patients follows criterions defined by the Therapeutical guidelines of direction of the Health department. It is given credit, however, that the humanized boarding to the carrier of HCV, in use of Peginterferon and Ribavirin, and the Pharmaceutical Care helps the patients to adhere to the farmacoterapia, considering the necessity of weekly contact with the involvement of the health professionals with the application of the medicine, stimulate, clarify, guide, besides providing comfort to the patients who are submited to the treatment during 48 weeks.

HPS-P-088

AUTOMATIZATION AT THE HOSPITAL PHARMACY

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Tornado is an automated storage machine installed in 2001 at the central hospital pharmacy, CSA, at Great Southern Hospital in Stockholm, Sweden. Tornado consists of two units with mobile shelves where restricted products are set aside on special shelves and can only be accessed by having an additional security clearing and a password. Castor can handle both traditional shelves as well as automated stock deposits.

The purpose of developing Castor was to simplify and increase efficiency when delivering goods to customers from both in-patient wards and out-patient wards. Castor collects automatically all information from a master system. By scanning goods labels, stock place labels and client labels we secure that the right products are delivered to the right customers.

Our experience shows that a combination between Castor and Tornado is the most efficient, generates rationalizing, is economically justified and also ergonomically developed. Castor even supplies a more secure handling compared to today's system, no errors has been detected since startup in September 2003, because the control system for bar codes is built-in, starting from receiving the goods at the pharmacy to gathering products for client distribution. Higher efficiency has also been achieved by automating several work elements through Castor. Due to more compact storing of products in Tornado a better use of the stockroom has also been achieved. For us at CSA, Castor has increased the production by 44.1% in a year. A solely use of the Tornado resulted in improved quality and handling but not as high increase in productivity as combined with Castor.

HPS-P-089

PROFILE OF PATIENTS WITH ACUTE LYMPHOCYTIC LEUKEMIA (ALL) AND NON-HODGKIN LYMPHOMA (NHL) TREATED AT AN OUT-PATIENT CHEMOTHERAPEUTIC UNIT OF ALBERT SABIN CHILD HOSPITAL-CE. PRELIMINARY STUDY.

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The Acute Lymphocytic Leukemia (ALL) and Non-Hodgkin Lymphoma (LNH) are the most frequent types of neoplasms in childhood. The knowledge about the profile of patients with ALL and NHL will be able to improve understanding about the outcome of treatment, to find solutions that can facilitate clinical approach and adhesion to treatment, as well as to reduce the complications of mistreatment that may increase human and social costs. The aim of this study was to describe the characteristics of patients with ALL and NHL such as age, sex, origin, diagnostics and evolution of treatment. The patients were assisted at the Out patient Chemotherapeutic Unit of Albert Sabin Child Hospital-CE from January 2001 to December 2005. Data for this descriptive study, obtained by a review of medical registers, were put in tables to obtain percent values. 254 registers were analyzed. The most frequent pathology was ALL (87%); 61% male patients; 43% living in Fortaleza; age range 0-5 (45%); 51% 6-10yr; 34% with exitus letalis; 51% with unknown evolution. In spite of being a preliminary study, the results about pathology, sex and age were equivalent to those of world literature. Other information need to be obtained in order to clarify the high percent of deaths and the unknown evolution so as to contribute to improve the clinical and therapeutical assessment of patients. Supported by FUNCAP and CNPq.

HPS-P-090

A NEW INTERDISCIPLINARY MODEL FOR POST-GRADUATE PHARMACY EDUCATION IN ADVANCING PRACTICE

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The role of Pharmacists is changing rapidly. Pharmacists play a key role in providing health advice, are readily accessible to the public, and their key role in helping patients manage their disease effectively has been endorsed by government policy. To support this, pharmacists in the UK are developing their role as supplementary prescribers and the government has recently announced the approval for pharmacists to become independent prescribers.

The School of Pharmacy at the University of Hertfordshire is developing a new Postgraduate framework for interdisciplinary learning for Advancing Pharmacy Practice to meet these new roles. This framework builds on the expertise of the University's Faculty of Health and Human Sciences in inter-professional learning and provides a programme to meet the needs of an Advanced Pharmacy Practitioner for the future. The framework provides a unique opportunity for a new School of Pharmacy to offer a practitioner based programme with inter-professional learning opportunities. The programme aims to enable the pharmacist to:

- develop skills to influence and deliver evidence based health care
- demonstrate the ability to learn and consolidate the practice of pharmacy in an inter-professional learning framework.

The programme structure comprises Core modules on Evidence-based Practice, Risk Management, Work Placed Learning, and Research Methods. Students can then select from a range of special pharmacy modules and modules from other programmes (including from post-graduate medicine) which are of common interest.

Benefits of this framework include:

- Facilitation of inter-professional learning and working for the pharmacist practitioner
- Responsiveness to the needs of contemporary inter-professional practice meeting the National agenda for professional development of individual practitioners.
- Better use of resources and expertise by the integration of modules across courses and Schools.

HPS-P-091

CASE REPORT: HYPERTENSION ASSOCIATED WITH VASO-VAGAL SYNCOPE

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AIM Evaluate Drug Therapy Problems (DTP) in a patient with high blood pressure (BP) and vaso-vagal syncope. METHOD Patient care process: 1) assess drug-related needs (assure an indicated, effective, safe and convenient drug therapy); 2) identify/categorize DTP; 3) develop care plan: therapy goals and interventions to solve DTP; 4) follow-up evaluation. The DTP categorization adopted the Pharmacotherapy Work-up® format. Consent form signed. CASE DESCRIPTION Women; white; 56 years; menopaused at 33; depression and suicide attempt after genitor loss; declared regular physical activity, but irregular diet. Patient in alendronate 10mg/day and HR for osteoporosis; in metformin 500mg/day for Diabetes type 2; irregular use of enalapril 25mg 12/12 for Hypertension; complained repeated dizziness, faint, nausea and emesis episodes, which related to de-compensating BP factors such as drug therapy noncompliance, nutritional factors and depression. RESULTS/DISCUSSION DTP identified: 1) Indication – needs additional drug therapy – synergistic effect, calcium and vitamin D for osteoporosis; 2) Noncompliance – irregular use of enalapril. Therapeutic goals: BP <; 135/80 mmHg; glycaemia <; 110 mg/dL; maintain or improve bone mineral density and avoid fractures. Pharmacist's interventions: suggested calcium 600 mg and vitamin d 400 UI/day; instructed regular drug therapy use and low sodium, sugar and carbohydrate intake. Holter showed BP control and during syncope episode Tilt test was positive, confirming vaso-vagal syncope. Patient received non-pharmacological instructions to control vaso-vagal episodes. CONCLUSION A relevant contribution of the pharmacist in this case was to promote BP control, eliminating causality between patient's pressoric levels and complaints. Pharmacist conjunct working with other health care professionals can abbreviate problem resolution. Acknowledgement: CEDEBA/DASF/SESAB.

HPS-P-092

CASE REPORT: OSTEOPOROSIS AND CHAGA'S DISEASE (CHD) – ELECTROLYTES AND ELLECTIVE TREATMENT

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AIM evaluate calcium and raloxifene use in a Chagasic patient with osteoporosis. METHOD Patient care process: 1) assess drug-related needs (assure an indicated, effective, safe and convenient drug therapy); 2) identify/categorize DTP; 3) develop care plan: therapy goals and interventions to solve DTP; 4) follow-up evaluation. The DTP categorization adopted the Pharmacotherapy Work-up® format. Consent form signed. CASE DESCRIPTION woman, black, 54 years old. Osteoporosis since 2001, using raloxifene 60 mg/day; ChD for 15 years with heart failure (HF), megacolon and megaesophagus, using digoxin 0,25 mg/day and hydrochlorotiazide (HCT) 25 mg twice a week; simvastatin 20mg prescribed for cholesterol (222 mg/dL). Complaint about lower limb pain, and eventual head and stomach ache. DISCUSSION/RESULTS DTP identified: 1) Safety – Adverse Effect – undesired effect – raloxifene causing limb pain and cephaleia; 2) Safety – Adverse Effect – contra-indication – raloxifene rising thromboembolism (TE) risk; 3) Indication – unnecessary drug therapy – HCT; 4) Safety – Drug interaction – calcium, HCT and digoxin – hypercalcaemia can cause dangerous arrythmias. With the therapeutic goals of maintaining or recovering bone mineral density and avoid fractures; maintain HF control; and avoid TE episode, the following interventions were considered: substitution of raloxifene by calcitonin; HCT interruption considered; non-pharmacologic instructions for lower limb pain; and seric calcium monitoring to avoid HF de-compensation. CONCLUSIONS Osteoporosis association with ChD constitutes a therapeutic dilemma, since calcium supplement is indicated for osteoporosis, but can interfere in HF control. Therefore, patient care process focusing DTP in patients with chronic diseases and poly-therapy favorites a more complete health evaluation, avoiding undesirable events with drug therapy use. Acknowledgement: CEDEBA/DASF/SESAB.

HPS-P-093

DRUG THERAPY EVALUATION IN AN ASTHMATIC PATIENT ASSOCIATED WITH OTHER DISEASES

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AIM: to evidence the importance of Pharmaceutical Care practice provided to patients with multiple disesases. METHOD: the process followed the Protocolo Clínico e Diretrizes Terapêuticas' norms from the Health Ministery and the Drug Therapy Problems (DTP) classified according to Dader's method. CASE DESCRIPTION: Women, 42 years, with 40% eye lesion due to Diabetes Type 2 (DM-2), complying to drug therapy, physical exercises, diet and social alcohol ingestion. Using metformin 850 mg 12/12 for DM-2; nifedipine retard 20 mg 12/12 for hypertension; mirtazapine 45 mg/day and clonazepam 2 mg/day for depression; patient declares initial therapy with formoterol/budesonide 12mg/400mcg 12/12 for asthma, but due to symptoms persistence, started to additionally use budesonide 32 mcg (nasal spray) and budesonide 200 mcg (inhaled powder); and using dipyrone 300 mg whenever necessary for headache. RESULTS & DISCUSSION: the following real and potential DTP were identified: a) quantitative unsafety drug therapy problem, due to corticosteroid use with DM-2 which is an aggravating factor to patient's ocular problem; b) quantitative unsafety drug therapy problem, because of multiple uses of corticosteroids, presenting excessive dosage. Patient's blood pressure was stable (130/80mmHg) confirming compliance to anti-hypertensive and low sodium intake diet. CONCLUSION: Pharmaceutical Care appears as an important practice within the health care team, granting a better quality of life for patients in use of multiple drug therapy, where drug interactions, adverse effects and mode of use are stressed and patient motivated to comply with pharmacotherapy.

HPS-P-094

IMPORTANCE OF THE PHARMACIST AMONG MULTI-PROFESSIONAL TEAM AT AN ASSISTANCE POLE FOR PATIENTS WITH HEPATITIS C

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AIM: pharmacist interview of a patient taking part of the Exceptional Drug Program (Programa de Medicamentos Excepcionais) at Hospital Manoel Vitorino, Salvador, Bahia, Brazil. CASE DESCRIPTION: Woman, black, 41 years, BMI 15,6 kg/m2. Using Peginterferon 100mcg 0,36 mL once a week and 2 pills of Ribavirin 250 mg 12/12 for Hepatitis C (HCV); using anti-retrovirals Lamivudine (3 T.C.) 150 mg, Zidovudine (AZT) 400 mg 12/12 h, and Efavirenz (EFV) 200 mg 12/12. Patient demonstrated initially uncomfortable and disbelieved about the assistance provided by health care professionals. RESULTS & DISCUSSION: the following DTP were identified: a) drug interactions between AZT and Ribavirin, developing a severe anaemia (Hemoglobin 6,0 g/dL, Erythrocyte 2,62 million/mm3), having as consequences patient internment for haematologic reposition, HCV and HIV drug therapy interruption and Erythropoietin introduction; b) inhibition of patient to collaborate in his assistance process. Interventions carried out by the pharmacist were: 1) communication of health problems previously unkown to patient's doctor; 2) information of non rationality of drug therapy regimen, with suggestion of Erythropoietin introduction, Peginterferon/Ribavirine temporary interruption; 3) patient was sent to an emergency service. After that, patient was followed-up weekly by the pharmacist, where exams results and possible adverse effects were monitored, attempting also to patient's commodity and she was sent to a psychologist. CONCLUSION: the importance of the pharmacist at an 'Assistance Pole', managing problems that may appear and interacting with other health professionals, contributing to a successfull treatment, recovering health team's credibility before the patient.

HPS-P-095

DRUG MANAGEMENT IN A PUBLIC GERIATRIC RESIDENCE: AN APPROACH.

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Introduction
Older adults are major consumers of drugs. They are more likely to take multiple medications, so that they are at greater risk for drug-related problems.
This residence is a public facility of the Municipality of Córdoba where older adults live. Like an elderly nursing home it has a health professional team for residents' care. Nevertheless, the institution has no pharmacist.
Drug supply involves selection, acquisition, storage, distribution, dispensing, and information as supporting services. These are referred to pharmacy management.
The aim of this presentation is to carry out a diagnosis about the basic activities of drug management at institutional level.
Methods----Setting: public residence for older adults with social and economic needs.
For the diagnosis, different activities were planned, such as visits to the institution for 3 months, participant observation, and reunions with physicians, nurses, and other personnel related to drug supply.
Results
There are 140 residents in 5 houses. 120 receive at least one drug. Supporting services assessed were the following
* Drug selection: There is neither a drug formulary approved for the institution nor Pharmacy & Therapeutics Committee.
* Drug acquisition: Open tender, monthly restricted tender, direct purchase, and donations are the methodologies used.
There are no registers of historic consumption. The drug storage is not centralized and there is no control of expiration date.
* Drug distribution (dispensing): Traditional distribution by restocking wards is used. There is a lack of procedures for distribution and dispensing.
* Drug information: There is no library for the health team. Only commercial literature is available at the institution.
Discussion:
Supporting services for drug management are required. Drug supply can be organized with professionalism if a pharmacist is integrated as a member of the health care team.

HPS-P-096

HOSPITAL PHARMACY: A TECHNICAL EVALUATION OF THE SERVICE

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The hospital pharmacy actually do not stay restricted only to techical and scientific aspects connects with medicines, but it is responsible for management of activies for reduction of the costs, rationalization of word and guaranty of the appopriate utilization of the medicines too.This work had as objective to evaluate the hospital pharmacy service of the Regional Hospital of Urgency and Emergency from Campina Grande-PB, acoording with technical standards have defined by National Agency of Sanitary Vigilance(ANVISA). Evaluation involved identification of avaiable structure(material and human resorts) and of processes have made(services and activities), through of a pre-fixed formulary. Among 151 items that were in formulary(100%) only 88 theirs(58,28%) could be applied in this evaluation, 46(52,27%) were met satisfactory way, they were accomplishing with ANVISA exigencies and others 42 items(47,73%) did not satisfy exigencies. From 63 items(41,72%) were not evaluate because they have not existed, we can quote activities of pharmacotechnical, dilution of germicides and information about medicines. A Central of Pharmaceutical Provisioning had a good location and organization that facilitated the activities carried out, but the storage of the hospital materials and others products were being made of inadequate way in the storeroom. The distribution system of medicines that was been utilized by the hospital was personal, but evatuation of precribes had not been made of adequate way. The pharmacist is present in the pharmacy at significant number ande they are members of Drugstore Comission of therapeutics and Comission of Control of the Infection Hospitalar. So in agreement with ANVISA orientations the hospital pharmacy does not carry out basics standards that are demands, because half of items were not met in pharmacy of satisfactory way.

Key Words: hospital pharmacy, standards, national sanitary vigilance.

HPS-P-097

EVALUATION OF THE SERVICES OF ANTINEOPLASTIC CHEMOTHERAPY IN A HOSPITAL IN CAMPINA GRANDE-PB, BRAZIL

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The antineoplastic chemotherapy is the applied method more in the treatment of the cancer, however it offers risks to the involved professionals and nor always the patient receives an attendance adequate. Aiming at the qualilification of the service the Agência Nacional de Vigilância Sanitária (ANVISA) sanctioned the Resolution RDC nº 220, of September, 21th of 2004 that it approved the Regulation Technician of functioning of the Services of Antineoplastic Therapy, which fixes the demanded minimum requirements. The work has as objective to evaluate the service of antineoplastic chemotherapy in a hospital in Campina Grande-PB, Brazil. The research was carried through in the period of March the June of 2005 with gotten data mediantes inspections through visits in different schedules and procedures, the results had been correlated and had been compared with the norms establishes for the ANVISA. Analyzed the service we classify it as deficient, showing the necessity of magnifying and reform of the infrastructure of the sector, mainly for the fact of the institution to possess an exclusive attendance in this specialty and to count on a proper pharmacy. It was observed existing inefficiency in the necessary area of dispense medicines. The Equipment of Individual Protection it was evidenced its use during the manipulation, but they are not hte adjusted ones for this procedure, and becoming irregular its use in the administration of antineoplastic medicines. Also, we do'nt find the accomplishment of previous descontamination of the materials, neither of the remaining portions of medication and excretion of the patients submitted the chemotherapy.

HPS-P-098

THE PROCESS OF DRUG DISPENSING AND DISTRIBUTION IN FOUR BRAZILIAN HOSPITALS

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Aims: This study aimed at identifying and describing problems found in the process of drug dispensing and distribution by pharmacy services in four Brazilian hospitals. Methods: A multicenter descriptive study was carried out in two steps: an interview with providers involved in the medication processes and then non-participating observation of their environment and practices. Results: Only one hospital was found to have a bar-coding dispensing system connected to a computerized prescription system. In all participating hospitals at least 90% of drugs were dispensed and distributed as unit doses but in none of them pharmacists assessed prescriptions. Work environments were noisy and interruptions were frequent, and both drug orders and supply were found to be inadequate. Conclusions: The study findings showed that the processes of drug dispensing and distribution in Brazilian hospitals encounter several problems, mostly associated to work environment conditions and inadequacy of drug ordering and requests. These factors constitute stressors to the health care team, resulting in decreased productivity, delays in processing orders and sending out drugs to the requesting units and, consequently, compromising nursing work and patient care. There is, therefore, a need for improving pharmacy services which will require restructuring the process of drug dispensing and distribution since adequate drug use is closely associated to the quality of all processes of the medication system. The following was proposed to improve the process: implementing a computerized prescription system, unit doses, and bar-coding dispensing system; improving work environment conditions; and pharmacists should review prescriptions.

HPS-P-099

PRESCRIPTION ORDERS: CONTRIBUTIVE ASPECTS TO MEDICATION ERRORS

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This descriptive and exploratory study aimed to identify and evaluate the contributive aspects to medication errors. The study was developed into four universities hospitals in southeast, northeast and center-east regions of Brazil. The results revealed that the problem of illegibility in hand written prescription remains. Besides that there are a lack of pattern concerning the use of generic or land mark names of medicines and a lack of justify for non administrated doses. We realized that this study showed the great amount of vulnerable points in medication system that requires system improvement for a better quality and safety to the patients.

HPS-P-100

REDUCTION OF COSTS PROMOTED BY THE HOSPITAL PHARMACY OF MATERNITY FREI DAMIÃO, JOÃO PESSOA - PB, BRAZIL.

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The Hospital Pharmacy is a clinical, administrative unit and technique, directed for pharmaceutical professional, this gives hospital services that assure the therapeutical medicamentosa to the patients with quality, effectiveness and security, promotes the safe and rational use of the same ones. It was in this intention that the Maternity Frei Damião opted for pharmacy hospitalar's implantation 24h(twenty-four hours). This type of service allows a bigger control in the dispatch of medicines and hospital material-medical. Objective: Hospital reduction of the consumption and the financial medicine costs and material-medical. Methodology: Three sequence months had been chosen, after the opening of the pharmacy that was in july/2005, where in accordance with the daily consumption arrived it the monthly consumption of each item and were compared with the previous year, for simple statistical calculations were possible to evidence the proportional cost to each year, thus establishing a correlation enters the years of 2004 and 2005. Results and discussion: The consumption in itens and total reals, referring to the hospital medical materials (MMH) and medicines between the years of 2004 and 2005, when correlated they represent a economy of R$ 28,427.74 and R$ 8,998.20 respectively. The relation between the total financial costs of 2004 and 2005, referring to the cited months, represents an average total cost of 143.571,40 in 2004 while that in 2005 it was of 106.145,46, thus entering, a total economy of 37.425,94, must also be standed out the act of contract of new employees and wage increase, resulting still in a economy of R$ 36.405,94. Conclusion: The implantation of the Hospital Pharmacy twenty-four hours provided a reduction of costs and represented a economy of 25,36 %. This possible, same having was observed, a considerable addition in the number of surgical procedures, however the Institution had considerable a financial profit, promoting the health with security.

HPS-P-101

ELECTRONIC PRESCRIPTION AS CONTRIBUTORY FACTOR FOR HOSPITALIZED PATIENTS' SAFETY

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Aims:The following study was performed to identify factors related to medication errors in the computerized physician order entry and their advantages and disadvantages according to doctors, nursing team and administrative officers. Methods: It is a survey descriptive study carried out at three units of a Brazilian academical hospital in the southeast area. The study was divided in two phases. In the first phase, we analyzed a total of 1.349 prescriptions from general medical unit, surgical and orthopedic wards during 30 days consecutively. A semi-structured instrument, elaborated by a group of researchers for the study proposals, was used. In the second phase, a semi-structured questionnaire was applied to the health professionals containing closed and open items approaching their opinion about the composition of electronic prescription, the advantages and disadvantages of them, and their suggestions for its improvement. Results: Out of 1.349 prescriptions observed, 17,5% presented deletions, 25,0% medicines written manually and 17,0% of them were incomplete. Some of the advantages pointed by health professionals were its legibility (37,5%), little time spent when elaborating and emitting them (20,5%) and the way they are a practical and organized (8,0%). The disadvantages pointed were repetition of previous prescriptions (34,0%), typing mistakes (17,0%), dependence on computers (11,0%) and alterations made manually (7,0%). Conclusions: We conclude, this way, that the computerized prescription order entry represents a great progress among the strategies used to minimize medication errors caused by prescriptions badly formulated. However, it doesn't eradicate the possibility of medication error occurrences, needing some system modifications.

HPS-P-102

RATIONAL ANTIBIOTIC USE IN THERAPEUTICAL THE SURGICAL ONE IN HOSPITAL OF THE BAGE CITY

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The antibiotic therapy has the purpose to cure an infectious illness or to fight a situated infectious agent in one determined focus of the infection. It is one of the main responsible causes for the incorrect antimicrobials use hospital level e, its accomplishment, of argued form and standardized he is one of the points most important of the program of antibiotic control. In this study the antibiotics more used in antibiotic surgical therapy in the Saint Casa de Bagé, as disgnostic had been identified of the rational antibiotic use verifying itself it necessity of bigger information to the professionals of health how much to the adequate antibiotic use.

HPS-P-103

CLINICAL PHARMACISTS USE PASS AND TO PROMOTE RATIONAL DRUG USE

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AIM:To ensure patient's medication safety and to promote rational drug use. METHODS:5000 inpatient prescriptions in 2003~2005 in our hospital were sampled; in which, the irrational prescriptions were classified and analyzed statistically based on prescription automatic screening system(PASS),pharmacological knowledge and literatures. RESULTS: 310(6.2% of the total) involved irrational drug use .The irrational drug use problems were mainly seen in drug interactions, the repetitive use of drugs, drug dosage exceeding the limit dose menstruum application and improper application. CONCLUSIONS:PASS provided an effective means for instructing and monitoring use of drug in the clinic.

HPS-P-104

INTERACTION BETWEEN BEZAFIBRATE AND WARFARIN

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Objective: To report a case of increased international normalized ratio (INR) after addition of bezafibrate.

Case Summary: A 73-year-old man with multiple medical conditions was stabilized on long-term warfarin therapy. In a consulting interview, the pharmacist found his INR was high (5.29) and noted an occurrence of oral hemorrhage. The patient denied changes in diet, alcohol ingestion, compliance with therapy, or changes in drug regimen except for the addition of bezafibrate. Before starting bezafibrate therapy, his INR values were within the therapeutic range (2.57). A chart review and evaluation of parameters, such as other changes in drug therapy, liver function, and drug-disease interactions, found none that could be ruled as contributory. The patient's INR was decreased to within therapeutic range (1.98 and 2.27) after bezafibrate withdrawal, and then peaked again at 3.36 upon rechallenge.

Discussion: The mechanism of interaction between the two drugs remains unclear. Fibrate antihyperlipidemic agents are mild to moderate inhibitors of CYP2C9, the enzyme responsible for warfarin metabolism, and can thereby decrease metabolism of warfarin. The fibrate derivatives also mostly bind to protein and have the potential to displace warfarin from its binding protein, leading to an enhanced hypoprothrombinemic effect. The combination of these effects may increase the anticoagulant response to warfarin. Another possible mechanism is interference with clotting factors' synthesis. In this case, the adverse drug interaction was assessed as 'definite' on the basis of a score of 9 on the Naranjo probability scale.

Conclusion: If the combination of warfarin and fibrate antihyperlipidemic agents is clinically necessary, a 30-40% lower dosage of warfarin with careful INR monitoring is recommended.

IPS-P-001

EFFECT OF ADDED PHARMATOSE DCL11 ON METRONIDAZOLE SUSTAINED RELEASE FROM METHOCEL K4M AND CARBOPOL 971P NF FLOATING MATRICES

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In vitro dissolution of metronidazole sustained release from floating tablets has been studied varying the proportion of sodium bicarbonate (SB) and Pharmatose DCL 11. Two polymers with different hydration characteristics, Methocel K4M and Carbopol 971P NF, were used to formulate the matrices. The variables studied include the matrices release profile, hydration volume and the floating behavior. All Methocel matrices floated more than 8 hours with SB proportions up to 24% while Carbopol matrices floated this time only with SB proportions up to 12%. Matrices hydration increased with time, showing a maximum and declining thereafter. Methocel matrices showed greater hydration volumes and greater drug dissolution compared to Carbopol matrices. After addition of increasing quantities of Pharmatose to matrices containing 12% SB the hydration volume decreases as well as dissolution increases. These results are considered due to water filled pores formed after Pharmatose dissolution and to lesser polymer proportions. Carbopol matrices showed greater susceptibility to Pharmatose addition, becoming more erodible and releasing higher quantities of metronidazole. The greater Carbopol susceptibility to Pharmatose addition is attributed to its entire faster hydration. Methocel matrices hydrate rapidly only at the surface delaying the entire hydration and Pharmatose dissolution.

IPS-P-002

COMPARATIVE EFFECTIVENESS OF O2–H2O2 MIXTURES PLASMA STERILIZATION TECHNOLOGY

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The plasma sterilization technology advanced rapidly within recent years; a number of laboratories having reported great possibilities for use in thermossensitive matters as alternative to conventional processes. Furthermore, plasma sterilization is safe, both for the operator and the patient, in contrast to EtO. In this work, studies were performed taking into account a Plasma sterilization technology using a Reactive Ion Etching (RIE) reactor. Power was applied at 13.56 MHz using a 6 inch diameter electrode. The gases tested were pure oxygen and oxygen and hydrogen peroxide mixtures in 190:10, 180:20, 160:40 sccm ratio and gas flow held constant 200 sccm, pressure at 0.100 torr and Radio-Frequency power at 25W, 50W, 100W and 150W. The exposition times were 3 to 120 minutes and temperature below 60°C. The biological indicator used was Bacillus subtilis var. niger ATCC 9372, witch was inoculated in glass carries (18 x 18 mm) in a load of 2.0 x 107 CFU/support. Progressive reductions of the initial microbial count could be observed in the D-values witch were 215.9, 55.5, 9.19 and 2.91 minutes for pure oxygen Plasma at 25W, 50W, 100W and 150W, respectively. Oxygen and hydrogen peroxide mixtures Plasma showed D-values: 190:10 (D= 6.41 min.), 180:20 (D=6.47 min.) and 160:40 (D= 4.02 min.) at 100W and 190:10 (D= 1.47 min.), 180:20 (D=3.11 min.) and 160:40 (D= 1.94 min.) at 150W. Scanning Electron Microscopy (SEM) analyses showed some damage on the spore cortex. Processes using plasma as main sterilization agent are presented effective in challenge with biological indicators. The plasma represents the most welcome sterilization technology in thermossensitive matters and a great potential to replace conventional sterilization methods in the near future.

IPS-P-003

INDUSTRIAL PHARMACY RESEARCH AND PRACTICE IN NIGERIA

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The academia and the pharmaceutical industry offer career opportunities for graduates of Pharmacy in Nigeria. With nine Pharmacy schools and emerging new ones offering courses in industrial Pharmacy, the relationship between industrial Pharmacy research and practice is expected to grow with the next decade. A recent emphasis on the promotion of manufacture of pharmaceuticals locally has further stimulated research within the academia with increasing emphasis on pilot scale-up industrial production. The relevance and future of research findings in relation to industrial application and practice are highlighted as they relate to industrial Pharmacy practice in Nigeria. The relevance of academic research in the field of industrial Pharmacy and the development and practice of industrial pharmacy in Nigeria is explored.

keywords: Industrial Pharmacy, research, industry, practice.

IPS-P-004

EFFECT OF STEARIC ACID ON THE PROPERTIES OF METRONIDAZOLE FLOATING MATRICES: CARBOPOL 971P NF MATRICES

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The properties of metronidazole sustained release floating tablets have been studied varying the proportion of the lubricant, stearic acid, on formulations with and without sodium bicarbonate (SB) and Carbopol 971P NF. The matrices were adjusted to obtain a fixed total weight of 600 mg. The variables studied include technological properties of the tablets such as tablet hardness and ejection pressure, the drug release profile, the hydration kinetics and the floating behavior. Tablets without bicarbonate did not float with exception of those containing the greater lubricant concentration (150 mg/tab). Tablets with sodium bicarbonate floated an average of 6 hours. Matrices hydration volume increased with time, showing a maximum and declining thereafter. The drug dissolution increases with increasing concentrations of stearic acid in the tablets. The same trend is observed with matrices containing sodium bicarbonate however the dissolution is 10-15% lesser. The release mechanism is predominantly controlled by diffusion in matrices without bicarbonate (nprom=0.565) while with bicarbonate the mechanism is shifted toward relaxation and erosion (nprom=0.709). These results are considered due to decreasing matrices coherence with an increasing quantity of stearic acid and a reducing polymer proportion as well as to the obstruction effect on the diffusion path by the CO2 bubbles formed after reaction with an acidic medium.

IPS-P-005

URINARY TRACT INFECTION IN PREGNANCY

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Aim of the Study:
Urinary tact infection (UTI) during pregnancy is a common cause of serious maternal and perinatal morbidity. This study was done to establish a treatment protocol suitable for urinary tract infection in Egyptian pregnant women.
Patients and Methods:
Egyptian pregnant women were screened for the presence of bacteriuria. Patients with proven bacteriuria were further investigated, treated and monitored. The following tests were done before and after treatment: complete urine analysis, culture and biochemical identification tests, and antibiotic sensitivity tests.
Results:
The study involved 165 pregnant and 25 non-pregnant women. UTIs were found in 43.64% (65.2% asymptomatic) pregnant and 16% (75% asymptomatic) non-pregnant patients. The peak of UTI in pregnant women were found in the young age (26-30yr), 2nd trimester and multi-para patient groups. Escherichia coli was the most common isolated microorganism (54.12%) in both groups. In pregnant patients, it was followed by Klebsiella oxytosa, Stapylococcus saprophyticus, Proteus mirabilis, Staphylococcus aureus, Pseudomonas aeruginosa and Enterobacter colacae respectively. Mixed infections were only found in pregnant patients most of them were symptomatic. Duration of treatment needed were 7 days. Most of the isolated uropathogens were sensitive to cephalexin, co-amoxiclave and cephadroxil respectively. A lower sensitivity was found to amoxycillin and high resistance against ampicillin.

Conclusion:
1.All pregnant women should be monthly screened for UTI
2.Most of UTIs are asymptomatic except mixed infections.
3.Escherichia coli is the most common causative organism.
4.For effective treatment use small doses of antibacterial agent for 7 days. Oral first generation cephalosporins and co-amoxiclave are the most effective treatment.
5.Patient education about the disease, personal hygiene and importance of therapy is very important to ensure successful treatment.

IPS-P-006

THE USE OF THE TASTE SENSOR IN THE EVALUATION OF THE TASTE MASKING OF FAMOTIDINE

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The purpose of the present study was the quantitative prediction of the bitterness-suppressing effect of sweeteners (sucrose or sugar alcohols) on the bitterness of famotidine (or quinine as control) solutions using an artificial taste sensor. The bitterness of commercially available, orally disintegrating, tablets containing famotidine was also evaluated using the sensor.

Firstly, we examined the response characteristics of the sensor response to sweetness. The sensor membrane is charged negatively in the presence of sweeteners, which tend to receive protons from one of the components of the sensor membrane. The magnitude of the sensor response was shown to increase in direct proportion to the concentration of the sweetener.

Secondly, we used two different methods to evaluate and predict the bitterness-suppressing effect of sweeteners on famotidine and quinine solutions. Method 1 was an indirect method: a regression equation was calculated between the output values of the sensor response to sweetness and the sweetness intensity obtained in human gustatory sensation tests of various sweeteners. The sensor output value of an unknown sweetener was then substituted into the regression equation and its sweetness intensity predicted. The second method was evaluation of the bitterness-suppressing effect of the sweeteners by evaluating the bitterness intensities of 1 mg/mL famotidine or 81.4 μM quinine sulfate solutions containing the sweeteners at various different concentrations by regression analysis. This method was more direct and convenient than method 1 and enabled us to predict the bitterness intensity of the sweetener solutions directly.

Finally, we also evaluated the bitterness intensity of the dissolution media of commercially available, orally disintegrating, tablets containing famotidine by the combined usage of bitterness- and sweetness-sensitive sensor channels.

IPS-P-007

DEVELOPMENT OF DICLOFENAC PRODRUGS FOR ENHANCED PERCUTANEOUS ABSORPTION

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Purpose. To investigate the physicochemical characterization and in vitro evaluation of alkyl ester derivatives of diclofenac as potential dermal prodrugs of diclofenac. Methods. The prodrugs of diclofenac were synthesized, and their physicochemical properties such as solubility, pKa and stability in buffered solution and in human serum were investigated. Furthermore, the permeation study of prodrugs across hairless mouse skin was carried out employing flow-through diffusion cell. Results. The methyl- and ethyl- ester prodrugs showed higher lipid solubility in terms of octanol-buffer partition coefficients (log Papparent) of 5.5 and 5.1 at pH 7.0, respectively, when compared with diclofenac. They showed moderate chemical stability in aqueous solutions of various pH's except strong acidic and basic conditions and were readily converted to diclofenac in human serum. The prodrugs showed a higher flux across the hairless mouse skin than diclofenac, with a maximum enhancement of 2.6-fold compared to diclofenac. However, they showed shorter lag time than diclofenac did, and poor aqueous solubilities. They were about 1000 times more soluble in propylene glycol than in aqueous solution. Methyl- and ethyl ester prodrugs had the pKa of 6.9 and 7.2, respectively. Conclusion. Alkyl ester prodrugs of diclofenac could be a potential candidate for improved dermal delivery of diclofenac.

IPS-P-008

BIOEQUIVALENCE EVALUATION OF AN ACECLOFENAC TABLET AND SOFT CAPSULE MEDICATIONS AFTER A SINGLE ORAL DOSE TO KOREAN HEALTHY MALE VOLUNTEERS

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Purpose. To develop analytical methods for the quantitative determination of aceclofenac in human serum and to evaluate the bioequivalence of an aceclofenac tablet and soft capsule tablet medications manufactured in Korea. Methods. The study was conducted as a randomized 2-treatment, 2-period crossover design in 16 Korean healthy male volunteers who received a single oral dose of 10 mg an aceclofenac tablet or soft capsule tablet in each study period. Serum concentrations of aceclofenac up to 24 hours after oral administration were determined using a validated HPLC with UV detection. In addition, in vitro dissolution profiles were studied. The pharmacokinetic parameters AUCt, Cmax and Tmax were calculated from the serum concentration-time profile and the analysis of variance (ANOVA) was carried out using logarithmically transformed AUCt and Cmax, and untransformed Tmax. The calculated pharmacokinetic parameters were compared statistically to evaluate bioequivalence between two medications. Results. This analytical method showed no interferences from endogenous substance of human serum, excellent sensitivity (limit of quantitation was 0.2ug/ml) and good precision and accuracy. There were no significant differences between two medications in AUCt and Cmax. The point estimates and 90% confidence intervals for AUCt (parametric) and Cmax (parametric) were 1.083 (1.003 ~ 1.173) and 1.072 (0.954 ~ 1.210), respectively, satisfying the bioequivalence criteria of the Korea Food and Drug Administration, the European Committee for Proprietary Medicinal Products and the US Food and Drug Administration Guidance. The corresponding value of Tmax was 0.107. Both medications revealed the comparable dissolution profiles with the 67.73 similarity factor (f2). Conclusion. These results indicated that the two medications of aceclofenac are bioequivalent and thus, can be assumed exchangeable in clinical practice.

IPS-P-009

DEVELOPMENT OF TRANSPARENT IBUPROFEN-LOADED SOLUTION WITH ENHANCED ORAL BIOAVAILABILITY USING POLOXAMER 188 AND MENTHOL

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Purpose. To develop transparent ibuprofen-loaded solution with the enhanced oral bioavailability using poloxamer and menthol. Method. The effects of menthol and poloxamer 188 on the aqueous solubility of ibuprofen were investigated. The dissolution and pharmacokinetic study of ibuprofen delivered by the poloxamer gels composed of poloxamer 188 and menthol were then performed. Results. In the absence of poloxamer, the solubility of ibuprofen increased until the ratio of menthol to ibuprofen increased from 0:10 to 4:6 followed by an abrupt decrease in solubility above the ratio of 4:6, indicating that 4 parts menthol formed eutectic mixture with 6 parts ibuprofen. In the presence of poloxamer, the solutions with the same ratio of menthol to ibuprofen showed abrupt increase in the solubility of ibuprofen. The poloxamer gel with menthol/ibuprofen ratio of 1:9 and higher than 15% poloxamer 188 showed the maximum solubility of ibuprofen, 1.2 mg/ml. Furthermore, the poloxamer gel with menthol [poloxamer/menthol/ibuprofen (15/0.25/2.5%)] gave significantly higher initial plasma concentrations, Cmax and AUC of ibuprofen than did solid suppository, indicating that the drug from poloxamer gel could be more absorbed than that from solid one in rats Conclusion. The results indicated that , the poloxamer gel with poloxamer 188 and menthol was a more effective oral dosage form for ibuprofen.

IPS-P-010

DEVELOPMENT OF LC-MS-MS METHOD FOR SIMULTANEOUS DETERMINATION OF PROSTAGLANDIN E1 (PGE1) AND PROSTAGLANDIN E1 ETHYL ESTER (PGE1-EE) IN DOG PLASMA

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Purpose: To develop and validate liquid chromatography-mass spectrometry-mass spectrometry (LC-MS-MS) method for the simultaneous determination of prostaglandin E1 (PGE1) and prostaglandin E1 ethyl ester (PGE1-EE) in the plasma of beagle dog. Methods: 9-Anthracenecarboxylic acid was used as an internal standard. The plasma samples were deproteinized by acetonitrile and the supernatant was evaporated under nitrogen gas. The residue was then reconstituted with methanol. LC separation was performed on X Terra MS C-18 column. The mobile phase consisted of 1mM acetate buffer (pH3.3) and 90% acetonitrile in water. Elution rate and injection volume were 180µl/min and 20µl, respectively. The initial mobile phase composition was 20% of 1mM acetate buffer which was increased to 80% by a linear gradient over 20 min and held for 3 min. The equilibration time between two injection was set at 7 min, resulting in total running time of 30 min. Results: Retention times of 9-anthracenecarboxylic acid, PGE1 and PGE1-EE were, 2.1, 14.56 and 19.3 min, respectively. The assay showed linearity from 2 to 100pg/ml for both PGE1 and PGE1-EE. Precision expressed as R.S.D. ranged from 2.45 to 18.59% for PGE1 and 3.65 to 16.31% for PGE1-EE. Accuracy ranged from 96.1 to 114.9% for PGE1 and from 92.5 to 118.6% for PGE1-EE. Conclusion: This method was very specific and sensitive, and could be employed successfully to follow the time course of the concentration of PGE1 and PGE1-EE in beagle dogs following intravenous injection of PGE1-EE.

IPS-P-011

PREPARATION AND IN VITRO EVALUATION OF NITRENDIPINE NANOPARTICLES

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Aim
The aim of the present study is to develop Solid Lipid Nanoparticles(SLNs),Nano Structured Lipids(NSL) and Lipid Nanospheres(LNs) as carriers of Nitrendipine(NDP) for topical application.
Materials and Methods
Nitrendipine(NDP),Soy bean oil,Dynasan 116,Soy phosphatidylcholine 95%,Tween 80,Span 60,Poloxamer 188.
LNs were prepared by hot homogenization followed by sonication method. Size and zeta potential of SLNs were measured by Photon Correlation Spectroscopy (PCS). The amount of the NDP in the aqueous phase was estimated by HPLC. In vitro and ex vivo (rat skin permeation) release studies were performed in 1 % SLS phosphate buffer (pH 6.8) using Franz diffusion cells.
Results
NDP lipid/oil based formulations were prepared by reported method. NDP Lipid/ oil based formulations of NDP having mean size range of 80 to 150 nm and zeta potential range of -28.2 to -44.6 mV were developed. Entrapment efficiency of NDP Lipid/ oil based formulations was found to be in the range of 86 to 99 %.
Discussion
Lipid/Oil based formulations were developed to enhance and sustain the percutaneous absorption of NDP. 99% of NDP entrapment efficiency was observed in NSL. LNs show relatively low entrapment efficiency compared to other lipid-based formulations studied. In all the lipid/oil-based formulations, the percentage of drug released ranged from 4.71 to 14.3 % after 24 hours. The obtained release data was fit into first order, Higuchi and Weibull equations. Release of drug from almost all the Lipid/Oil based formulations followed Higuchi and Weibull equations rather than first order. Skin permeation studies revealed that high NDP concentrations were found in the upper skin layers. Skin permeability was found to be higher for NDP LNs formulations compared to other formulations studied.
Conclusions
Lipophilic drugs like NDP can be successfully entrapped in the Lipid/Oil based formulations. Enhanced skin permeation and sustained release can be achieved by

IPS-P-012

A NEWLY DESIGNED FLOW METER FOR MEASUREMENT OF POWDER FLOW BY MEANS OF THE CRITICAL ORIFICE DIAMETER

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Various methods to characterize powder flow has been used, including (1) angle of repose [AOR], Carr's index [%C], Hausner ratio and critical orifice diameter [COD]. The COD is defined as the smallest opening through which a powder will flow under the influence of gravity. Taylor et al. (2000) suggested a composite index [CI], which integrates the results from AOR, %C and COD. This index is based on the concept that each of the test results add equally to the CI.

Most flow apparatuses used to determine the COD show inherent design problems due to the formation of (i) static powder regions in the corners between the cylinder wall and the floor and/or between the floor and the shutter and (ii) holes in the powder bed through which particles fall rather than flow. These problems often lead to inaccurate estimation of flowability, especially for powders which generally exhibts poor flow.

A new apparatus has been design consisting of a set of brass discs between 5 and 10 mm thick which can be stacked on top of each other to form a funnel. The angle between the opening and the orifice of each disc was machined to a set angle corresponding to that of hoppers used on standard tablet presses.

The AOR, %C, COD (using the new apparatus) and CI of various pharmaceutical fillers were determined.

Comparison of the COD's indicated large differences (16x) between the various powders, ranging from 1.5 (excellent flow) to 24 mm (extremely poor flow), whilst neither the AOR nor the %C or the CI reflected these extreme differences.

The new apparatus clearly fulfilled its purpose to eliminate static powder regions, whilst the brass material also minimized static forces. Furthermore, it proved to be able to discriminate between the flowability of powders with poor flow properties without the need of vibration-assistance or force feeding.

IPS-P-013

EVALUATION OF THE USP DISSOLUTION TEST METHOD A FOR ENTERIC-COATED ARTICLES BY PLANER LASER INDUCED FLUORESCENCE

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The USP drug release standard for delayed-release articles Method A was evaluated using Planar Laser Induced Fluorescence (PLIF). Prior authors have suggested that high pH 'hot spots' could develop during the buffer medium addition of the Method A enteric test. Additionally, previous studies have shown heterogeneous flow patterns and low-shear regions in the USP Apparatus II dissolution vessel, which may result in poor mixing of the buffer and acid media during the pH neutralization step of the Method A enteric test. In this study, PLIF was used to evaluate the mixing patterns and evolution of pH neutralization during the buffer medium addition with rhodamine-B dye and a pH-sensitive fluorescent dye, respectively. Additionally, a comparison of the Method A and Method B enteric tests was performed with enteric-coated tablets containing rhodamine-B in the film coat so as to image the dissolution rate of the coating polymer with PLIF. Rapid addition of the 250 mL of buffer medium over 5 seconds to the 750 mL of acidic medium shows efficient mixing and pH neutralization due to the generation of large-scale stirring and enhanced turbulence resulting from the descending buffer medium. Slow addition near the paddle shaft over five minutes showed segregation in the recirculating region around the paddle shaft. In contrast, slow addition near the vessel wall introduces the medium into fluid outside of the recirculation region and enables transport over the entire vessel. Enteric-coated tablets tested according to the Method A and Method B enteric tests performed identically, indicating no difference in polymer dissolution rate between the two tests. From these results, it was seen that 'hot spots' affecting the dissolution performance of enteric dosage forms are not generated during the neutralization step of the Method A enteric test namely when the media is added rapidly or outside of the recirculation region that surrounds the paddle shaft.

IPS-P-014

NANOEMULSIONS AS VERSATILE FORMULATIONS FOR PACLITAXEL DELIVERY

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Since pathogenesis of psoriasis involves the keratinocytes in epidermis, as well as the angiogenesis involving deeper skin layers, the drug delivery strategy should be customized to localize Paclitaxel (PCL) concentrations inside these two layers. In this investigation, in order to achieve penetration of PCL into deeper skin layers while minimizing the systemic escape, a nanoemulsion (NE) was formulated and evaluated for their in vivo drug delivery performance. Further, the formulation was explored for oral bioavailability enhancement of PCL.

The formulation had shown a nano-globular size (21.58nm), and was stable till infinite dilution. Upon dermal application, the drug was predominantly localized in deeper skin layers, with minimal systemic escape (3.19% in 48h). PCL delivered orally from NE was rapidly absorbed reaching a steady state value of 3.5µg/ml in 30 minutes, and steady state levels persisted upto 18h. This has amounted to an absolute bioavailability of 70.62%. Inhibition of P-gp efflux by TPGS and labrasol, would have contributed to the enhanced peroral bioavailability of PCL.

This investigation provides direct evidence on the localization of large molecular weight, lipophilic drug, PCL, in dermis. Further, the NE formulation has enhanced the peroral bioavailability significantly to more than 70%. The developed NE formulation was safe and effective for both peroral and dermal delivery of PCL.

IPS-P-015

SOLID-STATE CHARACTERIZATION OF NEVIRAPINE

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The purpose of this investigation was to characterize nevirapine (NVP) from commercial samples and samples crystallized from different solvents under different conditions. The solid-state behavior of NVP samples were determined by the information provided by physical techniques.The commercial samples of nevirapine had the same polymorphic crystalline form with an anhedral crystal habit. Intrinsic dissolution of nevirapine was similar for both the batches. Powder dissolution at different pH showed a pH dependent behavior, with maximum extent in acidic pH. Moreover, particle size had no significant effect on the rate of dissolution.

The samples crystallized from different solvent systems having varying polarity indices yielded different crystal habits. Various conditions of stirring and degrees of supersaturation influenced the crystal habit in all solvent systems. The recrystallized samples did not show a change in the polymorphic form of nevirapine, but pseudopolymorphs with varying crystal habit were generated. DSC, TGA and HSM confirmed desolvation prior to melting. XRD pattern of the pseudopolymorphs concluded different crystal structures of the solvates due to varying nature (affinity and polarity) of the crystallizing solvent blends. The solvates showed higher equilibrium solubility values and enhanced rate of dissolution. However, the intrinsic dissolution rate (IDR) of recrystallized samples was lower than the commercial samples. In addition to the pseudopolymorphs, amorphous form was also generated in order to improve the aqueous solubility of nevirapine anhydrate form. Quench cooling of nevirapine melt with liquid nitrogen produced the amorphous form which was thoroughly characterized by various techniques such as DSC and XRD that helped to differentiate amorphous form from the crystalline one. The higher aqueous solubility of solvates and amorphous forms indicates the usefulness of solid-state interventions to overcome the biopharmaceutic hurdles of drug delivery.

IPS-P-016

BIOPHARMACEUTIC CLASSIFICATION OF ANTIRETROVIRAL DRUGS: SIGNIFICANCE OF DISSOLUTION STUDIES

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Lamivudine (3TC), stavudine (d4T) and nevirapine (NVP) form one of the first line drugs in AIDS therapy and are formulated as fixed dose combinations (FDCs). Hence, the objective of this investigation is to design suitable dissolution methodology for quality evaluation of antiretroviral FDCs based on BCS.

A detailed investigation involving solubility, permeability and dissolution was undertaken with antiretroviral. Solubility profiling was performed for 3TC, d4T and NVP at various gastrointestinal pH and in BCS based biorelevant dissolution media. Further, dissolution testing was conducted for single drug formulations as well as FDCs (two drug and three drug) in various dissolution media and under several hydrodynamic conditions. Finally, single pass in situ permeability through rat jejunum was studied to predict the in vivo absorption behavior of all three drugs.

Solubility studies in the pH range of 1-6.8 and BCS based biorelevant media indicated absence of any solubility problems for 3TC and d4T. However, NVP exhibited a higher Do and thereby demonstrating potential solubility as well as dissolution limited absorption. Dissolution studies showed that 3TC and d4T had no dissolution related problems as was evident from their sufficient release in all media when present alone as well as in FDCs. Phosphate buffer (pH 6.8) at 30 rpm proved to be a discriminating media for two drug FDCs, sourced from two different manufacturers and can hence be used as a quality control media. NVP, on the other hand exhibited pH-limited dissolution from both separate formulations as well as in three drug FDCs. Single pass in situ perfusion studies in rats revealed that, NVP and 3TC are passively absorbed while d4T is absorbed by active transport showing a saturable absorption. All three drugs were highly permeable with Peff >; 2X10-5 cm/sec.

Maximum absorbable dose confirms the absence of any potential bioavailability problems for all three antiretroviral drugs lamivudine, stavudine and nevirapine.

IPS-P-017

DISSOLUTION METHODOLOGY FOR EVALUATION OF RIFAMPICIN CONTAINING FIXED DOSE COMBINATIONS USING BCS BASED APPROACH

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The purpose of this investigation was to develop the dissolution methodology for evaluation of rifampicin containing Fixed Dose Combinations of anti-TB drugs using BCS based approach. In this investigation dissolution studies were conducted at agitation intensities of 30, 50, 75 and 100 rpm so as to mimic the hydrodynamic conditions of gastrointestinal tract. Dissolutions were performed in various media recommended by USP as well as media proposed based on BCS for class II drugs. Equilibrium solubility of rifampicin was also determined

Theoretical solubility predictions based on experimental data and pKas of the drug resulted in classification of drug as a low solubility class drug because of its pH dependent solubility. BCS based predictions indicated that use of 0.1N HCl as dissolution medium reflects 100% bioavailability, while 0.01N HCl shows 70-90% bioavailability, which is more nearer to the in vivo bioavailability of rifampicin of 90%. Hence, 0.01N HCl may be more discriminatory medium to distinguish good and bad formulations. The major conclusion is 0.01 N HCl and pH 6.8 phosphate buffer were found to distinguish the formulations differing in bioavailability as compared to other biorelevant dissolution media, thus a dissolution methodology with 0.01N HCl and pH 6.8 phosphate buffer using USP apparatus II at 50 rpm is being proposed.

IPS-P-018

EFFECT OF AMORPHOUS CONTENT ON DISSOLUTION CHARACTERISTICS OF RIFAMPICIN

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Rifampicin, one of the main first line anti-TB drugs shows variable bioavailability in different marketed preparations and reasons cited include physiological, degradation, manufacturing/ processing, solid state and bioavailability assessment procedure. Although the amorphous form of a drug is expected to exhibit higher solubility, the amorphous rifampicin has been reported to have a solubility disadvantage as compared to crystalline form II, which is used in marketed preparations. Amorphous form was generated and characterized by solid-state characterization techniques. Physical powder mixtures of form II with varying amounts of amorphous form were prepared, which were then subjected to solid-state characterization techniques and further evaluated for their dissolution behavior. DSC scans show that area enclosed by integral of melting endotherm can be used for quantification of crystalline component, which can then be used to estimate amorphous content. No definite trend was evident in powder dissolution of mixtures that could implicate solubility difference of amorphous form. IDR results indicate that amorphous content has no effect on dissolution profiles of crystalline rifampicin.

IPS-P-019

MEFENAMIC ACID: AN EXAMPLE OF DISTINGUISHING NEW POLYMORPH FROM ALREADY EXISTING POLYMORPH OF IMPROVED CRYSTALLINITY

MEFENAMIC ACID: NEW POLYMORPH OR CRYSTAL DEFECT?

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The purpose of this study was to understand the crystallizing conditions for modifying the crystal habit and material characteristics of mefenamic acid (MA). Recrystallisation of MA was carried out from three different solvent/solvent mixtures at three different degrees of supersaturation under slow and fast cooling rates with and without stirring. Recrystallised samples were characterized using hot stage microscopy (HSM) FTIR, DSC, TGA, pXRD and SEM. It was found that recrystallization of MA from tetrahydrofuran:ethyl acetate(THF:EA) mixture and ethyl acetate (EA) produced form I crystals with wider transition temperature and with diminished pXRD peaks. On the other hand, recrystallization from ethanol:ethyl acetate (E:EA) produced crystals with improved crystallinity. The IDR of sample recrystallized from E:EA was not statistically significant from that of sample recrystallized from THF:EA and EA. Findings from this study demonstrate the crystallizing conditions for improving the crystallinity of the stable polymorphic form I of mefenamic acid.

IPS-P-020

THERMOREVERSIBLE LIPOSOMAL POLOXAMER GEL FOR LOCALIZED DELIVERY OF PACLITAXEL: HEMATOLOGICAL TOXICITY AND DOSE PROPORTIONALITY STUDIES

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The currently existing treatment modalities of cancer suffer from a major drawback of systemic toxicity, which results due to high systemic exposure of drug. Delivery of chemotherapeutic agents by delivery systems that alleviate systemic side effects but at the same time provide therapeutic advantage by controlling tumor growth exists as a viable option. To achieve this objective, thermo reversible poloxamer 407 gel-containing paclitaxel incorporated in liposomes was formulated at three dose loadings and was injected subcutaneously in Sprague Dawley rats. Blood samples collected at various time points were used in determination of drug concentration as well as were used for determination of WBC and neutrophil count for estimation of systemic toxicity of the formulation. Absorption occurred slowly with prominence of absorption phase in plasma profile. In addition, probability of flip-flop pharmacokinetics was seen. It was observed that though plasma levels and pharmacokinetic parameters increased with increase in dose, increase was statistically insignificant. Further, no significant increase in hematological toxicity was observed with increased drug exposure to animals. The results show that liposomal poloxamer gel can be used for delivering higher amount of paclitaxel with out increased systemic toxicity.

IPS-P-021

IN VITRO EVALUATION OF MODIFIED RELEASE FORMULATIONS OF NIFEDIPINE FROM INDIAN MARKET

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Nifedipine, an important therapeutic agent in the management of cardiovascular disorder is recommended to administer as modified release dosage form in order to avoid the fluctuations in blood levels. An in vitro evaluation of modified release formulations, marketed in India was conducted and compared their performance with a novel matrix based multi particulate system (MUMPS). The results indicate that even though the marketed formulations are found to comply to the definition of modified release formulations and predicted to produce therapeutic blood level for a prolonged period of time, the fluctuations were expected to be found uncontrolled except in the osmotic systems and MUMPS. Thus, it was concluded that novel MUMPS were found to be superior to any other marketed formulations with respect to the therapeutic advantage as well as manufacturing feasibility.

IPS-P-022

ALTERATION OF SKIN HYDRATION AND ITS BARRIER FUNCTION BY VEHICLES AND PERMEATION ENHANCERS: A STUDY USING TGA, FTIR, TEWL AND DRUG PERMEATION AS MARKERS

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The present investigation was designed to study the effect of most commonly used vehicles and PE on rat skin hydration, barrier function and permeation of an amphiphilic drug Imipramine hydrochloride (IMH). Thermo gravimetric analysis (TGA) and Fourier transform infrared (FTIR) spectroscopy were utilized to determine changes in skin hydration. Alteration of stratum corneum (SC) structure was investigated using FTIR studies. To monitor barrier function alteration; trans epidermal water loss (TEWL) measurement and permeation studies were performed. Hydration increased the ratio between Amide-I and Amide-II peaks in FTIR, and reduced the C-H stretching peak area. Both, propylene glycol (PG) and ethanol (EtOH) dehydrated skin, with the later showing predominant effect. Further it was confirmed that PG and EtOH decreased bound water content due to alteration in protein domains and extraction of SC lipids, respectively. Role of partition was found predominant for permeation of IMH through dehydrated skin. Synergistic effect was observed between PG and menthol in enhancement of IMH. Further findings provided strong evidence that PG affects protein domains and EtOH extracts lipids from the bilayer. Initial TEWL was well correlated with flux of IMH through the same skin. It was found that both, PG and EtOH, affects permeation of solute and TEWL by dehydration. Experiments also discovered that the Initial TEWL value has a strong potential as a predictive tool for the permeation of the solute.

IPS-P-023

MEFENAMIC ACID: CRYSTAL HABIT TO COMPRESSIBILITY

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Mefenamic acid is a high dose anti-inflammatory drug, which exhibits processing and bioavailability problems. With respect to processing, it sticks to all surfaces and possesses poor flow properties and compressibility. Thus the present investigation focuses on improvising the material properties and to study the compression behavior. An improvement in the material properties was achieved by solvent change and solvent evaporation methods using various solvents and their combinations. Recrystallization was achieved by using tetrahydrofuran as a solvent and for solvent change method, water was the second solvent employed. Further the recrystallized product was characterized for solid-state polymorphic stability Solid-state characterization revealed the polymorphic stability of the drug after recrystallization. The recrystallized product was subjected to compression studies using directly compressible excipients in order to provide an easier method for formulation development of the drug. Thought tablet mass lacked in moisture, it showed enhanced stability as compared to the non-recrystallized drug even as drug content in tablet was as high as 70%. The excipients were subjected to the drug-excipient interaction studies. The recrystallized product was evaluated for improvement with respect to pharmacotechnical properties, especially flowability and compressibility. In addition to this, single crystal XRD was performed with an aim to study the packing arrangement of the crystals. A pure polymorphic Form I was generated and single crystal XRD revealed that it is 'triclinic' in nature. Molecular modeling studies on the molecule predicted eight possible structures and polymorphism was explained on the basis of dimerization of the molecule. In a nutshell, through the present investigation, the solid-state property of MA was improved at particulate level that facilitates ease of handling and overcame poor material properties.

IPS-P-024

FATTY ACID ESTER PRODRUG: A PROTOTYPE FOR FUTURE DRUG DELIVERY SYSTEM WITHOUT SYSTEMIC ABSORPTION

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Fatty acid esters of a model drug ketorolac were synthesized and confirmed to be prodrugs by performing enzymatic hydrolysis in rat skin and liver homogenate and plasma. Their pharmaceutical suitability was determined by studying their stability in pH 3.0 to 11.0, and the possibility of their systemic absorption was evaluated by skin permeation test. Skin content analysis was performed to assay the amount of drug partitioned and deposited into the lipid rich dermal layer. Esters were highly stable toward chemical hydrolysis in all pH but were hydrolyzed to parent compound in rat plasma, skin and liver homogenate indicating that they were prodrugs and were stable for pharmaceutical uses. Their partition into dermal lipid layer was the function of their lipophilicity. Skin permeation analysis revealed that none of them permeated into receptor solution indicating that they acted as self permeation retardant by condensing the skin lipids via powerful H- bonding within the plane of the polar head groups in the continuous multiple bilayered lipid component of the stratum corneum, favorably than their alkyl or amide ester counterparts.

Acknowlwdgement: This research was supported by grant No. RT104-01-04 from the Regional Technology Innovation Program of the MOCIE.

IPS-P-025

DEVELOPMENT OF PIROXICAM LOADED INJECTABLE THERMOSENSITIVE IMPLANT USING POLOXAMER GELS

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To develop the injectable temperature-sensitive implant using poloxamer188 (P188), poloxamer407 (P407) and NaCl, for controlled release of piroxicam (PRX) by the intramuscular route. Temperature-sensitive P188-P407-NaCl triblock copolymers which have the different weight ratios were first mixed and they display different viscosity and gel strength. We report the effects of ploxamers and NaCl on the release of PRX from the poloxamers gel and evaluated the effect of PRX dissolution in different NaCl concentration. The temperature-sensitive injectable gel formula composed of various ratios of P188/P407/NaOH/ piroxicam/NaCl were prepared. The effects of P188 and NaCl on the physicochemcal properties such as sylingability, gelation time and gel strength were evaluated using rheometer, and their dissolutions were then performed. The injectable gel was then injected intramuscularly in rabbits for preliminary assessment of bioavailability profile of the gels over 5 days evaluation period. NaCl and P188 significantly enhanced the gel viscosity. The injectable gel composed of 15% P407, 17% P188, 2% NaCl, 0.01% NaOH and 2.5% piroxicam showed the optical physicochemical properties with the gelation temperature of 37 oC and the gel strength of 14,600 pas and gelation time of 22,8 min. The pharmacokinetic results suggested that it showed prolonged action in vivo following intramuscular injection in rabbit.

Acknowledgements: This research was supported by grant No. RTI04-01-04 from the Regional Technology Innovation Program of MOCIE.

IPS-P-026

PHYSICOCHEMICAL CHARACTERIZATION OF NOVEL BUCCAL BIOADHESIVE TRIAMCINOLONE-LOADED SPRAY FORMULA FOR STOMATITIS

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Purpose: To evaluate the physicochemical properties of novel buccal bioadhesive triamcinolone-loaded spray formula for stomatitis.

Method: Spray formula were prepared by dissolving various ratios of polyvinyl alcohol, Eudragit, PEG and Triamcinilone Acetonide in ethanol and filling in spray containers. These spray solutions were sprayed in plate and their film-forming time, film tensile strength and washability were evaluated. Furthermore, the dissolution test was carried out in 400? of artificial stimulated human saliva at 37*c and 50 rpm.

Results: Among the various formula tested, Eudragit RL/PEG400/PVA (8/4/0.5) had optimal physicochemical properties as a spray solution for buccal bioadhesive film and showed the sustained release of triamcinole for 4 h.

Conclusion: Our results suggested that novel buccal bioadhesive triamcinolone-loaded spray formula composed of PVA, Eudragit RL, PEG 400 could be a potential drug delivery system for treatment of stomatits.

Acknowledgements: This research was supported by grant No. RTI04-01-04 from the Regional Technology Innovation Program of MOCIE.

IPS-P-027

DEVELOPMENT OF IBUPROFEN-LOADED MICROCAPSULE WITH ENHANCED BIOAVAILABILITY USING GELATIN

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The gelatin microcapsules were developed using the spray-drying technique. Microcapsule were spherical in shape with a geometric mean diameter of about 67. A fractured form of microcapsule implicates a large inner cavity containing ethanolic drug solution in the gelatin shell. The ethanol content in the gelatin microcapsule was maximum at inlet air temperature of 105? and 4% (w/v) of gelatin and 0.6% (w/v) of SLS concentration. The gelatin microcapsule had 8-fold improved solubility and dissolution rate. The pharmacokinetic study in rats showed that the Cmax and AUC of ibuprofen in gelatin microcapsule was significantly higher than those in powder. However, there was no change in the Tmax, Kel and half life. Thus, the gelatin microcapsule might be a useful oral dosage form to improve the bioavailability of poorly water-soluble ibuprofen. Acknowledgements: This research was supported by grant No, RTI04-01-04 from the Regional Technology Innovation Program of MOCIE.

IPS-P-028

ENHANCED BIOAVAILABILITY OF POORLY WATER-SOLUBLE CLOTRIMAZOLE BY INCLUSION WITH ?-CYCLODEXTRIN

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Purpose: The aim of the study was to investigate the enhanced solubility, dissolution and bioavailability of clotrimazole by inclusion complex with ß-cyclodextrin. Method: In different molar ratios clotrimazole and ß- CD were dissolved in ethanol and water, respectively, and mixed together to obtain clear solution. The resulting solutions were kept for 24 h and then spray-dried. Their physicochemical properties such as solubility and dissolution were investigated. The pharmacokinetic study with clotrimazole-ß-CD inclusion complex in rats was then performed compared to clotrimazole powder. Results: The solubility of clotrimazole increased linearly as a function of ß-CD concentration, resulting in AL type phase solubility diagram which revealed a formation of inclusion complex in a molar ratio of 1:2, with the apparent association constant of 230.2 M-1. The in vitro dissolution rate of clotrimazole from inclusion complex in pH 7.4 phosphate buffer was dramatically enhanced compared to clotrimazole powder. The AUC value of clotrimazole in inclusion complex was significantly larger than that of clotrimazole powder, resulting in enhanced bioavailability of clotrimazole. Conclusion: The solubility, dissolution rate, and bioavailability of clotrimazole were improved by the inclusion complexation with ß- CD either in solution or in solid state.

Acknowledgements: This research was supported by grant No. RTI04-01-04 from the Regional Technology Innovation Program of MOCIE.

IPS-P-029

TRIPS PATENT PROTECTION AND PHARMACEUTICAL ACCESS IN TAIWAN

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Background: The Agreement on Trade-Related Aspects of Intellectual Property Right (TRIPS) in the World Trade Organization has created controversies about the protection of pharmaceutical patents and increased drug prices, which will affect the drug accessibility of developing and the least developed countries.

Objectives This study intends to explore how selected countries endeavor to find balance between industrial goal of patent protection policy and public health under the context of national political and economical environments.

Method: This research is based on literature review and comparative public policy analysis. It documented the close context of drug patents and drug prices, medicine accessibility and public health, as well as the analysis of the drug-patent issues within TRIPS.

Results/Conclusion: In the transnational comparison based on the national drug policy, this study uses five dimensions (national economic development, protection of drug patent, national burden of diseases and types of health care system, strength of pharmaceutical industry and the making of national drug-policy associated regulations) to classify seven countries into three types in terms of balance between patent protection policy and public health. The three types are: 1) balance toward industrial policy and economical direction, 2) balance toward the national public health needs, and 3) delicate balance between industrial policy and drug policy. In the case of Taiwan, the expenditure of patented drugs was under-presented in the National Health Insurance, which may affect the public access to innovative drugs and overall quality of drug treatment. As a whole, countries will have to search for delicate balance and the benefit of the public in formulating their national drug policies.

IPS-P-030

A LOOK INTO THE BLUE OCEAN OF CHINESE TRADITIONAL MEDICATION SERVICE: THE COOPERATION BETWEEN HOSPITALS AND PHARMACEUTICAL MANUFACTURERS

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Chinese traditional medicine, like those of India, ancient Rome, and Egypt, is one of the antique medical sciences with glorious history. In recent decades, modern technology and concentrated formulations have pushed the Chinese traditional medicine into a new era. Nowadays, the open attitude in western countries has made more investments on studies of Chinese traditional medicine. On the other hand, Chinese traditional medicine should go on a more exquisite way to provide better medical service.

Ideas of keeping healthier life have been widely spread in recent years. The old model serving only concentrated formulations limited the therapeutic regimen and could not fill all needs. Chinese traditional medication services of hospitals in Taiwan are changing into a new model of cooperation between hospitals and pharmaceutical manufacturers. This working model can introduce more comprehensive formulations and better medical services to the public.

The Taiwan government has promoted Good Manufacturing Practice Regulations (GMP) for more than 20 years. Under the GMP regulations, the pharmaceutical manufacturers produce quality drugs that are safe, pure, and effective. This in turn, diminishes the physicians' distrust to pharmaceutical products and improves patient drug safety.

Qualified pharmaceutical manufacturers produce quality concentrated formulations and unadulterated herbs for decoction. Physicians make diagnosis and decide regimens. Pharmacists provide patient education about drugs and keeping health. With the cooperation among the three parties, the quality of Chinese traditional medical service will be largely improved. The ideas of disease-prevention in Chinese traditional medicine will be carried out widely.

IPS-P-031

EVALUATION OF ORGANO-MODIFIED BENTONITES AND ITS INTERCALATION WITH HYDROPHOBIC POLYMERS TO CONTROL DRUG RELEASE

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The present work was done with the objective of testing different types of organic molecules in the delamination of sodium bentonite and to evaluate the biopharmaceutical performance of polymer intercalation. The organic molecules used were tryptophan, dapsone and spermine. The bentonite modified with tryptophan was tested for intercalation with chitosan but the reaction was not successful. The bentonite modified with dapsone and spermine were tried to be intercalated by ethylcellulose. At not drastic conditions, it was not possible. However, when it was used one commercial form of organo-modified bentonite (Viscogel B8), which is delaminated with one alkylammonium backbone of 14 carbon atoms, the intercalation with ethylcellulose was possible, both in ambient temperature and at 110°C. All these reactions were done in solution. The products were submitted to differential scanning calorimetry, transmission electronic microscopy, x-ray powder diffraction, infrared spectroscopy and other analysis to be characterized. The new nanocomposite formed from the last reaction was used to formulate matrix tablets by direct compression. The model drug was dapsone. It was proved that the material, when compared with physical mixture and ethylcellulose and Viscogel B8 alone, exerted control on the release of the drug. It was possible to achieve zero order kinetics release, which was proved by dissolution testing in gastric and enteric fluids. The best results were obtained with the ratio of ethylcellulose:viscogel of 4:1 at ambient temperature. New tests are being carried through in order to form one new type of water based polymer coating system for oral dosage forms.

IPS-P-032

DSC AND FT-IR AS TOOLS TO EVALUATE DRUG-POLYMER INTERACTIONS IN MICROPARTICULATE SYSTEMS

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Chitosan microparticles were prepared with the purpose of incorporating all-trans retinoic acid (ATRA). Morphology, drug content and the release behavior of microparticles were assessed. The interaction between chitosan and ATRA (acidic drug) using differential scanning calorimetry (DSC) and infrared (IR) spectroscopy as the relation of such interaction to drug release behavior of chitosan microparticles were also investigated. Chitosan microparticles presented irregular and rough surface and drug content of 47 ± 3%. The results of DSC and IR spectroscopy demonstrated complexation between the amino group of chitosan and the carboxylate group of ATRA to form amide bonds. The drug release study showed that approximately 10% of drug was released rapidly within 2 hours and the remaining drug was seizured into microparticles until the end of the experiment (48 hours). That release behavior was due to the strong drug-polymer interaction and the more compact network of the microparticles formed.

IPS-P-033

THE SYNTHESIS OF SOME 2-SUBSTITUTED QUINAZOLINO[4,3-B]QUINAZOLIN-8-ONES AS POTENCIAL BIOLOGICALLY ACTIVE COMPOUNDS.

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Aim: In the course of our work on the preparation of polyheterocyclic systems with pharmaceutical value, we focused on the synthesis of novel heterocycles in which the quinazoline ring was fused with again quinazole ring. That the EGFR tyrosine kinase inhibitors i.e. Erlotinib, fungal metabolites i.e. glyanthrypine and fumiquinazoline have quinazole scaffold prompted us to interest in this substance.

Methods: The synthesis involved two-step condensation from anthranilamide. The products were obtained by condensation of 2-substituted-4-(3H)-quinazolinone and substituted acids in the PPA or solvent-free conditions under microwave irradiation.

Title compounds were synthesized and their structures were confirmed by spectral methods.

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IPS-P-034

DEXAMETHASONE-LOADED NANOCAPSULES: PREPARATION AND CHARACTERIZATION

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The aim of this work was to prepare and characterize polymeric nanocapsules containing dexamethasone, a steroidal anti-inflammatory drug, in two different drug content (0.5 and 1.0 mg.ml-1), using poli(epsilon-caprolactone) as polymer. Nanocapsules were prepared by nanoprecipitation. Three suspensions were prepared: dexamethasone-loaded nanocapsules in a theoretical concentration of 0.5 and 1.0 mg.ml-1 (formulation 1 and 2, respectively) and unloaded nanocapsules (formulation 3). Nanocapsule suspensions (n = 3) were characterized according to the following aspects: encapsulation efficiency, pH, mean size, polidispersity index and zeta potential. For the stability studies the characteristics of the formulations stored at room temperature and protected from light were monitored. The formulations presented mean size between 230-260 nm, polidispersity index below 0.25, pH in the acidic range, negative zeta potential about – 20 mV and encapsulation efficiency close to 90 % (formulation 1 and 2). However, precipitation of the drug in formulation 2 was observed immediately after the preparation. Regarding the stability studies, the formulations 1 and 3 presented only a decrease in their pH value after 1 month of storage, which could be explained by the relaxation of the polymeric chains and/or by the degradation of the polymer. In conclusion, it was possible to prepare dexamethasone-loaded nanocapsules only in the concentration of 0.5 mg.ml-1. The presence of the drug didn't show any influence on the physicochemical characteristics of the colloidal suspensions. After 1 month of storage a decrease in the pH of suspensions were observed.

Financial Support: FAPERGS

IPS-P-035

THE INFLUENCE OF PARTICLE SIZE ON SIMVASTATIN TABLETS IN DISSOLUTION TEST

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This investigation aim is connection between dissolution rate of simvastatin tablets and particle size of active substance to be found since there are many factors affecting dissolution profile. Simvastatin is poorly water-soluble drug and it is one of factors having impact on dissolution rate within the gastrointestinal tract necessary for good bioavailability. Reducing particle size is likely to result in dissolution rate and BA increase.

In this study two different series of simvastatin tablets with different particle size of active substance were used. Different manufacturers made them as well. Tablets containing 20mg of simvastatin were made by the direct compression technique after dry granulation. They all got similar physical characteristics such as average weight, diameter, hardness etc.

Dissolution test was performed according to the paddle method (USP II) in 900ml of sodium lauryl sulfate buffer, pH=7±0.1, T=37±0.5°C at 50rpm.Content of simvastatin was determined spectrophotometricaly at 238 nm.

Samples were taken every 5 minutes for 30 minutes of dissolution test and the results for the first series of simvastatin tablets with particle size d(0.9)=36μm were: 51.43%, 89.46%, 92.15%, 94.92%, 96.73%, 97.88%. For the second series of tablets with particle size d(0.9)=28μm results were: 39.84%, 87.97%, 91.72%, 93.97%, 95.49%, 99.72%. Factor of similarity f2=66.4

The influence of particle size in two different series of simvastatin tablets was not crucial for dissolution profile. In both series particle size of active ingredient was within pharmacopoeias range (90%<;50μm). Dissolution rate of simvastatin tablets in both series was more than 80% per 30 minutes.

IPS-P-036

VALIDATION OF THE MICROBIOLOGICAL COUNT METHOD FOR NON-STERILE LIQUID DRUGS

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The microbial control of non-sterile products should prove the absence of pathogens and determine the number of viable microorganisms; these should be validated following the microorganism recovery parameter. The microbial count test aimed to quantify the viable microorganisms after inoculation in the syrups: Salbutamol Sulfate, Polyvitamin and Zidovudine, using casein-soy agar for bacteria and sabouraud-dextrose agar for fungi and yeasts. E. coli ATCC 8739, S. aureus ATCC 6538, P. aeruginosa ATCC 9027, S.typhimurium ATCC 14028 and C.albicans ATCC 10231 strains were used and polysorbate 80 and soy lecithin as neutralizing agents. The samples were grouped into test group (drug + neutralizing agent + microorganism) and viability group (microorganism). Each inoculate standardization group was 100 UFC/ml. The obtained results proved the absence of the inhibitory effect of the neutralizing agents incorporated to the culture medium. The validation of the method for Polyvitamin and Salbutamol Sulfate Syrup presented a recovery index above 70% for all microorganisms. The obtained results with Zidovudine Syrup proved 0% recovery in relation to the E.coli and S. typhimurium microorganisms, suggesting that the active principle has an inhibitory action on Gram-negative microorganisms, presenting a recovery above 70% for the other microorganisms. Recovery levels equal or above 70% of the microorganisms indicate the absence of anti-microbial activity of the neutralizing agents employed and substantiates the absence of inhibitory activity of the product in the microbiological count method, which is not validated for Zidovudine Syrup.

IPS-P-037

VALIDATION OF MICROBIOLOGICAL METHODS FOR LIQUID PHARMACEUTICAL FORMS

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Non-sterile products should comply with the pharmacopoeia requirements where the absence of pathogenic microorganisms and viable microorganism count are extolled. The count test is a microbiological method that must be validated by the microorganism recovery parameter (USP 29). Such parameter is constituted in the ability of revering specific quantities of microorganisms after inoculation of the sample. The objective of this work is to present the validation results of the microbiological count method for the pharmaceutical forms of dipyrone, methochlorpramide and paracetamol drops, produced by LAFEPE®. Casein-soy agar and sabouraud-dextrose fungi and yeast agar were used as culture medium for bacteria. The strains used in the validation were Saureus (ATCC6538), B.suntillis (ATCC6633), E.coli (ATCC8739) and C.albicans (ATCC10231). Due to the presence of preservatives in the formulations, polysorbate 80 and soy lecithin were used as neutralizing agents. The samples were grouped in test group (drug + neutralizing agent + microorganism) and viability group (microorganism). The inoculate volume was adapted to obtain at the most 100 UFC/ml. The obtained results proved absence of the inhibitory effect of the neutralizing agents with a recovery above 70%. The recovery indexes of the microorganisms in the test group in relation to the viability group varied from 74.19% to 125.81%. Levels of recovery equal or above 70% of the microorganisms indicate absence of anti-microbial activity of the neutralizing agents employed and substantiates the absence of the inhibitory activity of the product in the microbiological count method.

IPS-P-038

DEVELOPMENT AND VALIDATION OF THE ANALYTICAL METHOD FOR DISSOLUTION OF ANTI-HIV INDINAVIR SULFATE CAPSULES

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Indinavir sulfate is an anti-retroviral drug, which comprises the anti-HIV cocktail and is made available by LAFEPE, for compliance with the Ministry of Health, with quality and low cost, promoting the sustainability of the National DST/AIDS Program. The objective was to develop and validate the analytical method for the dissolution test of LAFEPR INDINAVIR 400 mg capsules, through spectrophotometry. The method was developed based on medium variations (sodium citrate buffer pH=3,8), purified water and ionic force of 0.1 and 0.01N hydrochloric acid (HCl); equipment (shovel and basket) and rotation (50 and 100 rpm). The defined volume of the medium, the analytical concentration and the time were 900 ml, 55.56 ppm and 45 min, respectively. The samples were evaluated under UV-VIS (Shimadzu®) spectrophotometer, at l=260 nm. In the evaluation process, robustness, linearity, stability, precision, specificity and accuracy were evaluated. The results were treated statistically through variance analysis (ANOVA) and Student-t test. In the development of the method, statistically significant differences were not proven between the media (water and 0.1 and 0.01N HCl); equipments (shovel and basket) and rotation (50 and 100 rpm). The parameters defined for the test were: 900 ml of water, 50 rpm, basket and 45 min. In the evaluation, statistically significant differences were not proven with 95% confidence between the evaluated conditions, indicating that the method is robust, linear, specific, precise and accurate. The stability of the samples was verified up to 24 hours. The method is currently being employed in the analytical routine of LAFEPE Quality Control.

IPS-P-039

DEVELOPMENT OF A NEW FORMULATION FOR THE MALARIA THERAPY

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In view of the great number of cases of malaria all around the world and the advancement of drug resistance, it has been proposed the formulation of a fixed dose combination (FDC) for malaria therapy. In this particular case, it was formulated a combination of sodium artesunate plus mefloquine chloride, both in adult and pediatric forms. How this is a new product, the preformulation studies were carried out in order to evaluate different possibilities of formulation and the solution of manufacturing problems, like the bad flow properties of mefloquine and the instability of artesunate. Several analyses were done with the raw materials in order to characterize the properties of the active substances and its interaction with the excipients: density, differential scanning calorimetry, optical microscopy, particle size distribution by laser scattering, x-ray powder diffraction ant others. By these studies, it was demonstrated that one particular formulation was suitable for the product, by the analysis of several excipients in wet and dry granulation and also by direct compression. The best result was achieved by the dry granulation and by the coating of the core tablets in six batches in one industrial area. The final product was submitted to full validated analytical methods and to stability testing (stress testing and shelf life). All the results were within the specifications and the product proved to be stable after 24 months. The manufacture was done taking care of the WHO definitions on cGMPs.

IPS-P-040

PRELIMINAR STUDIES OF CRITICAL HLB OF EMULSIONS FOR GENE THERAPY

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The concept of gene therapy involves the transfer of genetic material into a cell, tissue, or whole organ, aiming to cure a disease or at least improve the clinical status of a patient. Achieving the expression of a foreigner DNA into a population of cells requires the transfer of the DNA to the local. Therefore, it is necessary to create carriers that transfer and protect the DNA until it reaches the target (vectors). The disadvantages of the usage of viral vectors have encouraged efforts to develop emulsions as non-viral vectors. In fact, they have controllable stability and enable transfection. Developing a stable system is a preliminary step to produce the therapeutic one. This work aimed to evaluate the stability of a group of 26 emulsions produced by the phase inversion method. Two different lipidic phases were used (soybean oil and Captex™). In order to determine the critical HLB (Hydrophile-Lipophile Balance) of the oil phase, the HLB of the surfactant mixture was varied from 4.7 to 16.7. Visual aspect, pH, and Creaming Rates (CR) were evaluated. The physical-chemical behavior of the systems was evaluated by the microemultocrit technique, a derivation of microhematocrit that is broadly used in hematology. Concerning Captex™-containing emulsions, the ones that presented HLB range from 8.7 to 15.7 were the most stables, showing 3% of CR value. Regarding soybean oil-containing emulsions, the ones presenting HLB from 8.7 to 9.7 had the lowest CR values (2%), and were the most stable. The results suggest that the soybean oil-containing emulsions presenting a HLB range from 8.7 e 9.7 were the most suitable. Such systems may be very promising for gene therapy.

IPS-P-041

STABILITY UNDER CENTRIFUGATION OF AN IBUPROFEN-LOADED EMULSION

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Emulsions are dispersed systems that are workable for several pharmaceutical purposes. Concerning the safety and the release profile of the formulation, its stability is a key issue. Therefore, emulsion instability process has been extensively studied. Several methods to evaluate emulsion stability have been proposed, namely droplet size analysis, accelerated tests and light-scattering. Accelerated test measurements were used in this work to investigate the resistance of an ibuprofen-loaded emulsion to centrifugation. The emulsions were prepared by spontaneous emulsification process using Miglyol™ 812 at 5%(v/v) as lipid phase, a combination at 2%(w/v) of Tween™20 and Span™60 and distilled water. Two systems were prepared. They consisted of a course emulsion and an ibuprofen-loaded emulsion that contained around 3%(w/v) of ibuprofen in the lipid phase. 24 h after preparation, the stability under centrifugation was carried out at different centrifugal forces for 10 min. The percentage of creaming was determined by direct reading of the creaming layer in the graduated scale of Wintrobe tubes. For course emulsion, creaming rates were 3.5% at 40g and 4.5% at 400g, 1000g and 2000g. For ibuprofen-loaded emulsion, these values were 3% and 4%, respectively. Regarding small density differences between lipid and water phases, the resistance of an emulsion to centrifugation depends on the resistance of the interfacial film. The creaming rate reflects the strength of the interfacial film created by surfactants. In conclusion, results suggest that the incorporation of ibuprofen in Miglyol™ 812 could reinforce the efficacy of such film.

IPS-P-042

STATIN-BASED BIO-MICROEMULSIONS L/H FORMULATION

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Simvastatin (SIV) is a statin cholesterol-lowering agent used to treat hypercholesterolemia. However, pharmacological studies suggest clinical evidence of SIV as an anti-atherosclerotic drug. On the other hand, this molecule is practically insoluble in water and poorly absorbed by the gastro-intestinal tract. In addition, SIV induced muscle disorders as side effects. In order to decrease this handcap, several studies have suggested formulating SIV in lipid carriers. Recent attention has been given to the application of microemulsion (ME) as a drug delivery system. This pharmaceutical dosage form presents several advantages for drug target, e. g., reduction of side effects, high incorporation rate by increasing the drug solubility and enhancement of the permeation and stability of several compounds. The aim of this study was to prepare and evaluate a Simvastatin microemulsion. The free system was prepared by mixing 68%(p/v) of water, 11%(p/v) of Myglíol 812N™, 6.3%(p/v) of Phospholipon 90G™ and 14.7%(p/v) of Tween 80™. The SIV was incorporated at proximally 10mg/mL into the ME under a slight magnetic stirring and was quantified by a spectrophotometry assay at 238nm. The pH, macroscopic appearance and refractive index were evaluated. The free system showed a limpid and translucent aspect like a true ME. The pH and refractive index were around 7.91 and 1.374 respectively. No significantly changes were observed on the macroscopic appearance after incorporation of SIV, which indicated that all the drug was incorporated into the system. These results suggest that ME may be a eligible delivery system to carry Simvastatin, which has potential applications.

IPS-P-043

RELATIONSHIP BETWEEN SODIUM DICLOFENAC CONCENTRATION AND LOAD ABILITY OF XYLAN MICROCAPSULES

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Among the different approaches to achieve colon-selective drug delivery, the use of polymers holds great promise. Xylan is a polymer enzimatically degraded in colon. Hence, it is an eligible material to produce colon-specific drug carriers. Sodium diclofenac (SD) is particularly well absorbed in colon and its release in stomach is avoided due to its local side effects. The aim of this study was to incorporate different amounts of SD into xylan microcapsules (XM) and evaluate their load ability. XM were prepared by dissolving 124mg of xylan in 10mL of NaOH 0.6N at three SD concentrations (3.1; 6.2; and 60) in 6mL of polymeric solution and emulsified in 30mL of chloroform:cyclohexane [1:4(v/v)] with 5%(w/v) Span® 65. The interfacial cross-linking reaction was trigged by adding a terephthaloyl chloride solution and it was ended by dilution with cyclohexane. Then, the XM were separated by centrifugation and several washes. At last, XM were characterized. The drug loading efficiency was determined by UV spectrophotometry at 275nm. Regarding the macroscopic aspect, both free microcapsules (FM) and sodium diclofenac microcapsules (SDM) were shown to be a yellowish suspension. Microscopy analysis showed that not only FM, but also SDM were quite spherical in shape. However, the SDM presented a smaller diameter than FM, 11.7±0.58 and 16.7±8μm, respectively. A high encapsulation efficiency rate, which was inversely concentration dependent, was achieved. While the SD concentration of 3.1mg induced a load ability of 99±2%, 60mg of SD promoted a 30.4±6% load efficiency. Therefore, it may be concluded that SDM can be eligible as a new drug carrier for inflammatory diseases treatment.

IPS-P-044

XYLAN CHARACTERIZATION BY FT-IR

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FT-IR spectroscopy is a rapid and sensitive tool for structural elucidation and identification of several substances. Xylan, a polysaccharide found in a variety of cell wall plants, presents a relatively complex structure, which varies according to its source. In this study, infrared spectra were used in order to identify its structural conformation and characterize this polymer that has been used in our laboratory aiming to develop xylan microcapsules for colon-specific drug delivery. The polymer was isolated from corn cobs. After grinding, the corn cobs were dispersed in water under stirring for 24h. Then, an alkaline extraction was carried out using NaOH 4% (v/v). The extract was neutralized with acetic acid and xylan was extracted by settling down after methanol addition. At the end, several wash steps were performed and the sample was filtered and dried. The powered sample was analysed by infrared spectroscopy using a Thermo Nicolet Nexus 470 FT-IR spectrophotometer by means of KBr technique. As a result, the xylan extraction yielded a yellowish fine powder in a ratio of 9.7 ± 0.6%. The FT-IR spectra reveals two main absorption bands at 3405 cm-1 and 1160 cm-1 that can be attributed to the OH stretching characteristic of glycosidic groups and to CC and COC stretching in hemicelluloses, respectively. Also, a sharp band at 897 cm-1, which is typical of ß-glycosidic linkages between the sugars, was detected. In addition to the bands mentioned above, other peaks also allow the assignment of a fingerprint of xylan using FT-IR spectroscopy.

IPS-P-045

INFLUENCE OF THE IONIC STRENGTH ON THE CRITICAL MICELLE CONCENTRATION OF SODIUM DEOXYCHOLATE SOLUTIONS

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In diluted solutions, amphiphilic molecules are individual species dispersed in the media, and such solutions present ideal physical and chemical properties. As surfactant concentration increases, these properties deviate gradually from ideality and an abrupt change is observed at the concentration in which surfactant molecules self-assemble into micelles. Such concentration is known as critical micelle concentration (CMC). Inert salts, namely inorganic ones, have generally been found to yield a lower CMC. The aim of this work was to evaluate the influence of NaCl solutions on the CMC the of sodium deoxycholate (DSCNa) by using the electric conductivity method. Conductivity data were plotted as a function of the micelar concentration. CMC of DSCNa was found to be 0.8mM, which is 4.5 fold lowest than the one in water solution (3,6 mM). Salts addition tends to screen electrostatic repulsions between headgroups, which renders the surfactants more hydrophobic. Such increased hydrophobic interaction among the surfactants causes them to aggregate at lower concentrations, thereby yielding a lower CMC. In conclusion, a 77.5% decrease in the CMC of DSCNa in NaCl solution (nearly 2%) was found, compared to the one in water.

IPS-P-046

CONDUCTIVITY ANALYSIS AS A TOOL TO DETERME THE CMC OF SODIUM DEOXYCHOLATE BY CONDUCTIVITY ANALYSIS

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Micelles are dynamic colloidal aggregates of surfactant molecules that are able to solubilize drugs in their internal structure. The concentration above which surfactant molecules self-assemble into micelles is known as critical micelle concentration (CMC). Considering ionic surfactants, such property can be determined by conductivity when this is plotted as a function of the surfactant concentration. A sharp break in the curve indicates the formation of micelles. Sodium deoxycholate (NaDSC) is an anionic surfactant, derivative from bile salts, and widely used in the pharmaceutical industry. The aim of this work was to determine the CMC of NaDSC by electric conductivity. Conductivity analysis of the solutions at different surfactant concentrations (0.797 to 18.1 mM) was carried out. The obtained data was plotted in to the graph as a function of the NaDSC concentration. The CMC of NaDSC was found to be 3.6 mM, which is in a close correlation to the literature. Conductivity analysis was a useful tool to determine the CMC of NaDSC. Such method was fast, easy to apply, and the obtained data were in good agreement with the ones found on the literature (2 to 6 mM). However, some authors suggest that this is method not quite sensitive to surfactants whose CMC are low.

IPS-P-047

SOLUBILITY PROFILE OF PENICILLIN G BENZATHINE (PENGB) AT DIFFERENT PHS

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In the pharmaceutical industry, the preformulation studies focus mainly on searching physicochemically stable formulations that also present an appropriate biopharmaceutical profile. Considering such preformulation studies, the determination of the solubility of the drug at different pHs is a key issue. The aim of this work was to determine the solubility profile of PenGB at different pHs as a preformulation study in the development of prolonged release systems. The experiment was carried by the equilibrium method according to Granero (1), which consisted of preparing a supersaturated solution of PenGB at different pH values (between 5 and 9). Samples were stirred in the ultrasound bath for 3h and allowed to rest for 1.5h. Concentration was analyzed by UV spectrophotometry. PenGB solubility at pH 5.4, 7.4 and 9 was 0.057, 0.484 and 1.132 mM, ˌpectively. Because PenGB is a weak acid, a displacement of the balance inducing the formation of ionized species must have taken place. In conclusion, the results indicated a directly relationship be

IPS-P-048

DETERMINATION OF THE SOLUBILITY OF DRUGS IN DERIVATIVES OF CAPRILIC ACID

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The determination of the physicochemical properties of drugs is a key issue concerning the development of drug delivery systems. Of particular importance are parameters like the solubility in water and the partition coefficient. In fact, they play a major role when drug dissolution, biodistribution and bioavailability are concerned. Solubility in apolar solvents is also an important parameter mainly considering the pharmaceutical use of non-aqueous and heterogeneous systems. The aim of this work was to determine the solubility of drugs in oils that are frequently used in the pharmaceutical industry. The solubility of ibuprofen, hydrocortisone and simvastatin in Miglyol 810N® and Captex 200® was determined according to the equilibrium method. Samples were analyzed by UV spectrophotometry using calibration curves previously performed for each drug. Although both oils are derived from caprilic acid, drug solubility in these oils was found to be different. The solubility of the ibuprofen, hydrocortison and the simvastatin in Miglyol 810N® was 5.3429E-01, 3.6720E-04 and 3.44E-02 M, respectively. In Captex 200®, it was 6.2782E-01, 3.2677E-04 and 5.45E-02 M, respectively. In fact, the solubility of the drug in the dispersed phase directly influences the ratio of the phases in an emulsion. Besides, it affects the amount of surfactant necessary to stabilize the system, and the final aspect of the formulation. Therefore, such solubilization study may be a useful tool considering the determination of the ideal ratio between the phases, and the stability of the system.

IPS-P-049

THE INFLUENCE OF IONIC STRENGTH ON THE ADSORPTION OF DOXORUBICIN ONTO MAGNETIC PARTICLES

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Magnetic particles have been largely used in biotechnology. Since these particles are attracted by magnetic field, drugs bound to them can be driven to their site of action by means of the selective application of magnetic field on the desired area. Doxorubicin is a promising anti-cancer drug that can be directly adsorbed onto magnetic particle surface. The aim of this work was to evaluate the influence of ionic strength on such adsorption process. Control and test samples were prepared in triplicate. The former consisted of an aqueous solution containing 0.037mg/mL of doxorubicin. The latter consisted of a solution containing 0.037mg/mL of doxorubicin in a 0.15M NaCl medium. In both samples, it was added 0.0131g of magnetite particles. After stirring for 3 min by using a vortex, particles in the suspension were allowed to settle down and the supernatant was analyzed. Absorbance at the maximum wavelength was evaluated in both control and test samples, before and after magnetite particle adsorption, against the appropriate blank sample. It was found that the ionic strength did change doxorubicin adsorption onto magnetic particles, decreasing nearly 50%. Changing the ionic strength by the addition of an electrolyte may influence adsorption in at least two different ways. Firstly, it may affect interfacial potential and therefore the activity of electrolyte ions and adsorption. Secondly, competition of the electrolyte ions and adsorbing anions for adsorption sites may take place. In conclusion, it was found that doxorubicin adsorption took place in both aqueous and salt media. However, ionic strength did decrease doxorubicin adsorption onto magnetic particles.

IPS-P-050

EUDRAGIT-COATED MAGNETIC PARTICLES

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Magnetite particles have been proposed for oral use as magnetic resonance contrast agents and magnetic markers for monitoring gastrointestinal motility. However, it was found that magnetite undergoes dissolution at gastric pH. Regarding pharmaceutical technology, protecting compounds from gastric environment is a key issue. In fact, many approaches have been proposed, namely the development of pH-dependent systems. The polymers used to design these systems should be able to withstand the lower pH values of the stomach in order to protect the compound from the gastric fluid. Eudragit S-100 is one of the polymers currently used as it is soluble at or above pH 5.6. The aim of this work was to develop Eudragit-coated magnetic microparticles in order to protect magnetite form gastric dissolution. Such polymer-based magnetic microparticles were produced by spray-drying a Eudragit solution contuining magnetite particles. Sample characterization was performed by laser scattering particle size analysis, vibrating sample magnetometry and magnetophoresis test. Characterization data showed that polymeric superparamagnetic particles were successfully produced. The mean diameter was found to be 3.98µm. It was also determined that 90%, 50% and 10% of the sample was smaller than 8.94µm, 2.86µm and 0.61µm, respectively. In conclusion, the obtained results have demonstrated the feasibility of the presented method to develop Eudragit-coated magnetite microparticles. Due to the remarkable properties of the polymer, it is expected that gastric dissolution will not take place. Therefore, such systems may be very promising for oral administration.

IPS-O-001

CHITOSAN SUNSCREEN MICROSPHERES

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Microspheres (MS) as a delivery system for sunscreens offer great advantages in terms of carrier stability, controllable size, minimal contact of the sunscreen active with the skin and sustained action. The objective of the study was to formulate sunscreen MS using chitosan as a matrix and phenylbenzimidazole sulphonic acid (PBSA) as a sunscreen agent. MS were prepared using the emulsion crosslinking method. Four test formulations were prepared under different conditions and characterized for morphology, PBSA content, % incorporation efficiency (I.E.), size and in vitro PBSA release. Possible interactions were checked using differential scanning calorimetry (DSC) and infrared spectroscopy (IR). Results indicated relatively high % I.E., Increasing the PBSA/chitosan ratio as well as decreasing the actual amount of glutaraldhyde caused an increase in the PBSA content, % I.E., and MS diameter. Release data showed a biphasic profile. Increasing both the initial PBSA loading and the actual amount of glutaraldhyde enhanced PBSA release. Analysis of release data indicated first order kinetics. DSC confirmed the crystallinity of PBSA and the amorphous state of chitosan. IR indicated interaction between glutaraldhyde, chitosan and PBSA. In conclusion, the sunscreen MS prepared combine the desirable properties of MS and those of chitosan as a natural, high molecular weight, skin biocompatible polymer.

IPS-O-002

APPLICATION OF NEW TRENDS IN HPLC STATIONARY PHASES IN PHARMACEUTICAL ANALYSIS

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Analytical methods for pharmaceutical drug control are very important to assure appropriate quality and safety of drug substance or drug product. It is substantial to develop the methods using new trends in analytical chemistry to obtain reliable results according ICH requirements and to shorten analytical run time as much as possible.

New trends in liquid chromatography involve particularly new types of stationary phases which cover namely different selectivity or C18 chemical stability improvement. Smaller particles (3.5 or 1.8 μm) or monolith columns are used to shorten analysis time while the parameters of efficiency and peak resolution remain unaffected or are even improved. UPLC (Ultra Performance Liquid Chromatography) is a new direction of liquid chromatography. High pressure system allows using of all advantages of sub-2-microne particle-packed analytical column with small column diameters, which both has a positive effect on system efficiency and analysis time.

The quality control HPLC analytical methods of complex pharmaceutical formulations including various compounds in different concentrations were used for the comparison of new types of stationary phases with conventional C18 stationary phase. Efficiency together with other SST parameters, analysis time, solvent consumption and system maintenance aspects were compared for monolith columns (Chromolith, Merck), high through-put C18 analytical columns (Zorbax, Agilent) and BEH C18 analytical column (Waters), the last were connected into UPLC system. Advantages of new kinds of stationary phases were confirmed and discussed in case of analysis of Estrogel gel hormonal preparation, Ketoprofen gel and Diclofenac emulgel antiflogistic preparations. Significant improvement in efficiency and analysis time shortening was observed particularly using UPLC method, which could replace common HPLC in the future.

The authors gratefully acknowledge the financial support of the Czech Ministry of Education, project MSM 0021620822.

IPS-O-003

INFLUENCE OF CARBON SOURCE IN PRODUCTION OF CYTOCHROME P-450 IN THE YEAST SACCHAROMYCES CEREVISIAE

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The yeast Saccharomyces cerevisiae is a facultative anaerobe whose metabolism depends on the presence or absence of oxygen and the carbon and energy source supporting growth. The carbon source can be used to modify the type of metabolism in yeast. According to the carbon source and the growth phase of cells, the cytochrome P-450 enzyme is produced in yeast Saccharomyces cerevisiae. In this work, the differences between cellular growth in media containing different types of sugar as carbon were evaluated. This data will be important to relate the biomass yield and production of cytochrome P-450. The incubation time to reach the exponential growth phase were also verified. In this phase cytochrome P-450 is produced. Two strains of Saccharomyces cerevisiae, ATCC 9080 and ATCC 2366, were cultured in eight different types of carbon sources: glucose, mannose, fructose, galactose, sucrose, maltose, lactose and glycerol. The strains were growth in media containing 1% yeast extract, 2% peptone, 0,5% NaCl and energy and carbon source. The sugars were used in 2% concentration. Cells were incubated for 24 - 48 hours at 30oC in water bath at 120 rpm and harvest in intervals time for constructions of growth curves. Cell population was determined by plate count in Sabouraud dextrose agar. Differences in cellular growth could be observed, in both strains cultured in different sugars. The faster growth and higher yield biomass was observed in presence of glucose and mannose. Yeast cultured in media containing fructose, lactose and glycerol presented a low growth yield. When galactose, maltose and sucrose were used the growth was slower than in presence of glucose and mannose. In all strains and sugars, the exponential growth phase occured between 4-8 h incubation. For further experiments, cells will be harvested during exponential growth phase. The content of cytochrome P-450 will be measured and the effect of carbon source in biosynthesis of cytochrome P-450 will be evaluated.

IPS-O-004

PHENOLIC COMPOUNDS IN RED GRAPE EXTRACTS

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Oxidative stress occurs when free radical formation exceeds ability to protect against them causing several acute medical problems.
It is important to identify the antioxidant compounds that block this damage occurrence. Those compounds can be obtained by food intake but they can also be of great importance regarding industrial field, as they can also be used to produce diet supplements to prevent, for example, inflammatory problems
The study of phenolic compounds (PC) in food products is extremely important as they may contribute, when consumed in a correct diet, to a healthier life. PC are abundant micronutrients in human diet, and there are evidences of their role as antioxidants.
The use of chromatographic techniques is fundamental and when hyphenated with different detection methods can give us important information. The detection of compounds with important biological effect in humans is important for new drugs' development in Pharmaceutical Industry. .

The aim of this study was to quantify total PC in grapes and wines and to identify them by LC-DAD-FD-ED-MS techniques,

Total PC content of methanolic and ethanolic extracts of grape (skin and juice) was measured by Folin Ciocalteu method.

Methanolic extracts were analysed by LC and a mass spectrometry system equipped with an atmospheric pressure chemical ionization source was used in conditions previously optimized. Results were treated by Excallibur 3.1software.

In chromatograms obtained using LC-MS some PC as caftaric acid, procyanidin dimmer, catechin, (-)-epicatechin, mirycetin glycoside, antocyanin glycoside, t-piceid, quercetin 3-galactoside, quercetin glycoside, quercetin were identified on grape skins and juice, comparing their MS spectra with results from standards or data from literature. Some of the compounds were also detected with electrochemical detection, thought they may be responsible for antioxidant properties of wines.

IPS-O-005

DISSOLUTION ENHANCEMENT OF POORLY SOLUBLE DRUGS THROUGH DRUG-HYDROXYPROPYL BETACYCLODEXTRIN TERNARY SYSTEMS

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Meloxicam and Celecoxib, are two poorly water-soluble nonsteroidal anti-inflammatory drug with relatively low bioavailability. This study showed the effect of cyclodextrin with a third component on improving their solubility, dissolution rate, and bioavailability.

The effect of ternary complexation of meloxicam, with hydroxypropyl-beta-cyclodextrin and the basic aminoacid L-arginine on the drug dissolution properties has been investigated. Equimolar ternary (drug-cyclodextrin-arginine) systems were prepared by kneading,spray,freeze drying,solvent evaporation techniques and characterized by differential scanning calorimetry (DSC), FT-IR spectroscopy,scanning electron microscope(SEM). The dissolution behavior of meloxicam from the different products was evaluated. All ternary combinations were significantly more effective than the corresponding drug alone in improving meloxicam dissolution rate.

Also the inclusion complexation between celecoxib and hydroxypropyl-beta-cyclodextrin (HPBCD) in the presence of hydroxypropyl methylcellulose (HPMC) was studied. Phase solubility studies were used to evaluate the HPBCD complexation in the presence of HPMC. Stability constants, Kc, of the complexes were determined. Solid dispersions were obtained by kneading,solvent evaporation and freeze drying and characterized by the same methods(DSC,SEM,FT-IR).

The best performance in this respect was given by the ternary spray dried product of Meloxicam dissolution rate and solvent evaporation systems in case of celecoxib . For celecoxib, the presence of HPMC and HPBCD in the dispersions promoted its dissolution rate. Phase solubility study revealed a positive effect of the polymer on the drug complexation. Improvement in stability constants values, Ks, of ternary complexes clearly proves the benefit of the HPMC addition for promoting higher complexation efficiency.

IPS-O-006

OPTIMIZATION OF POORLY COMPACTABLE DRUG TABLETS MANUFACTURED BY DIRECT COMPRESSION USING THE MIXTURE EXPERIMENTAL DESIGN.

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The poor flowability and bad compressibility characteristics of paracetamol are well known. As a result, the production of paracetamol tablets is almost exclusively by wet granulation, a disadvantageous method when compared to direct compression. The development of a new tablet formulation is still based on a large number of experiments and often relies merely on the experience of the analyst. The purpose of this study was to apply experimental design methodology (DOE) to the development and optimization of tablet formulations containing high amounts of paracetamol (over than 70%) and manufactured by direct compression. Nineteen formulations, screened by DOE methodology, were produced with different proportions of Microcel® 102, Kollydon® VA 64, Flowlac®, Kollydon® CL 30, PEG 4000, Aerosil®, and magnesium stearate. Tablet properties, except friability, were in accordance with the USP 28th ed. requirements. These results were used to generate plots for optimization, mainly for friability. The physical-chemical data found from the optimized formulation were very close to those from the regression analysis, demonstrating that the mixture project is a great tool for the research and development of new formulations.

IPS-O-007

DEVELOPMENT OF PIROXICAM-LOADED GELATIN MICROCAPSULE USING SPRAY-DRYING

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Piroxicam is a drug with low water solubility and high membrane permeability included in class 2 of the Biopharmaceutic Drug Classification System. To enhance the solubility and dissolution of piroxicam by gelatin microcapsule using a spray-drying method. Piroxicam-loaded gelatin microcapsules containing piroxicam were prepared with various ratio of piroxicam, ethanol, gelatin and sodium lauryl sulfate. Their physicochemical properties such as microcapsule, size, shape, solubility and dissolution were investigated. Sodium lauryl sulfate and piroxicam and gelatin were dissolved in 7:3 mixture of water-ethanol (0.1M NaOH). The dissolution rate of piroxicam in the microcapsules increased markedly compared to pure piroxicam powder and appeared to be proportional to the sodium lauryl sulfate content in the microcapsules. Among the formula tested, the microcapsule at the gelatin/sodium laurylsulfate/piroxicam ratio of 8/1.2/0.6 showed the highest solubility and dissolution of piroxicam. The results demonstrated that the gelatin microcapsule using spray drying method could be a potential candidate for the oral delivery system of poorly water-soluble piroxicam.

Acknowledgements: This research was supported by grant No. RTI04-01-04 from the Regional Technology Innovation Program of MOCIE.

IPS-O-008

EVALUATION OF THE MANUFACTURING INDUSTRIES OF OFFICINAL MEDICINES AND PHYTOTERAPICS ON RIO DE JANEIRO STATE ACCORDING TO GOOD MANUFACTURING PRACTICES (GMP), AS RECOMMENDED BY THE WORLD HEALTH ORGANIZATION (WHO) AND REGULATIONS OF NATIONAL SANITARY SURVEILLANCE AGENCY.

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The manufacturing industries of officinal medicines and phytoterapics in Brazil developed a lot in the last years, recognizing the need to assure the quality of their products and tried to assist the patterns demanded by the government. In that point of view, the same ones are trying to adapt at the norms and guidelines established for Ministry of Health.
In this work was evaluated the current situation of the manufacturing industries of officinal medicines and phytoterapics of the Rio de Janeiro State, as well as, the behavior of the same ones for the adaptations accomplished for the execution of the legal and normative instruments, used for the sanitary inspections in companies with these activities.
Starting from the study of the existent administrative processes and of the information made available by ANVISA, had been identified 48 companies with activities relate the production and/or fraction and distribution of officinal medicines and phytoterapics. They were rescued and appraised the reports of existent inspections for each company, starting from the validity of the Resolution RDC no 210/03, having been verified the first nine months of implantation of the norm, the following situation: 29,2% companies in the satisfactory situation, 10,4% satisfactory companies with restrictions, 39,6% paralyzed, 6,2% unsatisfactory and 14,6% that requested the cancellation of the process because don't having conditions for the execution of the Resolution RDC no 210/03.

In relation of the adaptations for the execution of the norm, in general, the main irregularities found for these companies, implicate operational flow, the quality control and subjects regarding the registration of the product.

The current picture found demonstrates that it is still big the number of companies with related activities the production and/or fraction and distribution of phytoterapics and officinal medicines in adaptation phase in the industrial park of Rio de Janeiro State.

IPS-O-009

COMPARISON OF THE PHARMACY CURRICULUM IN THE UNITED STATES VS. IRAN IN PREPARATION FOR PHARMACEUTICAL INDUSTRY

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Established in 1934, Tehran Medical University (later known as Tehran University of Medical Sciences & Health Care Services -TUMS), was the first pharmacy school in Iran. It is currently one of eleven pharmacy schools in Iran. The Thomas J. Long School of Pharmacy & Health Sciences (T.J. Long) is one of seven pharmacy schools in the State of California. It was founded in 1955, long after the first school of pharmacy, The Philadelphia College of Pharmacy, was established in 1821.

This project was undertaken to compare the pharmacy curriculum TUMS versus T.J. Long in preparation for pharmaceutical industry.

TUMS requires students to take a great number of basic introductory science courses, whereas T.J. Long requires most introductory science courses to be completed prior to admission. While TUMS mandates courses such as English language and Islamic studies, students at T.J. Long have the opportunity to explore pharmacy beyond the classroom such as participation in pharmaceutical educational seminars. A number of courses such as Pharmacy Law and Neuropsychiatric Care are exclusive to the curriculum at T.J. Long, while others such as Drug Quality Control and field work in Industrial Pharmacy are exclusively offered to students at TUMS. Overall, T.J. Long prepares graduates to become generalist practitioners of pharmacy equipped with a strong pharmacy knowledge base and an emphasis on clinical work. On the other hand, TUMS exposes students to multiple pharmacy disciplines with an emphasis on research in addition to providing graduates with a strong pharmacy knowledge base.

Graduates of both curricula are equipped with the skills necessary to successfully practice in the field of industry. There are also restrictions within both curricula that may limit the student's exposure to pharmacy industry. Eliminating or minimizing these restrictions is one way of improving the current curricula in order to place a greater emphasis on pharmacy industry.

IPS-O-010

THE IDEAL INDUSTRIAL PHARMACY PROGRAM: A CROSS-CULTURAL STUDY

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In light of finding an ideal Industrial Pharmacy curriculum that allows pharmacists of the world to stand on equal grounds, a cross-cultural study of the undergraduate curricula at the USA; represented by the University of Cincinnati, Egypt; represented by Ain Shams University and Germany; represented by the German University in Cairo, has been performed to cover the educational side of pharmacists' careers. To test the strength of the relationship between university education and industry, an intensive visit to an eloquent pharmaceutical factory; Medical Union Pharmaceuticals (MUP) in Ismailia, Egypt, was integrated into this project. It was found that while studying a classical theoretical course will help one understand the core issues, as it is the case in Egypt, intensive lectures and practical courses, such as those delivered concurrent to the highly detailed lectures taught in Germany, increase both the theoretical and practical aspects of the subject. Also, the ideal curriculum should contain an industrial pharmacy skills lab akin to the one being run in American universities to create patient-oriented pharmacists that can ensure the best treatment for their patients. Pharmacy graduates must have the opportunity to manufacture and test all pharmaceutical dosage forms for quality as in the German System. It is concluded that although each teaching system has its merits, the German Pharmaceutical Educational System is the closest to the Ideal Industrial Pharmacy Curriculum.

IPS-O-011

THE INDUSTRIAL PHARMACY CURRICULUM

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This presentation is aimed at providing insight into the research that investigated the industrial pharmacy curriculum at the University of Havana, Cuba and Purdue University, United States of America, the relationship between industrial pharmacy education and practice, and the ideal industrial pharmacy curriculum.

A qualitative research was carried out using convenient methods. Secondary data was obtained from the internet, relevant texts, and course outlines. Informal interviews with contact students and lecturers via electronic mails and telephone conversation were also used. The information collected was then analyzed and the findings presented.

Despite limitations to the research methodology the findings suggest that the industrial pharmacy curriculum at the University of Havana and that at Purdue University are somewhat comparable in that, similar foundation courses are taught before moving to the core courses which were also similar. However both universities differ in three major areas; credit hours, type of qualification and practical experience. The relationship between industrial pharmacy education and practice is positively skewed. Ideally, industrial pharmacy curriculum should provide continual updating in the content and teaching strategies, greater flexibility and be completed in the shortest time.

In Concluding, improvement is possible with current industrial pharmacy curriculum. A positive relationship between industrial pharmacy education and practice exists. More advance research is needed in this area.

IPS-O-012

UNIQUE MODULAR CURRICULUM CREATES UNIQUE PHARMACISTS

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Addressing the educational needs of individuals going into the various positions available in the field is an ongoing challenge for colleges of pharmacy. The University of Cincinnati (UC) College of Pharmacy has developed a unique curriculum that prepares students to undertake a variety of pharmacy careers, including development and manufacturing, retail and clinical positions.

The modular system is a mechanism by which students are exposed to all facets of pharmacy. This begins in the first professional year with basic science classes including biochemistry, anatomy and physiology, molecular biology and medicinal chemistry. The skills laboratory courses occur over the first three years of pharmacy school and prepare students for experiential rotations, as well as pharmacy practice. Components of all other courses are incorporated into the skills lab. Skills lab is a pivotal tool in the modular curriculum system.

As time progresses, students are exposed to more advanced courses, i.e., management, therapeutics, pharmacokinetics. Therapeutics classes are designed to teach students individual body systems, more advanced anatomy and physiology, pharmacology of each system, as well as the medical chemistry of agents used to treat diseases of the systems. Students are taught manufacturing and development through a continuum of drug delivery and pharmacokinetic classes. These classes include the science behind industrial pharmacy and different delivery mechanisms, and contribute to an understanding of pharmacokinetics and pharmacodynamics.

The health care systems of the United States and around the world are changing. Pharmacy education must continually be updated and developed to meet health care needs. The progressive faculty and administration at UC recognized this and developed the modular curriculum system. This system graduates pharmacists who are prepared to develop medications, synthesize them and distribute them.

LMCS-P-001

RP-HPLC METHOD FOR DETERMINATION OF OFLOXACIN AND ITS DEGRADATION PRODUCTS IN TABLETS

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A quantitative RP-HPLC method was developed and validated for determination and assay of ofloxacin(OF) and its degradation products decarboxy ofloxacin (DOF), 9-piperazino ofloxacin (POF), des-methyl ofloxacin (MOF) and ofloxacin-N-oxide (NOF) in tablets. A RP-HPLC method was performed on XTERRA C18 column with hybrid particle technology at 45oC with 18:82 (v/v) acetonitrile-aqueous, pH 3.5 mobile phase at o flow rate 1 mL min-1. Detection was at 294 nm. Under those conditions the retention time and retention factor were 4.34 min and 1.07 for DOF, 8.13 min and 2.87 for POF, 9.06 min and 3.31 for MOF, 9.99 min and 3.76 for OF and 14.27 and 5.79 for NOF indicating that compounds were well separated. The RSD values for quantification of DOF, POF, MOF, OF and NOF were of 0.77, 0.58, 0,51, 0.10 and 0,70% indicating the precision of RP-HPLC method was good. The method is sensitive and reproducible. The limits of detection for DOF, POF, MOF, OF and NOF were 0.10, 0,13, 0,06, 0.03 and 0.03 µg mL-1. The recovery values were from 97,5% to 104,1%.

The described method can be used for simultaneus identification and assay of all analysed compounds in Visaren® tablets.

LMCS-P-002

STANDARDIZATION OF IBUMOL GEL OF COMBINED EFFECT WITH USE OF CHROMATOGRAPHIC METHODS.

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Non-steroid anti-inflammatory agents are basic preparations in the pharmacotherapy of many chronic diseases. However, their long-term use in effective doses is often difficult due to their frequent complications.

This work is dedicated to standardization of ibuprofen and paracetamol in gels 'Ibumol gel' with use of chromatographic methods (thin-layer and high performance liquid ones).

For analysis there was used 10% gel 'Ibumol gel' containing ibuprofen and paracetamol in ratio 1:1.25. The working substrates were extracted from the forming one with use of ethanol. After separation ibuprofen and paracetamol in the system of diluents ethyl acetate : aceton intensity of spot color and indicators Rf (0.68; 0.58, respectively) were identical to standards samples of working substrates. Quantitative content were assessed on the liquid chromatograph of mark Agillent 1100. Detection was performed with wave length λ 235 nm, and methanol-acetic acid was used as change phase (70:30). The chromatographic changes in standard samples of ibuprofen and paracetamol were studied parallel under these conditions. The quantitative contents of ibuprofen and paracetamol were determined in gels on the basis of symmetric, area and time of spikes. There was found: ibuprofen – X(mean)=0.008; f=4; t(P;f)=2.78; S=0.0002; E%mean=2.45%; paracetamol – Xmean=0.010; f=4; t(P;f)=2.78; S=0.0002; E%mean=2.26.

Thus, there has been performed qualitative and quantitative analysis of ibuprofen and paracetamol in gels with use of chromatographic methods of thin layer and high performance liquid. The technique proposed has been included into the project of temporal pharmacopoeia article for gels 'Ibumol gel'.

LMCS-P-003

STUDY OF PHENSULKAL RELEASING VELOCITY FROM SUPPOSITOIRE WITH METHOD IN VITRO.

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Purpose: Bisulphite derivative of phenyl-glyoxylic acid Phensulkal was anti-inflammatory drug is widely used in the gynecological practice. There are active investigations in the development of vaginal suppositories. These studies are devoted to investigation of releasing velocity of Phensulkal from experimentally obtained suppositories.

Method: There was used traditional method of Kruvchinckiy and modified 'revolving basket' for analysis where segment of the upper part of rabbit rectum (ampulla rectum) in the isotonic solution served as semi-permeable membrane. The phosphate buffers were use as dialysis medium (pH 7; 7.2; 7.4). Dialysis was performed at temperature 37+-0/5 C. The revolving velocity was 50 rm. Samples for analysis were selected every 15 minutes during 2 hours. The deficiency of material used for analysis was made up with clean buffer solution.

Quantitative content of Phensulkal in the dialyzate was determine with spectrophotometric method on the 'Agilement 8453' mark of spectrophotometer with wave length λ =252 nm. Standard solutions of phensulkal were used for comparison.

Results: Optimal conditions for phensulkal releasing from suppositories was use of devise 'revolving basket'. Maximal quantity of releasing in the medium of phosphate buffer in pH 7.2 was in 90 minutes, that accounted for 75% of phensulkal.

Conclusion: There has been studied and developed technique of phensulkal releasing velocity from suppositories under above-mentioned conditions. It was established that maximal releasing of phensulkal achieved in modified method 'revolving basket' from suppositories in comparison with traditional method of Kruvchinskiy.

LMCS-P-004

THE RP-HPLC METHOD IN DIKALM® TABLETS ASSAY

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Introduction: The RP-HPLC method has been developed for the simultaneous determination of acetylsalicylic acid, paracetamol and codeine phosphate in Dikalm® tablets, Fam Pharm, Krusevac.

Methods: The chromatographic system consisted of a Waters 600E pump, a Rheodyne 7725 injector with a 20 µl sample loop and a Waters 484 UV-VIS detector. Separations were performed on a Supelcosil™ ABZ+Plus column (150 mm x 4,6 mm; 5µm) at 20°C. pH of methanol-0,01 M potassium dihydrogen phosphate (10:90 V/V) mobile phase was adjusted to 4,00 with phosphoric acid. Flow rate was 1,6 ml/min. UV detection was performed at 284 nm.

Results: Linearity of the method was established within the concentration range 50,0-200,0 µg/ml for acetylsalicylic acid, as well as for paracetamol and 47,0-53,0 µg/ml for codeine phosphate. Accuracy of the method was confirmed with recovery values, 98,90% for acetylsalicylic acid, 98,78% for paracetamol and 99,31% for codeine phosphate. High method precision was found since RSD for acetylsalicylic acid was 0,57%, 0,78% for paracetamol and 0,27% for codeine phosphate. The sensitivity of method was demonstrated with determined LOD and LOQ for active components.

Conclusion: Based on obtained results, proposed method can be used for routine QC of Dikalm® tablets.

LMCS-P-005

DISSOLUTION TEST PERFORMANCE TIME INFLUENCE ON THEOPHYLLINE RELEASE PROFILE FROM AMINOPHYLLINE MATRIX TABLETS

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Aim of this work was to determine DT performance time influence upon theophylline release profile from aminophylline matrix tablets. Those are produced in laboratory conditions with lactose (38,43%) as diluent and Carbopol 971P (10%) as matrix agent.

Methods: Direct compression method is used in the matrix tablets production. Dissolution is determined at Sartorius solubility simulator, using mixture of enzyme-free artificial gastric juice and appropriate quantity of Na phosphate as dissolution medium. Previously specified conditions for pH value variation (1,2-7,4) in the function of time (0-8 h), simulate digestive tract conditions. Content of dissolved theophylline is determined spectrophotometricaly at 275 nm.

Results: Results of DT performed three weeks from tablets production have shown decrease in total theophylline release content after each hour comparing to results of DT performed immediately after tablets production. Noticed decrease was the least after first hour (3%), the most significant after fifth hour (14,29%), until decrease in total drug content was 5,58% after eighth hour. It could be possible that Maillard condensation or increase in temperature and humidity are responsible for tablets darken in the function of time, are also important for the mentioned diferences in theophylline release profiles from tablets.

Conclusion is that DT performance time has indisputable influence on theophylline release profile from examinated tablets.

LMCS-P-006

DEVELOPMENT AND VALIDATION FOR THE SIMULTANEOUS DETERMINATION OF ETHANOL CONTENT AND ORGANIC VOLATILE IMPURITIES IN RESERVOIR-TYPE FENTANYL TRANSDERMAL DELIVERY SYSTEM BY GAS CHROMATOGRAPHY

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An ethanol/water cosolvent system was applicably used as a vehicle in the reservoir-type fentanyl transdermal delivery system. Since ethanol acts as a skin permeation enhancer, the assay of ethanol content is an important criterion of quality control under good manufacturing practices (GMP). Furthermore, the determination of organic volatile impurities (OVI) mentioned in United States pharmacopoeia (USP) is dedicated to limit the residual solvent which would be harmful to health in drug products. This present study is to develop and validate an isothermal gas chromatography-flame ionization detection (GC-FID) method for the simultaneous determination of ethanol content and OVI in reservoir-type fentanyl patch (DurogesicÒ). The chromatographic conditions of the method employ a Supelco OVI-G43 capillary column (6% cyanopropylphenyl- dimethylsilioxane, 30 m × 0.53 mm i.d., 3 µm film thickness), isothermal elution with helium at a column flow of 5.2 ml/min, injector temperature at 200°, detector temperature at 250°, oven temperature at 50°, a split ratio of 20.0/1.0, and 1.0 µl injection volume. The validation criteria such as specificity, linearity, range, accuracy, precision (repeatability and intermediate precision), system suitability, robustness and limits of detection and quantification were considered. The results presented in this study showed the validated gas chromatographic method can be applied to the determination of ethanol content and OVI in the quality control of reservoir-type fentanyl patch.

LMCS-P-007

ROBUSTNESS OF RP-HPLC METHOD FOR THE DETERMINATION OF VALDECOXIB AND ITS IMPURITY SC-77852

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A reversed-phase liquid chromatography method was developed and validated for the evaluation of valdecoxib and impurity SC-77852, which constitutes of a–N-lactosyl sulfonamide and ß–N-lactosyl sulfonamide, i.e. a and ß-anomer. The separation is achieved on monolithic HPLC column. Presented RP-HPLC method is fully validated for its linearity, precision (repeatability), quantitation and detection limits, as well as robustness.

Method robustness was investigated using 23 full factorial design, to obtain information about the effects of the selected factors (methanol content in the mobile phase, pH of the mobile phase and the column temperature) on resolution, which was chosen as a dependent variable. The final step optimisation of the variables was performed using response surface design.

The best chromatographic conditions were achieved by using mobile phase - methanol:1% water solution TEA (36:64 v/v), pH 7.4, column temperature 220C. The separation was carried out on Chromolith Performance RP-18e column (100mm x 4,6mm), macropore size 2µm, mesopore size 13nm, flow rate 3.5ml/min, using detection on 220nm.

Validated method can be used for assay of valdecoxib and SC-77852 in dosage forms of valdecoxib.

LMCS-P-008

CA-125 AUC INCREASE FOR PREDICTING EPITHELIAL OVARIAN CANCER RELAPSE

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Aim: The objective of the present work is to evaluate if increases in the CA-125 normalized in time area under the curve (AUC) can be used to signal ovarian cancer relapse in advance of clinical detection.

Methods: Retrospective clinical information was gathered from 1990 to 2000 regarding to 111 patients with a diagnosis of epithelial ovarian cancer at Gynaecology Service with a minimum of 3 CA-125 serum concentrations between the end of primary treatment and the evaluation date. The first CA-125 level after the end of treatment had to be under 35 IU/ml (baseline). The end of treatment was determined as the date of curative surgery if the patient didn't receive any chemotherapy, or the date of conclusion of adjuvant chemotherapy or the end of consolidation chemotherapy. A criterion of CA-125 AUC increase was tested: the total CA-125 AUC normalized in time (AUC2) was compared to the previous one (AUC1) and a time (ti) was sought, where AUC2 = F * AUC1 with F equal to 1.10 (10%), 1.25 (25%), 1.50 (50%), 2.00 (100%), 2.25 (125%), 2.50 (150%) or 3.00 (200%). Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), false positive (FP) rate, and false negative (FN) rate was calculated and the best accuracy was registered. The lead time to relapse was measure from ti to the relapse date.

Results: The best accuracy (85.%) was achieved with a factor of 1.25 (25%) giving a sensitivity of 73%, a specificity of 90%, PPV of 70%, NPV of 91%, FP rate of 7.8% and an FN rate of 6.8%.The mean lead time to relapse achieved was 181.0 (-37 to 843; S.E.=56.3) days.

Conclusion: In our population the increase of 25% between two consecutive total CA-125 AUC normalized in time predicted the relapse with a high accuracy (85%) and with a substantial mean lead time to relapse (181 days).

LMCS-P-009

DETERMINATION OF L-ASCORBIC ACID IN BIOLOGICAL FLUIDS USING HYDROPHILIC INTERACTION LIQUID CHROMATOGRAPHY

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L-Ascorbic acid (vitamin C) is a physiologic reduction agent, the only biologically active one from four possible stereo-isomers. It plays an important role in human organism, especially as an antioxidant. Its level could be a marker of health and nutritional state at patients treated for metabolic, cancer or cardiovascular diseases.

Ascorbic acid is a very polar compound which is almost not retained on analytical column using common RP-HPLC conditions, at certain conditions it is eluted even with the dead volume. Hydrophilic Interaction Liquid Chromatography (HILIC) is a very convenient method for its determination, because it allows retention of very polar compounds as ascorbic acid.

ZIC HILIC (150 x 2.1 mm, 3.5 µm) chromatographic column was chosen for analysis using mobile phase composed of acetonitrile and ammonium acetate buffer pH 6.8. Detection was performed at 268 nm.

Isolation procedure of ascorbic acid from biological fluids included extraction using m-phosphoric acid. The method was validated using internal standard chlorogenic acid for quantitation. The calibration curve was linear from 0.57 µmol/l to 568 µmol/l with coefficient of correlation R = 0.9995.

The authors gratefully acknowledge the financial support of MZO 00179906, Grant Agency of the Ministry of Health of Czech Republic IGA NR /8048-3 and Czech Ministry of Education project no. MSM 0021620822.

LMCS-P-010

STUDY OF PROCTOSIGMOID EFFECT OF EXPERIMENTAL SUPPOSITORIES OF COMBINED EFFECT 'LEVOBAN'.

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Combination of antibiotics, anesthetics and provitamins in the suppositories may resolve a number of current problems related to rectum intestine. The purpose of investigations was to study pharmacological activity of new combined suppositoire 'Levoban' on the model of experimental proctosigmoiditis.

The experiment was performed on rats divided into 3 groups. Experimental proctosigmoiditis in animals was induced by rectal injection of 0.15 ml of 25% formalin water solution. Investigation was carried out with 3 hours intervals after induction of pathology. Control animals from group 1 were administered placebo. Control animals from groups 2 and 3 were administered suppositories in dose 0.25 g/kg and 1 g/kg rectally 1 time a day during 7 days.

The experiments showed that after administration of formalin into the rectum all the animals were observed anxiety expressed, increase in respiration and aggressiveness. Control animals had got local inflammatory process and severe intoxication and increase in rectal temperature by 1-1.9° C to 2-3 day of treatment, and there was seen red and black blood in the feces some animals that resulted in death of 2/8 animals. Animals receiving tested suppositories had better tolerance to harmful effect of formalin. The general state of animals improved significantly on the 2-3 days after treatment. Mucosal excretions from anus did not become suppurative. Rectal temperature reaction increased only by -0.3-0.8 C.

Investigation of suppositoire 'Levoban', containing combination levomicetin, anesthesin and sea-buckthorn oil during rectal administration there was established of rectum shows marked analgetic, antibacterial and wound healing effect.

LMCS-P-011

EFFECT OF DRUG-INDUCED ASCORBIC ACID RELEASE IN THE STRIATUM AND THE NUCLEUS ACCUMBENS IN HIPPOCAMPUS-LESIONED RATS

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The mechanism of ethanol, morphine, methamphetamine (MAP), nicotine-induced ascorbic acid (AA) release in striatum and nucleus accumbens (NAc) is not well understood. Our previous study showed that the glutamatergic system was involved in the addictive drug-induced AA release in NAc and striatum. Furthermore, frontal decortication eliminates drug-induced ascorbic acid release in the striatum but not in the NAc. In the present paper, the roles of the hippo-striatal and hippo-accumbens pathways in drug-induced AA release in the striatum and nucleus accumbens were studies by using microdialysis coupled to high performance liquid chromatography (HPLC) with electrochemical detection. Ethanol (3.0 g/kg, i.p.), Morphine (20 mg/kg, i.p.), methamphetamine (3.0 mg/kg, i.p.), and nicotine (1.5 mg/kg, i.p.) significantly stimulated AA release in the striatum and NAc, respectively. After hippocampus lesion by kainic acid, AA release induced by these addictive drugs could be eliminated in NAc, but not in the striatum. These results suggest that the hippocampo-accumbens glutamatergic pathway may be a common and necessary pathway in addictive drug-induced AA release in the NAc. The present results also imply that different pathway might be involved in drug-induced AA release in the striatum and the NAc of the rats.

MEPS-P-001

THE BI-COMPARTMENT AUTOINJECTOR OF THE FRENCH MILITARY HEALTH SERVICE FOR EMERGENCY TREATMENT OF ORGANOPHOSPHATE POISONING

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CONTEXT: In military situations, only early administration of antidotes could counteract deleterious effects of an intoxication by organophosphate nerve agents.
Until 1993, the Multipen(R) autoinjector (AI) was available to DUPHAR firm. This AI included atropine sulfate (2mg), diazepam (7.5 mg) and pralidoxime (350 mg) in liquids forms.
GOAL: From 1993, the French military health service considered changing Multipen(R) by a new product with a reusable mechanism and a bi-compartment cartridge. One compartment includes a freeze-dried form of atropine, pralidoxime and avizafone, the prodrug of diazepam. The second compartment contains sterile water which allows solubilization of the three-therapy just before intramuscular injection.
With this new device, change of the antidotes is possible as well as the replacement of the cartridge when expired.
RESULTS: The mechanical components of the new AI are purchased from the french firm SEDAT. Then, achievement of the medicinal cartridge (aseptic filling and freeze-drying) and assembly of the device are done in the 'Pharmacie centrale des armées'.
Efficacy of the three-therapy, evaluated in the French military health service research centre, leads to a 20 mg dose of avizafone as equivalent to the dose of diazepam previously included in the Multipen(R).
Freeze-dried form of the medication is stable at least 4 years at 5°C or 1 year at 25°C. After solubilization, stability of the antidotes is over 6 months.
CONCLUSION: Industrial and pharmaceutical processes of the new AI are validated. Use for soldiers is now in course of market authorization.
The 'Prix Galien 2005' was awarded to Col CLAIR, LALLEMENT and ZABE for the elaboration and validation of this bi-compartment autoinjector.

MEPS-P-002

CARDIOVASCULAR RISK ASSOCIATED WITH NON-STEROIDAL ANTI-INFLAMMATORY DRUGS IN MEMBERS OF THE CANADIAN FORCES

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AIMS:
Use of non-steroidal anti-inflammatory drugs (NSAIDs) and selective agents (COXIBs) is quite common in our population; however, it is unclear if patterns of use predispose our members to significantly greater risk of cardiovascular side effects. This study was performed to describe the usage patterns of NSAIDs and COXIBs in Canadian Forces members, and to determine if such usage is associated with increased use of cardiac medications.

METHODS:

A retrospective review of the pharmacy claims database was undertaken to identify all members who received an NSAID, COXIB, or both, between 1 January 1999 and 30 June 2005. Data was collected regarding patient demographics, amounts of drug dispensed, dispensing dates, and concomitant medications (cardiac and smoking cessation agents).

RESULTS:

A total of 39,707 members were identified as having received at least one cyclo-oxygenase inhibitor (either NSAID or COXIB) during the review period. Of these, 33,548 members received NSAIDs only, 1231 received COXIB therapy only, and 4928 received a combination of both drugs. The majority of members (58.4%) use these agents on a short-term episodic basis, with less than 1% of members using such therapy chronically. Cardiovascular medications were uncommonly used in our population.

CONCLUSIONS:

Preliminary review of prescription claims in our members indicates that usage patterns associated with increased risk for cardiovascular toxicity are largely absent in our population. Additional work will be done to quantify the number of individuals at risk.

MEPS-P-003

HOW TO PREVENT YOU FROM BEING INJURED IN YOUR PHARMACY UNDER THE EMERGENCY OF AN EARTHQUAKE

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Earthquakes strike your pharmacy(-department) suddenly. Preparation for the earthquakes is very important. However, many pharmacy(-department)s do not seem to pay attention for that. We would like to show how to prepare for earthquakes and lessen damage under the emergency.

Before an earthquake

Bolt bookcases, and other tall furniture to wall studs. Brace or anchor high or top-heavy objects. Secure items that might fall. Install strong latches or bolts on cabinets. Move large or heavy objects and fragile items to lower shelves. Store flammable products securely in closed cabinets with latches, on bottom shelves.

During an earthquake

Get down under a sturdy table or desk. Stay there until the shaking stops. Injuries can occur from falling building debris. Stay indoors until the shaking stops and you're sure it's safe to exit. More injuries happen when people move during the shaking of an earthquake.

Stay away from windows. Windows can shatter with such force that you can be injured several feet away. If you are in a coastal area, move to higher ground. Tsunamis are often created by earthquakes. If you are in a mountainous area or near unstable slopes or cliffs, be alert for falling rocks and other debris that could be loosened by the earthquake. Landslides commonly happen after earthquakes.

After an Earthquake

Check yourself for injuries. Often people tend to care for others without checking their own injuries. Don't try to move seriously injured people unless they are in immediate danger of further injury. Look for and extinguish small fires. Clean up spilled medicines or other flammable liquids immediately. Open closet and cabinet doors cautiously. Contents may have shifted during the shaking of an earthquake and could fall, creating further damage or injury. Inspect your pharmacy for damage.

MEPS-P-004

THE MILITARY HOSPITAL PHARMACY SUPPORT IN THE FOREIGNER MISSIONS

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The military and civilian persons involved in missions outside Portugal need a specific individual sanitary support. Thus, at the Hospital Militar de Belém (HMB) there is a military centre for preventing diseases which, together with the hospital pharmacy (HP) solves these situations preparing, among other things, four types of kits (A1, A2, A3 and A4). The A4 Kit contains the general medication and the A3, A2 and A1 are composed by doxycycline, mefloquine or proguanil and chloroquine respectively. The kits were prepared according to the duration and local of the mission. The logistics of all medicines and vaccines is responsibility of the HP.

The aim of this work was (1) to demonstrate the involvement of the military HP in foreigner missions; (2) to evaluate the kits dispensed on the HMB during 2004 and 2005 and (3) to compare the compositions of those kits with the OMS guidelines.

The data was obtained through the evaluation of the kits prescription in the HMB during 2004 and 2005.

The results show that, in 2004, 863 kits were prepared (A1-18.7%, A2-38.9%, A3-3.9% and A4-38.5%) and in 2005, 722 kits, (A1-28.0%, A2- 49.4%, A3-4.4% and A4-18.1%). In 2004, the kits were distributed as fallow: army- 28.0%; air force-36.8%; national guard-0.1%; navy-6.4%; police-11.9% and civilians-16.7%. In 2005, the kits were prepared for: army-36.4%; air force- 29.1%; National Guard-0.7%; navy-5.8%; police-14.7% and civilians-13.3%. The majority of kits used in 2004 and 2005 were destined to missions in Africa (53.9%) and Asia (50.8%) respectively.

The HP has an essential role in the individual sanitary support providing the three sectors of the armed forces, two security forces and civilians. The compositions of these kits are according to the OMS guidelines as well as the requirements of the different points of the world where missions are done.

PI-P-001

ROLE OF DRUG AND POISON INFORMATION CENTER IN A TERTIARY CARE HOSPITAL OF PAKISTAN

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Most developing countries suffer from lack of adequate drug information due to lack of adequate infrastructure, current literature and lack of resources and also poor documentation and dissemination of what little information is available. Existence and proper functioning of independent drug information centres can greatly contribute to the provision of unbiased drug information that is much needed in Pakistan and other developing countries. A teaching hospital-based drug information centre can be of assistance not only in patient care but also in educational activities. The centre can benefit from the material, monetary and multidisciplinary human resources that are usually available in such an institution. The Drug & Poison Information Centre (DPIC) of The Aga Khan University Hospital, Karachi is a repository of information and information resources. The centre works under the domain of Department of Pharmacy Services. DPIC provides information regarding drug dosages, adverse reactions, availability, compatibility and stability, use in pregnancy and breast feeding, poison information and its management. The DPIC also provides assistance to the hospital Pharmacy Therapeutic Committee for formulary management and drug evaluation monographs. The centre also assists the Ministry of Health in the process of drug registration and seeks expert opinion for the availability of drug in Pakistani market.

An eight-year experience of providing drug information service at The Aga Khan University Hospital, Karachi, Pakistan shows that it is possible to initiate such an activity at the local level with modest resources and that such a service is utilized if available. The information provided by the drug and poison information pharmacists would definitely results in improvement of patient care by optimizing drug therapy, minimizing adverse reactions and optimally managed poisoned patients.

PI-P-002

INTERNATIONAL COMPARISON OF EDUCATIONAL SYSTEMS FOR OTC DRUGS IN PHARMACY SCHOOLS AND CREATION OF NEW JAPANESE OTC DRUGS EDUCATIONAL TOOLS

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Aims: To keep our national health manageable and to stop increasing of medical expenses, training of pharmacists to give suitable information for self-medication to the general public has become essential. However, the educational system and tools for proper use of nonprescription (OTC) drugs are not adequate enough in Japanese pharmacy schools. We aimed to clarify these issues related to OTC drugs education in Japan, and to make and assess original e-learning tools for OTC drugs.

Methods: First, we investigated the various educational systems for OTC drugs at pharmacy schools in Japan and in four other countries (USA, UK, Australia and Singapore) through questionnaires and the Internet, respectively. Next, we made an original e-learning system for OTC drug education and have assessed them by asking pharmacy school students to use it and give their opinion about the system.

Results and conclusions: The Japanese pharmacy schools that have OTC drug lecture were only 30% of the total. Also, we found a large difference in volume, contents and purposes of their curriculums. Half of them did not aim to train their students for evaluation of symptoms, evaluation of medicinal effects and medical referrals. Lecture time in Japan was shorter than those in the USA and Australia. The results indicated that the differences between countries were due to differences in social background. Upon reflecting on the results of this investigation, we made our own original e-learning system for OTC drugs, and have released it on our department's website. Assessment of our results showed that the original e-learning system was effective.

PI-P-003

THE EFFECT OF SISTEMICALLY USED DRUGS ON THE EYES

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Locally applied drugs into the eye may lead to their systemic effects, but at the same time, systemically administered drugs may exert side effects on the eye or vision. Inadvertency of these latter side effects is their appearance on both eyes.

Lesions caused by the use of certain drugs are generally reversible in nature, but unfortunately, some of them are of unpredictable course, so that some of the disturbances may become irreversible. All parts of the eye may be the target for the side effects of drugs, but according to the frequency, they most commonly occur on lacrimal system, cornea, lens, retina and the optic nerve.

The side effects are: amblyopia, corneal deposits, dyplopia, photophobia, cataracta, myopia, nystagmus, blurred vision, color vision and/or visual disturbances, xerophthalmia and visual hallucinations.

Due to all these possible side effects of the drugs applied systemically or locally on the eye, care must be taken in timely recognition of such disturbances relating to the eye, and eventual exclusion of the possibility that they are caused by the drug used in the treatment of some quite different disease, not ocular. In any case, as far as the eye is concerned, it is always necessary to seek the advice of ophthalmologist.

PI-P-004

ANALYSIS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS USAGE BY MEANS OF A QUESTIONNAIRE

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Introduction: We prepared a questionnaire for the evaluation of risk factors in taking non-steroidal anti-inflammatory drugs (NSAIDs). The aim was to ask the patients about the efficacy and side effects of NSAIDs.

Methods: We included all patients who were prescribed NSAIDs by their physician.. There were twenty-eight questions ranging from general to the more specific ones. The research was done in the period June–December 2004 in 9 military pharmacies in Serbia and Montenegro.

Results: 160 patients filled in the questionnaire. The average patient age was 61, the majority were male; 71.2% patients suffered from some rheumatic disease. Arterial hypertension was the most common concomitant disease. The majority of patients (61.2%) used only one of NSAID; 48.9% as tablets, rarely as cream or gel (22.2%) or as injections (20%). Only 8.9% patients used suppositories. 27.1% rheumatic patients had medical treatment lasting 1-5 years, and 51.9% patients were treated for more than 5 years. 40.6% patients took drugs regularly to daily dosage regimen. 13.75% patients had no severe gastrointestinal (GI) side effects. 35.6% use additional aspirin as anti-aggregational treatment. Approximately 70% of patients use both NSAIDs and gastroprotective drugs. 7% of patients used proton pump inhibitors, and 63.1% used H2 receptor antagonists (58.1% used ranitidine).

Conclusion: Results show that every second patient used some of the drugs for preventing GI toxicity, along with using NSAIDs. The low incidence of side effects and low GI toxicity in our group of patients was probably due to the concomitant use of both NSAID and proton pump inhibitors or H2 receptor antagonists.

PI-P-005

PHARMACISTS AS PART OF THE DIABETES MANAGEMENT TEAM ? TRAINING IS REQUIRED IN ORDER TO INVOLVED THEM IN DIABETES CARE.

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We have created with local pharmacists an association promoting knowledge exchange and synchronisation of health care practices in diabetes. We propose a 6 item training course. At each session we pinpoint possible actions within the pharmacy itself. 408 pharmacists and assistants have so far been included. Knowledge evaluation is performed before and after the sessions (6 items and 31 questions on SBGM, insulins, software, diabetes complications, diabetic foot, diet, psychology and education). Initial evaluation (n=408) shows that pharmacists 1-perceive that the seriousness of the disease is linked to the therapy (type 1 diabetes more dangerous: 84%); 2-already have adequate knowledge of the disease, particularly concerning the diabetic foot; 3-don't know how to counsel SBGM in type 2 diabetes; 4- face difficulty in explaining diet; 5- are reluctant to counsel and demonstrate software or changes in insulins. For the 194 participants who have finished training, mean evaluation score was 14,7+/-2,0 after training versus 12,2 +/-1,2 beforehand on a scale of 20 (mean+/-sem) (p<;0,0001). All poorly scored items were improved and in particular disease perception. 67% of the trainees assessed considered that type 2 diabetes was more serious than type 1. Conclusion: the training course had a deep impact. It was favorably met by the pharmacists who discovered the different facets of diabetes care with their different protagonists and expressed real involvement. Their meeting with diabetes care teams improves cohesion and communication around the patient. These preliminary results are undergoing validation over the whole cohort of pharmacists who went through training.

PI-P-006

IMPROVED DIABETES MANAGEMENT IS POSSIBLE BY DEVELOPING EDUCATION AND PATIENT COACHING IN PHARMACIES.

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Our assocation promotes exchanges between protagonists involved with diabetes care and local pharmacists. Our pharmacists proposed an enquiry form 'You and your diabetes' to their patients including items on follow-up examinations and a validated questionnaire on quality of life. 286 questionnaires were studied : 56% of the study subjects performed ³ 1 blood test daily, 10% never checked. 63% have HbA1c every 3 months, 7% never. 58% have yearly appraisal of microalbuminuria, 27% never. 65% have a yearly eye examination, 8% never see an ophtalmologist. 49% have a yearly heart check-up, 19% never refer. 60% have their lipid levels checked every 6 months, 5% never. Significance of HbA1c is known by 51%, microalbuminuria by 40%, optic fundus by 62%. 12% dont know their actual blood pressure levels, 53% say their levels are <;130/80, 53% know their BP target, 64% know that diabetes is a heart risk factor. 37% never exercise while 63% know that exercise is recommended. Only 11% go to the podiatrist every 2 months, 68% never do. 63% know that feet have to be checked. 50% of patients consider having a good quality of life, whereas 10% consider theirs as bad. Evaluation was followed by detailed explanations on the need for regular screening and on diabetes complications. Conclusion: 50% of the patients declare having adequate information and follow up which stresses the interest of education enforcement within the pharmacy, the most visited health structure. Interest demonstrates by pharmacists and patients proved a real need for complementary educational steps.

PI-P-007

THE APPLIED PHARMACOINFORMATICS UNIT FIELD OF WORK IN THE MEDICINES AND MEDICAL DEVICES AGENCY OF SERBIA

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Introduction: The Applied Pharmacoinformatics Unit is a part of the National Centre for Information on Medicines and Medical Devices within the Medicines and Medical Devices Agency of Serbia which performs regulatory affairs in compliance with the Law on Medicinal Products and Medical Devices of Serbia ('Official Gazette of the Republic of Serbia ', No. 84/2004).

This abstract is a short overview of work and results accomplished since the Applied Pharmacoinformatics Unit operation commencement.

Mission: The Applied Pharmacoinformatics Unit is engaged in compiling appropriate experts publications intended for doctors and pharmacists, based on collecting and processing information from primary medicines data sources. So far, there have been published Pharmacotherapy Guide and National Medicines Index, two publications used by health professionals in everyday work for conducting rational, efficacious and evidence based pharmacotherapy. They contain key, brief and important information necessary for making decisions and giving medicines consumers advice on certain medicines application.

Gathering data on medicines consumption in Serbia and performing their statistical, epidemiological and pharmacological analyses (ATC, DDD) is also a part of its work. On this basis, there are made suitable analyses showing current pharmacotherapy condition and directing the activities towards the continuous advancement and improvement of patients treatment.

Conclusion: Development of the applied pharmacoinformatics includes a number of activities significant for pharmaceutical health care. It is also important for establishing the continual following pharmacotherapy in practice and accurate informing health care professionals on medicines traffic. Collecting and processing medicines consumption data provides the indicators for enhancement of the National policy on medicines and the prerequisites for modern treatment with efficacious medicines.

PI-P-008

THE APPLICATION OF NATIONAL HEALTH INSURANCE DATABASE IN TAIWAN: A VALUABLE PHARMACY INFORMATION DATA SOURCE

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Background: Large electronic databases constructed by regulatory organizations or research institutes could often provide abundant information on population-based drug utilization. Taiwan's National Health Insurance (NHI) databases, with the coverage rate of nearly over 99% of Taiwan's population, have the opportunity to reveal significant pharmacy-related information as compared with other automated databases in other countries.

Objectives: (1) to present the structure of National Health Insurance databases, along with the comparison with automated databases in other countries (2) to estimate the strengths and weakness of the NHI databases (3) to systematically review studies revealed pharmacy-related information using the NHI databases.

Method: Using the characteristics of existing automated databases in other countries to estimate the strengths and weakness of the NHI database. Using PubMed as a tool to search studies revealed pharmacy-related information using the NHI databases since 1997.

Results: Studies using the NHI databases usually focused on the analysis of drug utilization pattern and drug utilization volume. A variety of drugs were investigated, which included psychotropic drug, anti-ulcer drugs, hepatoprotectants, antimicrobial agents, non-steroidal anti-inflammatory drugs (NSAIDs), and sleep-related medications.

Conclusion: The construction of National Health Insurance (NHI) databases absolutely provides abundant research resources to provide population-based pharmacy utilization information in Taiwan. Yet, researchers or regulatory organizations could make even greater progress toward studies on drug safety issues using the NHI databases.

PI-P-009

WWW.APOTHEEK.NL: INFORMATION ON THE INTERNET ABOUT MEDICINES AND THE PHARMACIST TUNED IN TO THE NEEDS OF THE PATIENT

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In 2001 the Dutch Society of Pharmacists started a website for the public. Goal was to provide the public with reliable information on medicines, on the pharmacy (finding a pharmacy and working in a pharmacy), on patient rights and the feasibility to ask questions.

The information on medicines is provided in three categories: Information on medicines and diseases; Information on self medication; Monthly themes on diverse subjects in healthcare.

In this abstract we'll focus on the information on medicines and diseases. Our objective was to provide the public with supplementary information to the patient package insert to improve adherence.
The questions and answers you can find on the medicines are the following:

- the effect of the medicine and the diseases it's being used for
- side effects to pay attention to
- interaction with other medicines
- can I drive a car, drink alcohol, eat anything
- can I use it when I'm pregnant, want to become pregnant or if I breastfeed
- how to use it
- what do I do when I've forgotten a dosage
- can I stop abruptly

Basic information on diseases and what patients can do for themselves was provided for by the Dutch Society of General Practitioners. By a link the public can find more information on the site of the Society.

A survey amongst 700 visitors after their visit to the site showed that the public was very pleased with the site. They found the information they were looking for and indicated they asked advice from the pharmacist or general practitioner after previous visits to the site. The visits to the site took an average of 11 minutes.

PI-P-010

DRUG-RELATED PROBLEMS – RESULTS FROM PATIENT INTERVIEWS

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The objective of the study was to create a foundation for improving the quality of counselling practice in pharmacies. The research question was to describe drug-related problems (DRPs) in terms of frequency as well as type in people with angina pectoris, type 2 diabetes and asthma.

Data were collected by medication reviews, home interviews and registration of DRPs for 123 angina pectoris patients, 192 type 2 diabetes patients and 99 asthma patients. The interviews dealt with the patient's drug-related experiences, knowledge, perceptions, problems and actions. The DRPs were registered according to the so-called PI-Doc system.

The results showed that when a medication review was supplemented by qualitative interviews with patients, a relatively high number of DRPs was revealed compared to other studies. An average of 2.8 DRPs were identified per angina pectoris patient; 4.1 DRPs per type 2 diabetes patient and 4.0 DRPs per asthma patient. 'Inappropriate use of medicines by the patient' and 'Other problems' (such as limited knowledge of the illness, inappropriate lifestyle, fear of medication, lack of information, etc.) were the two most common DRP sub-categories identified in all three patient groups.

Conclusion: The study provided a profile of a pharmacy-based population of 414 patients visiting the pharmacy, all of whom are at high risk of experiencing drug-related problems. Pharmacy staff needs to take this high rate of DRPs in people with angina pectoris, asthma and type 2 diabetes into account when dispensing medicines to and advising patients from the three groups, especially when explaining how to use medicines appropriately.

Reference: Haugbølle LS, Sørensen EW: Drug-related problems in patients with angina pectoris, type 2 diabetes and asthma – interviewing patients at home. Accepted for publication in Pharmacy World and Science, February 2006.

PI-P-011

QUESTIONS AND ANSWERS ON-LINE DRUG INFORMATION SYSTEM ACCESSIBLE BY COMMUNITY PHARMACISTS

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Introduction:

In Brazil, there are not enough unbiased drug information systems accessible through Internet. The daily work in a Drug Information Center generates pieces of information in a question/answer format. These pieces of information, in general, are not used outside the service. However, they can be useful to help community pharmacists to improve pharmaceutical care. So, there is a need to provide these pieces of information to community pharmacists.

Objectives:

To describe steps taken in building up an on-line drug information system and its characteristics and data.

Results:

Based in a previous Access database, it was built an on-line Drug Information System accessible through internet using PHP computer language. Users can fill an on-line form and the question enters automatically in the System. The answer is writing down directly in the System and is provided to the user by the regular ways and/or can be accessibly by him/her in the System too. The questions of possible community pharmacists' interests are classified as 'pharmacy level' and can be accessible by whom who subscribe the System, which requires fee payment. Currently, the System has 2400 questions/answers, 1128 out of them can be accessible in the 'pharmacy level'.

Conclusion:

The on-line System is new and its use by community pharmacists is even newer. Follow up is required to verify System usefulness by community pharmacists.

PI-P-012

DISCRIMINANT ANALYSIS AS A TOOL FOR STUDYING PROPERTIES OF THREE GROUPS OF DRUGS WITH ANTIMICROBIAL, PARASITE CHEMOTHERAPY AND ANTITUMORAL ACTIVITIES HAVING A COMMON CORE OF DIHYDROCARBAZOLE.

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Purpose: To obtain a mathematical predictive analysis applied to a selective group of drugs which show a common scaffold. These compounds interact with different targets. A quick calculation of chemical properties of this chemicals may suggest some structural features of their receptors.

Methods: Thirty drugs divided in three groups with antibacterial, antiparasite and antitumoral pharmacological activities were selected. Physicochemical, electronic and thermodynamic properties were measured with the algorithms of molecular mechanics and quantum mechanics. The calculated properties were analysed by discriminant analysis.

Results: The number of variables in the model were 8. The programm select 5. The Wilks' Lambda equal to .0004850, F (10, 46) equal to 204.2666 p<; 0.00001.

Dipolo was the most significant discriminant property, the others less significative.

Conclusions: This research will be focused to calculate 3D molecular descriptors of drugs mentioned above with the purpose to get a deeper knowledge about their receptors.

PI-P-013

SURVEY THE TRADE AND DEMAND OF TRADITIONAL CHINESE MEDICINE IN TAOYUAN COUNTY

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In Taiwan, people are popularly to use traditional Chinese medicinal (TCM) materials. Taoyuan County Government has decided to promote the economic growth in TCM by the research and retail trade in this area. Therefore, in order to understand the situation of retailers sell about TCM. The methods: The resource responses came from Taoyuan County approximately 1,850,000 people living in. This study was investigation 602 retailers, selling the amount of herbal medicine per month. The questionnaire lists 613 TCM items, offer to the traders fill out the questions. Finally, 542 valid responses were analyzed. The response rate was 90%. The results: we were received the top ten of the sales for purchase in Taoyuan County. According to the drug different effect, as follows: supplement the blood, supplement qi, warm the center, securing and astriction, clearing heat, drainage the fire, clearing heat, cooling the blood, dispersing food and abducting stagnation, supplement yin, quickening the blood and transforming stasis, coursing wind and discharging heat. The top ten TCM items are Jujube, Ripe fruit of Barbary wolfberry, Root of Membranous Milkvetch, Coix Seed, Root of Chinese Angelica, lotus seed, Rhizome of Common yam, Rehmannia Rhizome , Seed of Gordon Euryale , Poria. In sum, this study gives a better understanding of the profile of TCM users in Taoyuan County, it clearly points out that for health conditions and health seeking behaviors are based on the action of TCM.

PI-P-014

MEDICATION INFORMATION ON PATIENT PACKAGE INSERT IN PHITSANULOK, THAILAND : CONSUMERS'NEED AND PERCEPTION

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Aim
To evaluate medication information achieving in patient package inserts (PPIs) in Phitsanulok, Thailand
Methods
Consumers who walked in a university community pharmacy were asked to consent in the study. Semi-structured questionnaire was designed to interview consumer on format and material uses for PPIs. Four alternative designs of PPIs were presented to consumer as examples. Consumers' Illness condition, present medication uses, medication administration and frequent health care institutes for visit were also asked. Statistical analysis was performed by chi-squared test.
Results
294 consumers were participated the study, 66.7% were female and average age was 37.93 years old. 36% of the consumers had underlying diseases and 48% regularly used medication for their symptoms. 65% used to receive written materials for medical information. 78% of consumers were responsible for taking their own medicines and following construction on medication label. 80% of written materials were collected from package inserts and 92.7% of written materials receivers had read the information. 48.9% of the readers understood the information on PPIs while only 4.7% did not. Most of PPIs readers showed they gained medication knowledge as indication and adverse events. Most participants favored a briefly information on a half of A4 print size. A larger font print, at least 14 points, was needed. Colorful and pictogram PPI were attracted but were not the most needed. For statistic analysis, only occupation were statistical significant difference in PPIs required stating ($p<0.005$), students and government officers and less ages seemed to need more.
Conclusions
Providing consumers with written medication information may probably be an effective intervention strategy to improve medication knowledge and promote appropriate self-care. Further studies are needed to assess outcomes and investigate the impact of written medication communication, as patient package inserts.

PI-P-015

SAFETY OF DRUG THERAPY IN LATEX-ALLERGIC PATIENTS

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Introduction: Natural rubber or latex contains antigens that may cause hypersensitivity reactions, with clinical manifestations ranging from hives to anaphylaxis. The amount of allergen able to trigger reactions also varies and some individuals may develop these reactions even when exposed to an extremely low amount of allergen. Identifying sensitive patients and minimizing their exposure are alternatives to reduce allergic reaction events. However, in Brazil, there are limited hospital devices with a latex-free alternative. Another aggravating circumstance is the lack of information in devices and drugs as to whether the product contains latex.

Objectives: To collect information on the composition of the rubber stopper of injectable drugs available at the Hospital and prepare an instrument to enable finding information fast.

Material and Method: Information on the composition of the rubber stopper of injectable drugs available at the Hospital were obtained contacting manufacturers of drugs and manufacturers of pharmaceutical rubber stoppers, since there was no information available on the package of drugs involved.

Results: Information on 174 injectable drugs were collected to form a table with drug description, manufacturer's name and composition of the rubber used in stopper.

Conclusion: Collected information provided an addition to the guidelines for the management of latex-allergic patients and contributed to enable medical and non-medical professionals working at this Institution to evaluate alternatives to minimize exposure to an allergenic agent and guarantee a reduction in the risk of drug therapy in patients with known allergy to latex.

PI-P-016

PATIENT EDUCATION – DESCRIPTION OF A MULTIDISCIPLINARY INTERVENTION IN PATIENTS WITH RHEUMATOID ARTHRITIS. THE ROLE OF THE PHARMACIST.

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Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease that predominantly affects the synovial tissue of joints. It represents a major disease burden worldwide and affects 0.5-1.0 % of the population. In RA, the individual patient has a key role in implementing and manipulating the management of care (ie alteration of analgesia intake, exercise and pacing strategies) in response to coping with the physical consequences of the disease. Patient education programmes have proved to be effective in helping patients cope with their disease.
In the department of Rheumatology at Karolinska University Hospital, patient education of patients with RA is performed by a team of health care professionals (physician, pharmacist, nurse, etc). The education program formerly consisted of two consecutive weeks of education on the clinic. During these two weeks the patients stayed on the clinic during the day and participated in several different forms of lectures and physical activities. At the moment we're trying a new approach where the newly diagnosed patients are invited to attend an after-noon seminar on the pharmacological treatment of RA. This enables patients with part- or full-time work to get the information they need early on in the disease progress.

Questions and the exchange of experiences between patients are encouraged. Most questions to the pharmacist concern the use of anti-rheumatic drugs either alone or together with alternative medication such as herbal remedies etc. The task of answering these questions are sometimes challenging due to lack of proper documentation. However, every piece of information is important and of mutual gain since the patients and the health care professionals receive the same information and this in turn improves both patient safety and communication.

We evaluate on a regular basis and time will tell if and when we need to make further adjustments to meet the patient's demands and needs.

PI-P-017

DRUGS FOR CHILDREN OFTEN HAVE LIMITED DOCUMENTATION – 'ATL BARN' (PHARMACY PREPARED PREPARATIONS FOR CHILDREN) A WAY OF COMPILING INFORMATION ON EXTEMPORANEOUS PEDIATRIC PREPARATIONS USED IN SWEDEN

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There is little published evidence for many extemporaneous medicines; this is particularly the case for medicines for children. In pediatrics there is a great need to use extemporaneous products since few licensed products are suitable for pediatric patients. Apoteket Production & Laboratories at Apoteket AB has started a project to alleviate this situation by compiling available information in information sheets i.e. ATL-sheets. These information sheets have previously been published in a book, ATL Children. In 2004 an updated and enlarged edition of the book was published.
The new and updated information sheets were produced by a group consisting of pediatric pharmacists from University hospitals in Sweden and experts from Apoteket Production & Laboratories. The information sheets from the first edition were evaluated according to content and whether or not they were still valid. New information sheets were then developed based on statistics of frequently ordered extemporaneous preparations. International pediatric monographs, literature search on PubMed and other available data bases, such as Micromedex were used to gather information. All information was then put together in collaboration with clinical pediatric experts and compared to therapy recommendations.
ATL Children covers 86 commonly used preparations. The book also has two new general chapters dealing with preservation of preparations to premature babies and differences in reformulation of preparations designed for adult use to child-adapted preparations.

The information sheets are intended for use by both pharmacy and medical staff. The sheets both inform that there are extemporaneously prepared products available as a therapeutic alternative to avoid nurses splitting suppositories or crush tablets, and as guidelines on how to use the products. The books are handed out for free to medical staff, and so far 2600 copies have been distributed to pharmacies and prescribers.

PI-P-018

PROFILE OF ELDERLY IN INSTITUTO JUVINO BARRETO (IJB) AND IMPORTANCE OF PHARMACEUTICAL ASSISTANCE TO PROMOTE HEALTH AND SOCIAL WELFARE

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The presence of pharmacist in asylums is important because of the greater necessity to aid aged patients since they present more risks to develop adverse effects and drug interactions. In this context, students of the UFRN Pharmacy course had carried out a project whose purposes were giving pharmaceutical orientation and defining the profile of elderly who live in IJB-Natal/RN as well as to characterizing the structure and professional team of the asylum. The research included 91 persons of both genders, being more than 60 years old, between June and December 2005. Questions concerning the social, cultural, economical and health conditions were applied and prescriptions were analysed. About 55% of the interviewed were female, 95% had declared to be catholics and 40% illiterates. When questioned about their skin colour, the great majority had considered themselves as belonging to the white race (56%) and the others to black (21%) and brown races (11%) or a miscegenation result (12%). Analysing diseases which were related by them, it was evidenced the predominance of cardiovascular diseases, especially the hypertension. Diabetes, mental disorders and skin diseases were also frequently found on the studied group. Some of the actions developed by the students were bingos, music and dance festivals, besides educative plays. The students had still acted on the dispensary of the institution, preparing individual doses and discarding overdue medicines. The importance of this work consisted on the pharmaceutical assistance offered and evaluation of life conditions in asylum which contributed for humanization of the students.

PI-P-019

PHARMACEUTICAL CARE AND CASE REPORT: DEFINING THE NECESSITY AND PROPOSING A STANDARD STRUCTURE

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AIM: Propose a standard structure to present and publish case reports generated within the Pharmaceutical Care practice. METHODS: The elaboration of the structural proposal was based on a non-systematic literature review using the term 'How to Write a Case Report' at the internet. The literature was reviewed to establish the items used in the structure of a case report. The items presented in all revised literature were defined as obligatory, while diverging ones were assigned as recommendable/optional. In addition, a systematic search of case reports indexed at MEDLINE was carried out. RESULTS: The literature points no consensus on items to compose case report's structure. Besides, among 1.234.703 case reports indexed at MEDLINE, only 14 (0,001%) had the term 'Pharmaceutical Care', but these showed neither standardized structure nor content between them. This article proposes the following obligatory items for case reports within Pharmaceutical Care: 1) Title & Authors; 2) Introduction; 3) Case Description; 4) Results & Discussion; 5) Conclusion; 6) Bibliography. Special attention must be given to the item 'Results & Discussion', since it should contain an evaluation of the patient; definition and classification of the Drug Therapy Problems (DTP); and description of the Care Plan used to solve and prevent the DTP, focusing on the interventions accomplished and the therapeutic outcomes achieved. CONCLUSION: Health professionals contribute to disseminate information about unusual events through case reports design. Since redirection of the pharmacist towards a clinical practice, it is imperative to contribute to the academic and scientific community in this field. Therefore, this professional should use a standard format to present/publish case reports with the objective of effectively sharing clinical experience in a complete and uniform aspect.

PI-P-020

ELECTRONIC QUESTIONNAIRES AT THE PHARMACY COUNTER - A METHOD TO CAPTURE THE PATIENT'S VIEW ON HIS/HER MEDICATION

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Apoteket AB Sweden

Background:

To meet the increasing demands on methods to follow up drug prescription and utilization, Apoteket has developed a tool for electronic questionnaires, used at the pharmacy counter. Apoteket is the sole retailer of all pharmaceutical products in Sweden with more than 900 outlets covering the whole country.

Description of method:

This method is intended for studies on prescription drugs, and is offered to companies, authorities and organisations interested in following up prescription and/or use of a certain drug or a whole class of drugs. The studies are currently carried out at 55 community pharmacies.

Entry of a prescription on a drug, which is subject to a study, triggers a check on whether or not the patient meets the qualifying criteria. If so, an electronic questionnaire is presented automatically, and the patient is offered to participate. The questionnaire is completed on the screen and saved automatically.

Questions can be covering e g experiences on the use of a drug, indication for use, compliance issues, concomitant medication and adherence to prescribing guidelines.

Experiences so far:

This method is suitable for shorter studies and facilitates a rapid collection of data from a unique perspective - the patient's own view on his/her medication. The shift of roles at the pharmacy counter - the staff member asks the questions and the patient gives the answers - adds valuable information to data already available from other sources.

PI-P-021

MEDICATION NEGATIVE OUTCOMES: CONTRIBUTION OF A DIC

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Aims: to characterize the contribution of a DIC (Cedime) in solving drug related problems (DRPs) in the received community pharmacists' questions, based on the identified medication negative outcomes (MNOs) and based on the Cedime recommendations for improving medication outcomes.

Material and methods:

Study design: descriptive cross-sectional study, run during 1 month. A pre-test and a pilot study were done previously. The analysed questions are all of those related with MNO, real or at risk. The MNO are classified as their cause: patient's needs, effectiveness, safety or without known cause. The involved medicines are classified according to the ATC. The MNOs identified, are classified using ICPC2.

The type of Cedime recommendations to contribute for solving DRPs is charactized as drug information or pharmacists' education. Cedime recommendations for pharmacist's intervention to overcome MNOs are classified in several topics.

Data analysis: data register is done in a form and a data base created for the study and data analysis is done by descriptive statistics.

Results: will be available for the congress.

Discussion: Cedime receives more than 40 questions per day from community pharmacists, being most of them MNOs related. The provided recommendations made by Cedime to the community pharmacists to solve DRPs are characterized in this study, using pharmaceutical care concepts.

PI-P-022

WHAT INFORMATION IS NECESSARY FOR A PHARMACIST?

Y Nanaumi
Seven Pharmacy Japan

The patient is something with 'the information that we want to know'.
'An offer of drug information' to the patient by a pharmacist advanced and became ordinary now.
It increased that the patient utilized 'Medicine notebook'.
Duties of offer of 'Extra information for long-term taking' by a pharmacist began as pharmaceutical service covered by the public medical insurance, too.
However, will not we do providing to the patient for self-satisfaction?
It is important that we grasp 'what the information that the patient really needs is' for us now.
Therefore we carried out a questionnaire to the patient.
[Questionnaire contents]
Do you have a 'Medicine notebook'?
Is 'information of medicine' to get at a community pharmacy useful?
Which information is useful?
Now what is information with interest you except information handing by letter?
What is it that you want to talk in a thing about medicine at a community pharmacy?
What is it that you want to talk in a thing except medicine at a community pharmacy?
[Result & conclusion]
The patient wants to know a side effect and interaction with other medicine not to mention action of medicine.
In addition, the patient wants information about relation of food and drink, a healthcare products and medicine.
The patient wants to obtain information about the contents which said medical materials and home health care and welfare system from a community pharmacy pharmacist even if accompanied besides medicine.
A category of an intelligence network needed by a community pharmacist is large, but we include everything of this information as knowledge, and a community pharmacy is a duty as area assets offering it to the patient.

PI-P-023

TRACKING OF ANTI-HYPERTENSIVE DRUGS ACQUISITION IN A METAL WORKS NEAR CAMPINAS THROUGH DATA OBTAINED FROM A PBM SYSTEM.

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Hypertension is a disease characterized by a rise in blood pressure and constitutes an elevated risk for cardiovascular diseases. The Pharmacy Benefits Management (PBM) manages benefits of access to drugs by reducing costs and motivating its rational use. The objective of this study is to verify if the DBP system can be used as a tool to supply information on the consumption of anti-hypertensive drugs, their use profile and indirect monitoring of adhesion. During three months (April, May and June 2005) the drug consumption of a group formed by approximately 2500 employees of a metal works near Campinas was analyzed. This company subsidizes 70% of the cost of drugs to its employees. Of this total, 165 workers (6.6%) used anti-hypertensive drugs where 126 (76.36%) were males and 39 (23.64%) were females, totaling 675 drug cases prescribed. Of these, 126 (18.67%) were not in accordance with the IV Brazilian Consensus on Hypertension. Of the 549 (81.33%) remaining, it was noted that: 136 (24.77%) corresponded to adrenergic inhibitors; 117 (21.31%) to angiotensin conversion enzyme inhibitors (ACE); 69 (12.56%) to diuretics; 51 (9.29%) to angiotensin II receptor antagonists; 02 (0.36%) to direct vasodilators; 45 (8.20%) to calcium ionic channel blockers and 129 (23.49%) were association between classes. The incidence of hypertension in the studied population is below that of the general Brazilian population (from 15 to 20%) probably due to the low mean age of the workers, that is, 30 years.

PI-P-024

LIPID REGULATING MEDICINES CONSUMPTION ASSESSMENT IN REPUBLIC OF SERBIA DURING THE PERIOD 2003-2005 YEAR

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Lowering the concentration of low density lipoprotein (LDL) cholesterol and raising high density lipoprotein (HDL) cholesterol reduces the progression of coronary atherosclerosis and may induce regresion , it stands to reason on significance of lipid regulating medicines.

The aim of our study was the following consumption of lipid regulating medicines in Serbia during the three years (2003-2005) observation time.

Lipid regulating medicines registered for marketing in Serbia presented. The main groups used were HMG-CoA reductase inhibitors (statins) and fibrates.

The number of Defined Daily Doses (DDDs) per 1000 inhabitans per day, according to the ATC/DDD methodology has been compared , separately for each medicines and group.

Among mentioned statins consumption of simvastatin was the most prominent statin, followed by atorvastatin and fluvastatin. Among mentioned fibrates consumption of gemfibrozil was the most prominent fibrat, followed by ciprofibrat. The price per DDD analised too. Cheapest statin according to Defined Daily Dose was simvastatin , most expensive was fluvastatin. Cheapest fibrate was gemfibrozil.

During the observation time, consumption of statins significantly increased relating to total consumption of the lipid regulating medicines from 23% in 2003. , 55% in 2004. to 82% in 2005. year

Having in mind that HMG-CoA reductase inhibitors have been shown to reduce mortality and cardiovascular morbidity in patients with hyperlipidaemia and patients with coronary artery disease, it is understandable that consumption of statins rapidly increased during the observation time period.

PI-P-025

ASSESSMENT OF ANTIPLATELED MEDICINES CONSUMPTION IN SERBIA DURING THE PERIOD 2003-2005 YEARS

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Antiplatelet therapy is a necessary life-long treatment for all patients at risk of atherothrombosis. Atherothrombosis is an extensive, progressive, unpredictable and deadly disease affecting the coronary, cerebral and peripheral circulation

The aim of our study was the following consumption of Antiplatelet medicines in Serbia during the three years (2003-2005) observation time.

Antiplatelet medicines registered for marketing in Serbia presented. The main groups used were Thromboxane A2 inhibitor , Phosphodiesterase inhibitor , Glycoprotein (GP) IIb/IIIa blockers and ADP-receptor antagonists.

The number of Defined Daily Doses (DDDs) per 1000 inhabitans per day, according to the ATC/DDD methodology has been compared , separately for each medicines and group.

Among mentioned antiplatelet medicines consumption of Acetylsalicylic acid (ASA) was the most prominent, followed by ticlopidine and dipyridamole. The price per DDD analised too.

The vast majority of the consumption of platelet function inhibitors consists of acetylsalicylic acid. Acetylsalicylic acid is first line agent in the treatment of blood clots and is used by approx. 90 per cent of the people are treated with platelet function inhibitors. Treatment with acetylsalicylic acid is far less expensive than treatment with other medicinal products from the same group. At the same time, the market share of acetylsalicylic acid has decreased compared to the more expensive platelet function inhibiting medicinal products containing dipyridamole and clopidogrel, and one of the reasons for this is the combination treatment with clopidogrel or dipyridamole and acetylsalicylic acid.

There has been an especially large increase in the consumption of clopidogrel far more expensive than the other medicinal products from this group.

PI-P-026

THE EFFICIENCY OF MEDICAL DEVICE BARCODE INDUCING WAREHOSING MANAGEMENT SYSTEM IN HOSPITAL

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PURPOSE:The goal of inventory process for medical device barcode system reaches rapid, efficiency and cost down for the hospital and distribution centers.

METHODS:The resource planning of barcode management system of inventories is established in Tri-service General Hospital (TSGH) from Nov., 2004. Our team members for the systems are designed multi-modular for the projects, including planning, investigation, discussing and evaluation. The sequencing of commercial off-the-self package is going to implementation project, system configuration, and application modules for barcode PDA reader linkage SQL server of central database.

RESULTS:the barcode reader had been identified over one thousand and two hundred different label data in our hospital. The results of barcode inventory system are that working process accurately and rapid was positive trend, paper-use reduced and toward positive attitude of clinical colleague for patient safety. Only one thing must be completed in native manufactories.

CONCLUSIONS:In summary, the medical device barcode system had been developed in TSGH, we still have developed space in the future, such as: medications, material paper, clothes, medically equipment and instrument. We hope barcode system to improve clinical environment for patient safety and inventory processing in my hospital.

PI-P-027

PHYSICAL CHARACTERIZATION OF CALCIUM CARBONATE UTILIZED IN PHARMACEUTICAL INDUSTRY

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Diluents are excipients that provide form, stability and volume to dosage forms. A good draining of these powders into the compression machine or the capsule shells, provide a homogeneous distribution of the material, which supply unitary dosage forms with a very small deviations from the average weight. The aim of this work was to evaluate, through physical characterization, the quality of diluent Calcium Carbonate (CC), substance also used therapeutically as adjuvant on calcium reposition. The rheological tests were done according to the 4th edition of European Pharmacopoeia: Repose angle (RA), Flow Rate, Bulk Density (DB) and Tapped Density (TD), from which were obtained the following parameters: Hausner Factor, Carr Index, Porosity and Vacuum. Granulometry was determined measuring the Ferret's diameter of 500 particles of the sample, with the aid of a binocular optical microscope, provided of a graduated nonio, using an objective 10X (Magnitude 100X). Five distinct batches were analyzed and submitted to analysis of variance (ANOVA). These batches showed significant difference (P=0,05) to RA, BD and TD. The results can indicate some interference on the flowability and compaction of these powders since CC is used on considerable quantity in pharmaceuticals formulations so as excipient as drug. The average m. Studies to determinate ifmdiameter of particles varied between 6,08 and 8,30 RA, BD and TD really influence on these excipient function will be carried out in future formulations.

PI-P-028

EXTREME EXPOSITION TO ULTRA-VIOLET RADIATION: CARE TOWARD CHILDREN AND TEENAGERS.

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This paper approaches the consequences of extreme exposition to UV-radiation due to cumulative erithematogenic effects. It intends therefore to inform about the main short- and long-range harmful effects of HV-overexposure, as well as to disseminate and spread around the means and measures of prevention against same. After applying a bibliographical research methodology on international journals, it was rendered possible to gauge from precious cumulative dosage measurements that an appraised 80% of all ultra-violet radiation accumulates within the organism during the first 20 years of age.

This elapses as a consequence of children's and teenagers' longer exposure times to the natural environment which leads to their being subjected to risk behavioural patterns, due to the current practice of exposure to solar rays for tanning, that has become during the recent decades a synonym for health and beauty. Besides, the different skin phototypes were assessed with their pertinent recommended solar protective indices. As a result of aforementioned bibliographical research whatever information necessary for the promoting of childhood and youth health were selected and are to be broadcast in the format of information tutorials, all of which are supposed to be explained and put into practice by pharmaceutical professionals whenever those enter into contact with subjects belonging into such age brackets, for it is during childhood that life habits are stablished.

PI-P-029

A STUDY ON MEDICAL PRESCRIPTION IN MONTES CLAROS/MG - BRAZIL

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INTRODUCTION: Medication errors are divided into prescription, dispensation, and administration. They constitute a public health problem in several countries and are present both in public and private services. Problems such as illegibility are the most frequent ones, and this causes medicaments exchange and alteration of dosage and posology, and endangers patient's health. OBJECTIVE: assessing the quality of prescription in the town of Montes Claros/Brazil, showing the most frequent errors. METHODOLOGY: along January 2006, one thousand prescriptions of under control medicaments were selected and assessed. There was no criterion for exclusion. Such prescriptions were divided into 2 groups (presence or absence of errors), according to the official guidelines of the Agência Nacional de Vigilância Sanitária (the Brazilian agency for health), Decree 344/98. Most frequent errors in the prescriptions were identified. RESULTS AND DISCUSSION: Among assessed prescriptions, 100% have presented error, and the most frequent ones were: illegibility (49%), inadequate notation (47%), absence of dosage (34%), and pharmaceutical form (17%). Errors such as prescribed amount, posology, patient's identification, and those involving notation have also been identified. Although errors in prescription have been assessed, studies on dispensation and administration are still to be carried out, for this responsibility is due to all professionals involved in the system. Assessing such errors means searching effective alternatives for a rational use of medicaments, what contributes to prevent damages to patients. CONCLUSION: Prescription quality in Montes Claros is precarious and represents a high risk to patient's health, what may directly jeopardize his body functioning.

PI-P-030

COMPARATIVE STUDY BETWEEN IRON QUELATO AND FERROUS SULPHATE IN THE TREATMENT OF ANEMIA FERROPRIVA

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The present study Quelato Iron understands a comparison between anti-anemic medicines and Ferrous Sulphate in the treatment of the ferropriva anemia. Ahead of the conceptual analysis the well-known importance of the iron for the organism due its participation in the innumerable necessary metabolic processes to our survival can be perceived. The ferropriva anemia consists of the reduction of the reserves of iron in the organism and if it constitutes in the problem of very common public health, mainly occurring in children and pregnant women being associated the partner-economic factors that restrict the population most devoid of an adequate diet. Through the bibliographical research it was possible to detect excellent differences in the therapeutical performance of the Quelato Iron in relation to Ferrous Sulphate. However, this study it comes to trace a quarrel enters these differences of these medicines and to clarify to the population and the professionals of the area of the health of the existence of a medicine of great effectiveness, tolerated, easiness of use that propitiates adhesion to the treatment more good so that then, had its advantages, the iron quelato if becomes the medicine of first choice for the treatment of the ferropriva anemia.

PI-O-001

THERAPEUTIC GUIDELINES: INTERNATIONAL COOPERATION IN THE DEVELOPMENT AND PROVISION OF STANDARD TREATMENT GUIDELINES

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Health practitioners everywhere need independent, up-to-date and unbiased therapeutic advice to ensure patients receive maximum benefit from available medicines. Unfortunately practitioners in most countries do not have access to reliable treatment guidelines; most often the only accessible information is product-specific and generated by the pharmaceutical industry. The production of reliable and usable treatment guidelines is not a simple matter and just getting started can be difficult, even for large countries with ample resources.

Therapeutic Guidelines Limited (TGL) is an Australian-based independent not-for-profit organisation. It produces Therapeutic Guidelines that provide clear and concise, independent and evidence-based recommendations for patient management that have been developed by Australia's leading experts. Therapeutic Guidelines are respected, recognised, used and sought after nationally and internationally.

TGL has collaborated with groups in many countries to develop feasible arrangements for the distribution of Therapeutic Guidelines. Some arrangements involve a licence for Therapeutic Guidelines to be adapted for local use, translated and published (eg Japan, China, Russia) with a modest royalty payment returning to TGL. Arrangements of this sort are mutually beneficial and therefore sustainable.

Some countries, especially those that do not have the infrastructure or resources to undertake translations and adaptations, have been pleased to have access to the content as it stands. In such cases, arrangements have been put in place to allow access to the electronic versions of the Australian texts at special rates (eg Burma, Croatia, Solomon Islands, Sri Lanka) thereby avoiding the prohibitive costs of distributing printed guidelines.

The aim for TGL in these collaborations is promote the quality use of medicines. We would be pleased to discuss possible opportunities for further collaboration.

PI-O-002

PATIENT INFORMATION LEAFLETS FOR METERED DOSE INHALERS: AN EXAMPLE OF INFORMATION DISCRIMINATION?

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The metered dose inhaler (MDI) is widely prescribed but not easy to use well. Every inhaler pack dispensed in the United Kingdom contains a printed patient information leaflet (PIL), written in English. The inability to read and understand this information could contribute to poor inhaler technique.

Aims: a) To compare MDI technique in users with poor and fluent English b) to evaluate two interventions: a translated leaflet plus advocate support (PIL+ verbal) and a touch-screen computer program (MTS) using video clips and own-language instruction.

Methods: a) Inhaler technique was videotaped and key steps rated blind for 105 fluent English-speakers (FE) and 69 Turkish-speakers with poor English (EP). b) The EP group was randomised to receive information by MTS (n=34) or PIL+ verbal (n=35). Inhaler technique was videotaped before and after information.

Results: Only 17% of the poor English group had adequate technique compared to over half (62%) of fluent English speakers. The EP group were significantly less likely than the FE group to report ever seeing the practice nurse about their asthma. After information, global technique was rated as improved in 50% of the MTS group compared to 28% of those given a translated PIL. A further 6 people (17%) in the PIL group improved after subsequent verbal advice in their own language. Both information methods significantly increased inhaler shaking and mouthpiece checking, but co-ordination only improved in a small number of people.

Conclusions: The study suggests that MDI users with poor English could be disadvantaged in terms of access to medicines information. The acceptability of pharmacy-based support services for this, and other specific language groups should be explored. Multimedia could be useful for brief explanations, particularly for first-time users, but improving poor co-ordination requires individualised 'hands on' teaching from health professionals.

PI-O-003

WHAT CHILDREN WITH TUBERCULOSIS BELIEVE ABOUT THEIR TREATMENT

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Aims: Determine the beliefs and behaviors of pre-teen patients relative to their tuberculosis treatment.

Methods: A questionnaire, developed by the research group and pre-tested in a Moldova TB hospital, was administered in August, 2005. Respondents included 165 patients (9-12 years) in two TB hospitals, one in Moldova (56 patients) and the other in Kyrgyz Republic (109 patients).

Results: The pre-teen patients with TB reported they believe that TB drugs lower fever (30%), stop cough (46%), stop headache (8%), improve appetite (4%), kill the cause of TB (74%), cure TB (56%), prevent TB (16%), and also treat other illnesses (2%). They also indicated they believe that TB medicine always helps people with TB (75%); helps most people with TB (14%); helps some people with TB (6%) ; never helps people with TB (2%), and don't know 3%.

The pre-teens also indicated they believe that: if they take TB drugs, they will: get well quicker (63%), feel better (14%), and not infect other people (18%); when they feel better they should stop taking TB medicines (88%), not stop (8%), or don't know if they should stop (4%).

Four percent of respondents felt bad due to taking TB medicine, 83% never felt bad, and 13% sometimes felt bad. Of those who felt bad, 50% told a doctor; 18% told a nurse, 10% told a mother, father, or other relative, 1% stopped taking the medicine, and 21% did not tell anybody but continued taking it.

Three-fourths of respondents indicated they would like to know more about TB treatment.

There were no significant differences in responses between the two TB hospitals.

Conclusions: Results indicated the need to better inform pre-teen patients with TB about their medicines and suggested what information was most needed. Plans are underway to develop an educational program for hospitalized children with TB.

PI-O-004

ASSESSMENT OF LITERACY OF SCHOOL-LEAVING CHILDREN ON DIABETES

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The literacy about disease & medications affects the pattern of drug use in communities. Most of the thinking freezes in the growing stages and affects the behavior at later stages of life. The expected number of diabetics in India will be 57.2 million in 2025. Thus India has become the 'Diabetic capital of the world'.

This study has assessed the literacy of school-leaving children (grade XII) on diabetes and medications used to treat it. A total of 1148 students filled in a questionnaire that had 23 closed-end questions on diabetes.

Upto 80% of the respondents knew that diabetes is not a short-term problem. Interestingly, only half of the children knew that diabetes is controllable. However, less than half of the children believed that it is curable. Over 93% of the children knew well about relationship of diabetes with blood sugar level. 56% of the children knew that diabetes could be of different types. Over 80% of the children knew that diabetes does affect other body parts as well. An almost equal number were aware of 'special food' for diabetes.

Only half of the children were aware of the importance of eye care in diabetics & only one-third of the children had correct knowledge of the symptoms. Upto 85% believed life style changes help the diabetics. 64% children knew that different types of insulin preparations are available for the diabetics. Nearly all converged that correct knowledge of disease/drugs will help and expressed willingness to learn more.

On the basis of these results, a customized education module is under preparation and shall be used for the dissemination of information.

PI-O-005

INFORMATION NEEDS OF PLWHA ACCESSING ANTIRETROVIRAL THERAPY (ART) IN GHANA

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Aim: Patient information/education is essential for medication adherence, especially so for antiretroviral therapy in order to prevent therapeutic failure and the development of resistance. The aim of this study was to investigate the information needs of People Living with HIV/AIDS (PLWHA) accessing antiretroviral therapy (ART) in Ghana.

Method: 24 ART healthcare providers in 4 public ART centers in Ghana participated in a face-to-face interview using an investigator-administered open-ended questionnaire which required them to describe the type of information they provided their patients accessing ART. Interviews were conducted in July-August 2005.

Results: 33.3% of the participants were doctors, 20.8% were pharmacists (included 1 pharmacy technician), 25% were nurses (included 1nurse assistant), 16.7% were laboratory technologist/technicians and 4.2% was a psychologist. 45.8% of participants were female, 79.2% had provided ART services for 1-2 years and 20.8% for more than 2 years. Most of the providers were trained ART adherence counselors.

Information provided to PLWHA during ART adherence counseling included explanation of and expectations from ART, essence of adherence and consequences of non adherence to ARVs, side effects and storage of ARVs, ARV intake in relation to food. The 6-point Living Positively With HIV chart in the counselor's room sums up the information needs of PLWHA on ART: (1) Adherence to ART (2) Personal and environmental hygiene (3) Daily exercise (4) Safe sex practices (5) Diet and nutrition (6) Joining a support group.

Conclusion: Providers' experiences indicate the need for ongoing patient information/counseling by way of reinforcement especially when patients are getting better on ART and therefore may be less motivated to adhere to their therapy. The introduction of the adherence monitor concept helps to encourage patient adherence.

PI-O-006

DIAGNOSING INFECTIONS OR NOT, - ICELANDIC GPS' DIAGNOSTIC BEHAVIOUR

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Background: General practitioners (GPs) have frequently been found to prescribe antibiotics liberally without sufficient diagnostic basis and be relatively insusceptible to interventions aiming at improving practice. The aim of this study was to explore the nature of GPs' diagnostic routines and their perspective to provide a foundation for a better understanding of the GPs' practice.

Methods: In 1995, as a part of a larger project, 10 Icelandic GPs were interviewed (¾-2 hours) and 3 observed in the consultation (face-to-face and phone, 3-10 hours). The observations were described in detail and the interviews transcribed verbatim. Diagnostic issues were extracted and analysed. In 2006 the 8 informants who are still alive commented on the analysis and provided an update.

Results: There were wide variations in the diagnostic procedures that the GPs used. Some had developed rules-of-thumb, in general, for specific diagnostic labels and/or for specific patients. They often balanced risks against other issues of assumed importance, like money, time, need for the workforce, clients' need for job and/or earnings and adverse effects on the doctor-patient relationship. Perceptions of risk also varied from being focused on the possible development of resistance to being focused on the possible consequences of an untreated infection. Some informants mentioned both these issues and discussed the balancing act or art, whereas others focused on one side. Examples also existed of not being worried one way or another.

Conclusion: The GPs' diagnostic procedures were dominated by a high degree of variability and individuality. If changes in GPs' diagnostic routines are considered necessary, it is not sufficient to bombard them with 'scientific facts' and technological aids. A prerequisite for changing practice is the GPs' acceptance that the information is correct, the technology is reliable, and that both are practical, applicable and relevant for the individual physician.

PI-O-007

G-STANDAARD: MEDICATION SURVEILLANCE BEFORE DRUG DELIVERY

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The G-Standaard is a Dutch database containing information on drugs and other products delivered by the pharmacy. The data support the following processes in healthcare: prescription of drugs by physicians, placing orders for drugs, financial process, monitoring medication and delivery of the right drug.

Data for medication surveillance are provided for bij the KNMP, the organisation of pharmacists. The data are being made available for the local pharmacist, the hospital pharmacist and the physician by softwarehouses. Before delivery of the drug to the patient a number of checks is being processed by the pharmacy information system: a check on the dosage, on counter-indications (diseases, non active substances like gluten and aspartaam, pregnancy and lactation), interacting drugs, allergies and a check on drugs with the same active substance of with a comparable pharmacologic profile. A warning appears on the screen with relevant background information and an advice on how to deal with it.

Basic principle for the generating of a signal is that it has to be clinically significant. This is being decided by expertpanels. The literature used and the results of the discussions are made available to the user.

For interactions an evidence-based procedure for structured assessment of drug-drug interactions has been developed and published in Drug Safety 2005:28(12): 1131-9.

New modules are being developed for the advice on adjustment of dosage in case of impaired renal function and in case of pharmacokinetic or pharmacodynamic polymorfism.

PI-O-008

E-THERAPEUTICS – ELECTRONIC DECISION SUPPORT TOOLS THAT PROVIDE UNBIASED, EVIDENCE-BASED DRUG AND THERAPEUTIC INFORMATION FOR CANADIAN HEALTHCARE PRACTITIONERS TO SUPPORT IMPROVED MEDICATION MANAGEMENT

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Aims: In 2005 the Health Council of Canada identified the need to develop unbiased, evidence-based drug information for physicians, pharmacists and patients. Developed and managed by the Canadian Pharmacists Association (CPhA), e-Therapeutics is a decision support tool that delivers Canadian drug and therapeutic information to the point of care. The goal is to support best practices in drug therapy and improve safety by providing practitioners with current evidence to help them answer their drug therapy questions, compare treatment options and choose appropriate therapy.

Methods: e-Therapeutics was developed with a contribution from Health Canada. Delivered through the Internet, with select content on a handheld, it offers drug and therapeutic information published by CPhA. This is supplemented by links to new drug safety alerts, a drug interaction analyzer, public drug plans and references (e.g., PubMed, Cochrane Collaboration, clinical practice guidelines).

Results: In 2006 the Health Council of Canada urged adoption of e-Therapeutics to improve prescribing and prevent adverse events. The potential impact includes better patient outcomes; fewer errors; improved communication of new safety information; and better value for pharmaceuticals. This presentation will demonstrate these electronic tools and highlight the role of e-Therapeutics in Canada's electronic health record initiatives.

Conclusions: In the complex health care environment practitioners are moving away from remembering towards the look-up of information to support decision making. e-Therapeutics provides access to the right information at the right time to make the right therapeutic decision.

PI-O-009

EFFECT OF COMPUTERIZED ALERT SYSTEM ON PRESCRIBING PRACTICES AND QUALITY OF PATIENT CARE IN A TEACHING HOSPITAL OF PAKISTAN

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The medication use process has become complex and fragmented in nature. The lack of communication among the healthcare providers further reduces the quality and safety of medication use. Pharmacist's involvement and support in clinical decision making process has been shown to reduce medication errors, prevention of adverse drug events and overall improvement in patient's clinical outcomes. Department of Pharmacy has a mission to provide safe and high quality pharmaceutical care to its patients. Pharmacy in conjunction with hospital administration and medical staff, has directed efforts towards residing pharmacist inside the ward. The Point of Care Pharmacist (PCP) model was approved by the P&T Committee. Pharmacist was positioned in a medicine ward. PCP Pharmacist worked with physicians to assured rational prescribing of cost-effective medications, worked with patients to improve their knowledge of the medications they receive, and partner with nursing to reduce unnecessary delays in the medication use system and improve the overall safety of medication use within medicine ward. Major findings after one month shared with the P&T Committee were cost saving of US$ 6000, 12 discharge patients counseled; ADR reported 10, # of pharmacist's intervention (Dose adjustments, IV to PO, Pharmacotheraputic recommendations, Drug-Drug Interactions etc.) were 165. The concept is in infancy in our setting and there is a lot to improve. Pilot would seem as a role model to expand such services to other patient care areas in order to improve and maximize the quality of drug usage system. Department of Pharmacy Services is planning to expand this program in other areas of the hospital to minimize the chances of potential errors.

BB-P-001

PREPARATION AND EVALUATION OF A NEW TYPE OF SUSTAINED-RELEASE SUPPOSITORY CONTAINING AMINOPHYLLINE

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Objective:
Aim of this study was to develop a new type of sustained-release suppository containing aminophylline to apply to patients with bronchial asthma and so on.
Methods:
Sustained-release suppositories containing aminophylline (Neophyllin, 50 mg) were prepared using the hollow-type suppository (Watanabe et al.) which included gel agents such as sodium alginate (SR Suppositoriy I) and sodium polyacrylate (SR Suppository II) in its shell. These two types of suppositories were compared with the hollow-type suppository without polymers (Control Suppository). Drug release measurement in vitro was employed according to the method of Muranishi et al. Theophylline in plasma was assayed by HPLC after rectal administration of each sustained-release aminophylline suppository in male albino rabbits. Bioavailability parameters, Cmax, Tmax and AUC, were obtained from the plasma theophylline concentration-time curves.
Results:
In vitro test, theophylline was released almost completely within 30 min from Control Suppository. On the other hand, the dissolution percentage of theophylline increased slowly from SR Suppositories and reached 80% (SR Suppository I containing 30% sodium alginate) and 40% (SR Suppository II containing 30% sodium polyacrylate) in 6 h, respectively. The plasma theophylline concentration was rapidly increased after rectal administration of Control Suppository (Tmax, 1.4±0.4 h: Cmax, 25.1±3.4 μg/mL). Concerning of bioavailability parameters obtained by SR Suppositories, Tmax (5±0 h, SR Suppsotory I; 5.3±0.5 h, SR suppository II) delayed and Cmax (19.8±1.5 μg/mL, SR Suppository I; 16.6±1.2 μg/mL, SR Suppository II) decreased significantly. However, AUC values between Control Suppository and SR Suppositories were not statistically different.
Conclusion:
It may be concluded that a new type of sustained-release aminophylline suppository prepared using sodium alginate or sodium polyacrylate is a promising preparation for use in patients with bronchial asthma and so on.

BB-P-002

PHARMACOKINETIC ANALYSIS OF SERUM EPHEDRINE AND PSEUDOEPHEDORINE PROFILES AFTER ORAL ADMINISTRATION OF A KAMPO KAKKONTO PREPARATION TO HEALTHY VOLUNTEERS

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The pharmacokinetics of serum ephedrine and pseudoephedrine concentrations as the indexed reference ingredients of Kampo Kakkonto herbal medicine (ge-gen-tang in Chinese) was compared after oral administration of two doses the Kakkonto extract preparation. The mean maximum concentrations of ephedrine and pseudoephedrine after a 3.75 g dose were 1.50 and 1.58 times higher than those after the 2.5 g dose, respectively, although the time to maximum concentration was not significantly different for the two doses. The mean area under the time - concentration curve of ephedrine and pseudoephedrine were significantly higher after the 3.75 g dose in relation to dose ratio, while the mean residence time and and elimination rate constant of the terminal phase were not significantly different. The disposition profiles of ephedrine and pseudoephedrine showed a linear kinetic behavior after the two doses.

BB-P-003

ANTI-TUMOR ACTIVITY OF BETULINIC ACID AND ITS APOPTOTIC ON KB CELL LINES

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This paper focused on the study of the in vitro anticancer activity of Betulinic Acid (BetA) and growth inhibition of S180 in vivo.

BetA 800,1 200 mg•kg-1 i.g. markedly inhibited the growth of S180 cell in vivo. By the way of our lab, MTT assay showed that BetA could inhibit the proliferation, in a dosage dependent manner, of the cells of HT-29?A2780?LS-1747?SMMC-7721?Bcap-37?OVCAR-3?PC-14?K562?MA891 and KB cell lines, in which the IC50 of KB cells was the least. The BetA at the dose 1~100 μmol•L-1 inhibited significantly the growth of KB cells in dose dependent manner(The IC50 is 11.60 μmol•L-1).

Then, we discovered that BetA Derivatives not less than 5 have higer anticancer activity of KB than BetA. BA-ß-NH2(CH2)2COOH(The IC50 is 5.29 μmol•L-1)?BA-?-NH2(CH2)3COOH(The IC50 is 4.82 μmol•L-1)?BOA -ß-NH2(CH2)2COOH(The IC50 is 5.56 μmol•L-1)?BOA -?-NH2(CH2)3COOH(The IC50 is 4.54 μmol•L-1)?BOA -Gly-OH(The IC50 is 4.74 μmol•L-1).

In the study of the BetA's inducing KB cells apoptosis activity, we observed the typical apoptotic morphological changes after treated with BetA. Moreover, TUNEL assay detected the apoptotic DNA cleavage and apoptosis cells were also got by flow cytometer after stained with PI, so that the inducing apoptosis activity of BetA was approved by morphological, biochemical methods and flow cytometry. Besides, it was also found that when incubated with BetA, the Mitochondia membrane voltage of KB cells would decrease dose-dependently, which was the characteristic of the apoptotic cell mitochondria and this further affirmed the apoptotic-inducing effect of BetA on KB cell.

With these results, we can come to the conclusion that the BetA had the anticancer activity through inducing tumor cell apoptosis and could be used as a new compound for anticancer drugs.

BB-P-004

INFLUENCE OF LACTOSE, POLYVINYLPYRROLIDONE AND POLYETHYLENEGLYCOL IN MUCOADHESIVE BUCCAL TABLETS OF CHLOREXIDINE DIACETATE

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This investigation deals with the development of buccal adhesive tablets formulations of chlorhexidine diacetate. An ideal buccal delivery system should adhere in the oral cavity and release the drug in unidirectional way toward to the mucosa in a controlled- or sustained-release approach. Seventeen formulations with 5 mg of the active ingredient with theoretical formulation weight of 150 mg were developed. The tablets had different quantity of lactose (X1), polyvinylpyrrolidone USP (X2) or Kollidon 90 F, and or polyethyleneglycol NF (X3) or Poliox WSR 301 NF, based on the statistical design, "simplex lattice" mixture approach. Tablets were prepared using direct compression method and all samples were evaluated for physical changes such as hardness, average weight, dimensions and adhesive force. The concentration of chlorhexidine diacetate released 'in vitro' was assayed by HPLC method using ultraviolet detection. The relationship between lactose (X1), polyvinylpyrrolidone USP (X2) or Kollidon 90 F, and or polyethyleneglycol NF (X3) or Poliox WSR 301 NF and dependent variables (Y1 = hardness; Y2 = adhesive force) are represented as cubic models:

$$Y1 = 5.94X1 + 9.69X2 + 13.80X3 + 21.21X1X2 - 38.86X1X2\ (X1-X2)$$

$$Y2 = 256.4X1 + 50.5X2 - 397.0\ X1X2 - 456.2X2X3 + 629.2X1X2X3 + 249.2X1X2\ (X1-X2) - 164X2X3\ (X2-X3)$$

The formulation with lactose or Kollidon 90 F, without Poliox WSR 301 NF, delivered more than 17% of chlorhexidine diacetate in 4 hours. Kollidon presented satisfactory adhesive strength and dissolution profiles for the tablets, and its association with lactose seemed to be suitable for the development of pharmaceutical dosage forms.

BB-P-005

GLUCOSE CLEARANCE IS A RELIABLE INDICATOR OF INSULIN RESISTANCE IN SPONTANEOUSLY DIABETIC GOTO-KAKIZAKI RATS AND WISTAR RATS FED WITH A HIGH-SUCROSE HIGH-FAT DIET

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Aims: The postprandial hyperinsulinemia is a causative factor of obesity, pancreatic beta-cell exhaustion and the development of diabetes. The insulin resistance in peripheral tissues characterizes the metabolic syndromes. The insulin resistance is measured by the glucose clamp technique. Although this glucose clamp method is very high sensitive method, it requires the tedious and time-consuming operations. A rapid and accurate evaluation method for the insulin resistance would be very useful in clinical practice. We examined whether the glucose clearance is a reliable indicator of insulin resistance in spontaneously diabetic Goto-Kakizaki (GK) rats and Wistar rats fed with a high-sucrose high-fat (HSHF) diet.

Methods: The glucose was intravenously infused into GK rats, HSHF diet rats and normal diet rats. The changed of blood glucose and plasma insulin levels during and after the infusion of glucose were measured. An oral glucose tolerance test (OGTT) was also performed. The glucose clearances were determined using a simple kinetic model. The values of homeostasis model assessment (HOMA) were calculated as an indicator of insulin resistance using fasting glucose and insulin levels and correlated with the glucose clearances.
Results: The fasting blood glucose and plasma insulin levels were significantly higher in GK rats than those in normal diet rats. Although the fasting plasma insulin level in HSHF diet rats was significantly higher than that in normal diet rats, the fasting blood glucose level in HSHF diet rats was almost same as that in normal diet rats. The simple kinetic model could quantitatively describe the alterations of the blood glucose levels and the glucose clearances could be determined by this model. It was clarified that the log-transformed glucose clearance is significantly correlated with the log-transformed HOMA.

Conclusions: These results suggested that the glucose clearance is a reliable indicator of insulin resistance.

BB-P-006

THE EFFECT OF PALM OIL-BASED AND COMMERCIALLY AVAILABLE PARENTERAL LIPID EMULSIONS ON NORMAL & CANCER LIVER CELL LINES

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Parenteral nutrition (PN) is a mode of nutrition that involves the administration of nutrients through the intravenous (IV) route. It is indicated when the oral or enteral route of nutrition can not be established or is insufficient, which can include the cancer patients. Lipid emulsion is a major component of the PN regimen. Commercially available IV lipid emulsions (IVLEs) are produced from different sources of oil with various contents of fatty acids (FAs). Several studies have demonstrated that certain FAs present a specific cytotoxicity for tumour cells. This study was conducted to look into the cytotoxic effects of palm oil (PO)-based lipid emulsion and several commercially available IVLEs on cancer liver cell line (HepG2), and normal liver cell line (Chang). Cells viability was evaluated by MTT colorimetric assay, which involves the reduction of a tetrazolium component into an insoluble blue formazan by the mitochondria of viable cells. All emulsions inhibit the proliferation of HepG2 cell line with IC50 of 15.1+0.81 µg/ml, 46.5+1.6 µg/ml, 61.5+1.7 µg/ml, 67.2+1.3 µg/ml for soy bean oil (SO)-, long/medium chain tryglycerides (LCT/MCT)-, olive oil (OO)- and PO-based emulsions, respectively. SO-based emulsion is significantly more cytotoxic against cancer cell lines compared to others based emulsion, whereas OO-based emulsion is not significantly different compared to LCT/MCT-based and PO-based emulsions ($p<;0.05$). All emulsions did not significantly inhibit the proliferation of Chang cell with IC50 >; 80 µg/ml ($p<;0.05$). The results showed that in-vitro, the IVLEs could exert cytotoxic effects on the cancer cells besides acting as a source of energy and essential fatty acids.

BB-P-007

A VALIDATED METHOD HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY (HPLC-MS-MS) FOR DETERMINATION OF ISONIAZID AND ACETYLISONIAZID IN PLASMA HUMAN TO DETERMINE ACETYLATOR PHENOTYPE

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To establish a useful method for acetylator phenotypication and therapeutic drug monitoring of patients receiving isoniazid a rapid and sensitive method using high-performance liquid chromatography tandem mass spectrometry (HPLC-MS-MS) was developed and evaluated for simultaneous quantitative determination of isoniazid and its major metabolite, N-acethylisoniazid. The method involves a protein precipitation of 200 uL of plasma with 1 mL of Methanol and a sucessive dilution of supernatant with 1 mL of water, centrifugation and injection (50 uL). The analytes were ionized using positive electrospray mass spectrometry then detected by multiple reaction monitoring (MRM). The m/z transitions 138 to121 (for isoniazid) and 180 to 121 N-acethylisoniazid) were used for quantification. The calibration curve was linear from 0.712 to 11.4 ug/mL (isoniazid) and 0.312 to 5.0 ug/mL (N-acetylisoniazid). The retention times of isoniazid and Ac-INH were 7.0 and 7.5 minutes, respectively. The method is in use for acetylator phenotyping determination of individuals in anti-TB treatment.

BB-P-008

THERAPEUTIC DRUG MONITORING (TDM) FOR ANTITUBERCULOSIS TREATMENT SAFETY: SCREENING FOR ISONIAZID ACETYLATOR PHENOTYPE.

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Tuberculosis is the world's second commonest cause of death from infectious disease, after HIV/AIDS. In Brazil, there were an estimated 116.000 new cases of tuberculosis in 2003. Regimens containing isoniazid (INH), rifampicin and pirazinamide are traditionally used first-line therapy for tuberculosis. However, acute or chronic hepatitis frequently develops in patients receiving these drugs. There have been studies on the relation-ships between the acetylator phenotype and the efficacy or side effects of INH. The rapid acetylators should take larger doses on INH than slow acetylators, and slow acetylators are at risk of hepatic toxicity. These findings strongly suggested the necessity of therapeutic drug monitoring (TDM) in blood or serum to define the most appropriate dosage regimen for each individual. To 27 Brazilians patients, all residents at Rio de Janeiro, Brazil, with pulmonary tuberculosis, were given a 400 mg/Kg oral dose of isoniazid each. From the concentration ratio of acetyl-isoniazid and INH (metabolic ratio = Rm) phenotypification methods were assessed. The Rm at 2h post-dose revealed a trimodal distribution: a fast (Rm >; 0,81), intermediate (Rm 0,41- 0,8) and slow (Rm <; 0,4) acetylators groups, with predominance of slow acetylators (52%).

BB-P-009

ON-LINE SOLID PHASE EXTRACTION COUPLED WITH HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (SPE-HPLC-MS-MS) FOR QUANTIFICATION OF CLONAZEPAM IN HUMAN PLASMA: AN AUTOMATED METHOD FOR BIOEQUIVALENCE STUDIES.

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A validated method for on-line solid phase extraction coupled with high-performance liquid chromatography tandem mass spectrometry (SPE-HPLC-MS-MS) is described for the quantification of Clonazepam in human plasma. The method involves a dilution of 100 uL of plasma with 50 uL of diazepam (2.5 ng/mL), used as internal standard, vortex-mixing, centrifugation and injection of 100 uL of the supernate. The analytes were ionized using positive electrospray mass spectrometry then detected by multiple reaction monitoring (MRM). The m/z transitions 316 to 182 (clonazepam) and 237 to 194 (diazepam) were used for quantification. The calibration curve was linear from 1 ng/mL (limit of quantification) to 200 ng/mL. The retention times of clonazepam and diazepam were 2.6 and 3.2 minutes, respectively. The intra-day and inter-day precisions were 3.43-15.45% and 5.2-17%, respectively. The intra-day and inter-day accuracy were 94.00-103.94%. This new automated method has been successfully applied in a bioequivalence study of two tablet formulations of 2 mg clonazepam.

BB-P-010

NON-LINEAR MATHEMATICAL INTERPRETATION OF KINETICS OF PHYSICO-CHEMICAL UNIT PROCESSES. PART 1. NOVEL KINETIC WAVE MODEL.

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The paper presents a trial of a novel approach to the problems of active substance release from the dosage form, in particular to the premises being the basis of mathematical models used in description of these phenomena. The paper starts with a critical analysis of standard mathematical models used in the description of kinetics of active substance release from the dosage form, which focuses on their limitations, simplifications of premises used in the models and discussion of the reasons that led to the development of a novel wave model. Next the premises and equations of the proposed wave model are presented, as well as statistical methods enabling determination of estimators for parameters characterizing the presented model.

BB-P-011

NON-LINEAR MATHEMATICAL INTERPRETATION OF KINETICS OF PHYSICO-CHEMICAL UNIT PROCESSES. PART 2. THE USE OF A NEW KINETIC WAVE MODEL FOR INTERPRETATION OF THE KINETICS OF DETREOMYCIN RELEASE FROM EMULSION OINTMENTS W/O.

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A comparative statistical analysis of the first order kinetics model and Higuchi 'square root of time' model with the proposed wave model was performed on the basis of empirical data of chloramphenicol release from twenty-seven emulsion ointments W/O with different quantitative and qualitative composition. Non-linear estimation of the proposed wave model, using the method of least squares, and next of the first order kinetics model and Higuchi 'square root of time' model was performed on the basis of the obtained results, using quasi-Newtonian algorithm available in computer software STATISTICA® 7.0 manufactured by StatSoft Polska. The correlation coefficients R and root-mean-square errors S calculated from the above models were compared with each other using a non-parametric sign test for dependent trials. A statistically significant difference between R and S parameters were obtained at a presumed confidence level p=0.05 for favour of the wave model, what proves that it better explains the analyzed empirical data.

BB-P-012

BUCCAL TABLETS WITH PEPTIDES

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The aim of a reaserch was to obtain the mucoadhesive tablets for the peptides substances. The tablets were composed of the mucoadhesive polymer: methylocelulose (MC) or alginic acid sodium salt (ALG) and hialuronic acid – as substance which increase the tablet's adhesion and modified absorbance of a peptide across the oral mucosa. The model peptide substance was insulin. Mannitol was used as the filling up substance.

Tablets was examined according to Ph.Eur. 2005. A desintegration time in the water and adhesion force were measured. Also release profiles were examined in a dissolution tester by method 9 USP XXIII and in a diffusion chamber with semi-permeable membrane. A preliminary in vivo test on rabbits was realized too.

All of prepared tablets fulfilled the conditions of pharmacopea. An average desintegration time for individual tablets versions were about 60 miutes for MC tablets and 64 minutes for ALG tablets. ALG tablets were characterized by greater adhesion force than MC tablets. A diverse results were obtained for pharamceutical availability measurements depending on a method applied. Pharamceutical availability of insulin after 3h was about 4% for MC tablets and about 20% for ALG tablets in dissolution tester, while in diffusion chamber it reached only 0,25 % and 0,3% respectively. The preliminary test on rabbits reviled that insulin administered in the form of buccal tablets was absorbed accros oral mucosa membrane.

BB-P-013

IN VITRO STUDIES OF THE PROPERTIES OF THERMOSENSITIVE SYSTEMS PREPARED ON PLURONIC F-127 AS VEHICLES FOR METHOTREXATE FOR DELIVERY TO SOLID TUMOURS

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The results of in vitro studies demonstrate that the systems prepared on 14,8% Pluronic F-127 with certain additives, i.e. lactose, glucose, propylene glycol, glycerol may be used as vehicles for active substance administered as direct injection into the neoplastic tumour. Prepare the sol-gel transition temperature of the prepared formulations at physiological temperature ranges of the body makes possible their injection in the liquid state and subsequent gelification in situ providing a prolonged release of the active substance at the application site.

Methotrexate release from selected formulations approached zero order kinetics and the investigations have shown that the use of Pluronic F-127 in the construction of drug carriers enables to obtain such a form that, depending on the presence of additives and their concentration, provides active substance release at any-time. Analysis of physicochemical properties of the investigated formulations, i.e. pH, osmotic pressure, density allows to believe that their administration by means of a thin needle should not be problematic and they will not irritate tissues or cause pain after application. Obtained findings indicate that formulation based on Pluronic F-127 with 1% addition of lactose revealed the best physico-chemicali properties. Methotrexate release from this system approached zero order kinetics and active substance semi-release time (t0.5) determined for this formulation supports its usefulness in constructing a prolonged release drug from.

BB-P-014

EXPERIENCE WITH COMPARATIVE DISSOLUTION STUDIES ACCORDING TO THE FDA GUIDANCE FOR BIOWAVERS

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Aims
To share experience in performing comparative dissolution studies according to the FDA guidance on the waiver of in vivo bioavailability and bioequivalence studies for immediate release solid oral dosage forms based on a biopharmaceutics classification (BCS) system.

Methods
All the studies were performed according to the conditions stipulated in the FDA Guidance (August 2000).

Results
Over a period of three years more than 230 comparative dissolution studies were performed, most of which were performed between the foreign innovator and the South African innovator. Studies were also performed on proportional similar generic formulations, differing in strength. Examples of data to be presented, include:
1. Proportionally similar products containing APIs that are not highly soluble according to BCS, may show dissimilarity as in the case of ciprofloxacin and clarithromycin.
2. Innovator products registered in national regions in the EU do not always show similar dissolution profiles as was found with mirtazapine.
3. An example was found where different batches from the same site of the innovator show non-similar dissolution profiles.
4. In general, dissolution profiles between the foreign innovator and SA innovator are similar, for example terbinafine HCl and losartan potassium.

Conclusion
1. Comparative dissolution testing as defined in the FDA Guidance for Industry and the South African MCC guidance provides the pharmaceutical industry with a practical tool to address several regulatory issues.

2. A paddle speed of 50 rpm is not ideal in cases of cone formation. A paddle speed of 75 rpm is proposed as general condition.

BB-P-015

AN ALTERNATIVE HIGH-PERFORMANCE LIQUID-CHROMATOGRAPHIC METHOD FOR DETERMINATION OF DICLOFENAC IN PHARMACOKINETIC STUDIES.

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Diclofenac, 2-[(2,6-dichlorophenyl)amino]phenylacetic acid is non-steroidal anti-inflammatory (NSAIDs), analgesic, antipyretic drug. To measure diclofenac in plasma, several methods have been developed including high-performance liquid chromatography with UV detection. In the present study, an alternative, fully validated HPLC procedure employing UV detection for the determination of diclofenac in a 0,5 µL plasma sample is presented. Naproxen was used as an internal standart. After liquid-liquid extraction the compounds were separated in reverse-phase Shim-Pack® C-18 (150 mm x 4.6 mm, 5 µm particle size) column, Shimadzu LC-20AT HPLC system, equipped with a model LC-20AT pump, oven for column model CTO-10AS. The flow rate was 1.0 ml.min-1. The retention time was 3.5 min for naproxen and 6.0 min for diclofenac. The samples were detected by ultraviolet absorption at 275 nm. The mobile phase consisting of acetic acid-acetonitrile (47:53) was used. The method showed sensitivity (detection limit of 20 ng/ml), good precision (repeatability 2.09%), intermediate precision (5.51%) and accuracy (98.71%) for low quality control sample. The method has presented a excellent speed (total analysis time 10 min). The linearity was assessed in the range of 50 to 5.000 ng/ml. The representative linear equation was y= 0,0003x + 0,0131 with a correlation coefficient (r=1) highly significant for the method. The proposed HPLC method presents some advantages, firstly, the mobile phase doesn't require the pH adjusts and it is easily removed from equipment. In addition, the method has been demonstrated to be simple, to have short retention time, good limits of detection and linearity. Furthermore the assay may be considered a useful alternative method for pharmacokinetic studies in humans.

BB-P-016

ENHANCED BIOAVAILABILITY OF ITRACONAZOLE WITH A NEW SELF-EMULSIFYING FORMULATION IN HEALTHY VOLUNTEERS: EFFECTS OF FOOD AND DOSE ON THE ORAL ABSORPTION

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Purpose. The objective of this study was a comparative investigation of the effect of food on the oral bioavailability of two itraconzole formulations in eight healthy Korean male volunteers.

Methods. Each subject received a Sporanox® capsule (Sporanox® 100 mg) or two doses of ITRA-GSMP® capsules (ITRA-GSMP® 50 mg or ITRA-GSMP® 100 mg) in the fasted state and after a high-fat breakfast on six separate dosing occasions in a randomized fashion. The plasma concentrations of itraconazole were determined by using a validated HPLC-fluorescence method. Pairwise comparisons of AUC0-24 and Cmax were carried out with t tests to investigate an effect of food on the bioavailability.

Results. At the same itraconazole dose of 100 mg, AUC0-24 and Cmax of ITRA-GSMP® 100 mg were about 7-7.5 times higher in the fasted state (1785.2 ng/ml•h and 307.5 ng/ml, respectively), and 3-4 times higher in the fed state (1890.2 ng/ml•h and 264.5 ng/ml, respectively) than Sporanox® 100 mg. AUC0-24 and Cmax of ITRA-GSMP® 50 mg (431.0 ng/ml•h and 108.5 ng/ml, respectively, in the fasted state, and 689.4 ng/ml•h and 108.1 ng/ml, respectively, in the fed state) were similar to Sporanox® 100 mg (232.8 ng/ml•h and 42.9 ng/ml, respectively, in the fasted state, and 466.2 ng/ml•h and 82.4 ng/ml, respectively, in the fed state). The absorption of Sporanox® capsule showed the significant differences between the plasma concentrations of itraconazole in the fasted and fed states, while that of ITRA-GSMP® capsule was similar between the both states.

Conclusion. Consequently, it is suggested that ITRA-GSMP® capsule, SEDDS formulation, is an interchangeable formulation with improved bioavailability and reduced food effect at the half-dose of Sporanox® capsule.

BB-P-017

STEREOSELECTIVE DETERMINATION OF ESLICARBAZEPINE ACETATE (BIA 2-093) AND ITS METABOLITES IN PLASMA BY HPLC-UV

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Aim: To validate a simple and economical HPLC-UV method for simultaneous and stereoselective determination of eslicarbazepine acetate (BIA 2-093) and its metabolites BIA 2-194, BIA 2-195 and oxcarbazepine (OXC) in plasma. BIA 2-093 is a new antiepileptic drug structurally related to carbamazepine and OXC, which is under development at Laboratórios BIAL. Method: The calibration curves were constructed from spiked human plasma samples containing known amounts of all four drugs and the internal standard (BIA 2-265). The extraction of the analytes from plasma samples was carried out by means of a selective solid-phase extraction (SPE) procedure using Waters Oasis® HLB cartridges on a vacuum manifold column processor. The extract was evaporated to dryness and then reconstituted in the mobile phase. The quiral separation was achieved by isocratic elution with water/methanol (88:12, v/v), at a flow rate of 0.7 ml/min, on a LichroCART 250-4 ChiraDex (ß-cyclodextrin, 5 µm) column at 30ºC. The compounds were detected by ultraviolet absorption at 225 nm. Results: Calibration curves were linear (r >; 0.99 for all analytes) over a range of 100-2000 ng/ml for BIA 2-093 and OXC, and 100-20000 ng/ml for BIA 2-194 and BIA 2-195. The overall precision (expressed as CV %) and accuracy (expressed as bias %) of calibration standards were within 10%. The mean relative recoveries in plasma, taking into account all compounds, ranged from 94.0% to 102.2%. The limit of quantification was 100 ng/ml and the limit of detection was 25 ng/ml for BIA 2-093 and 10 ng/ml for BIA 2-194, BIA 2-195 and OXC. No peaks due to the human and mouse plasma matrices interfered at the retention time of the analytes and no interference was found with several tested drugs commonly co-prescribed. Conclusion: This method is simple, accurate and less expensive than others, allowing its use in therapeutic drug monitoring as well as pharmacological and toxicological preclinical research in plasma.

Supported by FCT and BIAL, Portugal

BB-P-018

DETERMINATION OF AMPICILLIN IN HUMAN PLASMA BY LC-MS/MS AND COMPARATIVE BIOAVAILABILITY OF TWO AMPICILLIN FORMULATIONS.

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A simple, fast and selective LC-MS/MS method was described for the determination of ampicillin in human plasma using amoxicillin as internal standard. The samples were prepared from human plasma by solid-phase extraction (SPE), and the analytes were determined using electrospray positive ionization (ES+) in the multiple reaction monitoring mode (MRM), m/z 350.10>;106.4 and m/z 366.06>;207.88, ampicillin and internal standard, respectively . The cone voltage, capillary voltage and collision energy were 10v, 2.75Kv and 12ev, respectively. The liquid chromatographic system consisted of a C18 reversed phase column with acetonitrila (0.1% formic acid): water (0.1% formic acid), 80:20,v/v, as mobile phase. The bioequivalence was determined in healthy human, adult volunteers after a single dose of ampicillin 1000mg capsules in a randomized cross-over study. The reference and test formulations were administered to volunteers with 300 ml water after overnight fasting. The method showed precision and accuracy for the application in bioequivalence study of 500mg capsules of ampicillin. Using a short running time of 2.5 minutes, the lower limit of quantification (LLOQ) of ampicillin obtained was 0.1µg/mL for a plasma sample of 250µL and a recovery of 94.38 ± 4,05%. Bioequivalence between the products was determined by calculating 90% confidence intervals (90% CI) for the ratio of Cmax, AUC0-t and AUC0-inf values for the test and reference products, using logarithmic transformed data. The 90% CI for the ratio of Cmax (0.83-1.02), AUC0-t (0.83-1.02) and AUC0-inf (0.84-1.04) values for the test and reference products are within the 0.80-1.25 interval proposed by FDA and EMEA. It was concluded that the two IND formulations are bioequivalent.

BB-P-019

QUANTIFICATION OF NORFLOXACIN IN HUMAN PLASMA BY HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY AND ITS APPLICATION TO A BIOEQUIVALENCE STUDY.

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The Norfloxacin is a fluoroquinolone and have broad antibacterial spectra and are active against most Gram-negative and many Gram-positive species. A accurate, precise and sensitive assay methods was developed for the determination of norfloxacin (NFX) in human plasma using ciprofloxacin as internal standard and it was employed in a bioequivalence study of two 400mg tablet formulations in 24 healthy volunteers. Norfloxacin and the internal standard were isolated from the plasma using Chloroform and separation achieved via reversed-phase liquid chromatography on a C18 column eluted isocratically with a mobile phase consisting of 88:12 (v/v) of di-Sodium hydrogen phosphate (20mM) with pH adjusted to 3.0 with phosphoric acid and acetonitrile. NFX concentrations were analyzed by combined reversed phase liquid chromatography and U.V. detection (λ=280 nm). From the NFX plasma concentration vs. time curves the following pharmacokinetic parameters were obtained: AUC0-t, AUC0-∞ and Cmax. The internal standard and NFX eluted about 12.4 e 10.5 min, respectively at a flow rate of 1.2mL/min. The mean absolute recovery of NFX in plasma was 91,19% and the internal standard was 93,91%. The assay showed excellent relationships between peak area ratios and plasma concentrations and NFX tablets (r2 = 0.99). The method showed sensitive with an lower limit of quantification of 0.05µg/ml, based on 250µL of plasma. The 90% confidence interval of the individual ratio geometric mean for both AUC0-t and Cmax were 85,02 – 106,5% and 85,36 – 111,1% respectively. Thus, test formulation was considered bioequivalent to reference formulation according to both the rate and extent of absorption.

BB-P-020

DEVELOPMENT AND VALIDATION HPLC METHOD FOR THE SIMULTANEOUS DETERMINATION OF TRIMETHOPRIM AND SULPHAMETOXAZOLE IN HUMAN PLASMA.

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Sulfonamides are used primarily in the treatment of urinary tract infections, in combination with trimethoprim (TMP), they also frequently used for the treatment of otitis, bronchitis, sinusitis and pneumoystis pneumonia. A HPLC method for the simultaneous determination of TMP and sulphametoxazole (SMX) in human plasma has beeen developed and validated using ciprofloxacin as internal standard. The samples were prepared from human plasma by solid-phase extraction (SPE) using HLB Oasis® cartridges. The mobile phase 20mM sodium monobasic phosphate pH 3,0: acetonitrile (89:11, v/v) was used for separation of TMP,SMX, ciprofloxacina and from other remaining plasma components with a C18 analytical column, wich were detected by UV at 230nm. The TMP, internal standard and SMX eluted about 3.9, 6.3 and 10.5 minutes, respectively at a flow rate of 2.0mLmin-1 .Mean recovery were above 80,29% and 93,47% for TMP and SMX, respectively. The calibration graphics were linear in the concentration ranges of 0,05 - 5µgmL-1 and 0,5 - 60µgmL-1 for TMP and SMX, respectively. The intra- and inter- assay coefficients of variation were less than 10% for both drugs. The analytes were stable in human plasma sample .The method showed acceptable precision, accuracy, sensibility to be applied in pharmacokinetic study.

NS-P-001

GLYCOXIDATION OF ASPARTATE AMINOTRANSFERASE USING IN VITRO MODEL WITH CU2+; THE EFFECT OF A GROUP OF PHENOLIC ANTIOXIDANTS OF PLANT ORIGIN

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Non-enzymatic glycation includes oxidative steps and because of that it is also termed glycoxidation. The process is causing impairment of protein functions during aging and diabetes mellitus. Transitional metal ions are necessary for the full development of oxidative reactions. In an in vitro model with purified porcine aspartate aminotransferase (AST, EC 2.6.1.1) Cu2+ ions, the effect of D-fructose as a glycating agent and the influences of a group of phenolic compounds. During 3 weeks of incubation at 37°C, AST activity was measurable even in the presence of 1μM Cu2+. D-Fructose in 50 mM concentration decreased the enzyme activity by 40% after 3 weeks. As for the antioxidants studied, no negative effect on the enzyme activity was found but only a slight stabilizing effect of o-coumaric and m-coumaric on AST activity was found after 2 weeks, while no remarkable protection of the AST activity was visible with any compound studied after 3 weeks. Beside AST activity, development of advanced glycation end products (AGE) was studied under the same conditions. Generation of total AGEs was rapidly increased in the case of samples containing D-fructose together with copper. In the case of pentosidine, the presence of any phenolic compound studied caused inhibition of pentosidine formation during glycation. As for the total AGEs, phenolic antioxidants had only mild but remarkable inhibitory effect on AGEs formation, with exception of quinoic acid (no effect). The results contribute to our longterm in vitro studies of natural phenolic compounds as possible antiglycoxidation agents.

Acknowledgements: Supported by the Charles University Grant 128/2005

NS-P-002

CHEMICAL COMPOSITION AND TOXICITY OF MELIA AZEDARACH L. AGAINST MALARIA VECTOR ANOPHELES STEPHENSI

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Melia azedarach L. or Persian lilac (Meliaceae) is a deciduous tree, native to Southeast Asia and northern Australia, which is growing in northern of Iran especially in the coastal parts of Caspian-sea. Investigations that have been accomplished about the Melia azedarach L. showed that different parts of the plant were used in folk medicine for treating some diseases and as insecticide for pest control. In this work, the fruit's of Melia azedarach L. was extracted with hexane and ethanol, and then its fatty acids methyl ester was analyzed using GC/MS. Thirteen constituents representing 85.1% of the total extract were identified. Among them the major components identified were methyl palmitate (18.8%), methyl linolenate (16.1%) and methyl linoleate (9.8%). The fruits extract was evaluated against larvae of main malaria vector, Anophles stephensi. Results showed that the LC50 value is 5.5 ppm for this oil and it seems as a potent biorational insecticide for malaria vectors control.

NS-P-003

PHYTOCHEMICAL AND PHARMACOLOGICAL INVESTIGATION OF WHOLE PLANT EXTRACT OF INDIGOFERA ASPALATHOIDES

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Indigofera aspalathoides Vahl. ex. DC, a member of papilionaceae, reported to have antiinflammatory and antineoplastic activities. The powdered whole plant was successfully extracted with methanol, pet ether using soxhlet apparatus (70-80°C). Column chromatography and preparative TLC were used to isolate individual compounds. Phytochemical investigation of the extract revealed the presence of alkoloids, glycosides (reducing sugars), phytosterol, flavonoids, mucilage, saponins, proteins and aminoacids.

Pharmacological investigations of the methanolic fraction were carried out to study anticancer, antilice, analgesic, anti-edematous and anti-ulcer activities using Swiss albino mice of both sex weighing 18-25g. Antimicrobial activity against bacteria, fungi and dermatophyte were carried out using Streptococcus sps.& Staphylococcus sps., Asperigillus niger and Trichophyton rubrum respectively.

The plant extract showed wide variety of pharmacological activities which made itself an important medicinal plant in treating many diseases.

NS-P-004

STUDIES TOWARDS ISOLATION OF MARKERS FOR APPLICATION IN QUALITY CONTROL OF SCELETIUM PLANT MATERIAL AND ITS DOSAGE FORMS

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Aims:
The Sceletium plant has been reported to contain psychoactive alkaloids, specifically mesembrine, mesembrenone, mesembrenol and related alkaloids. Sceletium is marketed as dried plant powder and as phyto-pharmaceutical dosage forms.

The relevant alkaloids are not commercially available, hence relevant markers were isolated and characterised to qualify them as reference standards for the quality control (QC) of Sceletium raw material and its solid dosage forms.

Methods:
Mesembrine, mesembrenone, Δ 7-mesembrenone were isolated by solvent extraction and chromatography. Mesembranol and epimesembranol were synthesised by catalytic hydrogenation of mesembrine. All compounds were subjected to 1H, 13C and 2-D NMR and LC-MS-MS. Mesembranol and mesembrine hydrochloride were crystallised and their structures confirmed by X-ray crystallography. Sceletium plants were obtained from local farmers of which two were identified as S. tortuosum and S. emarcidum. The dosage forms were purchased from local pharmacies. An HPLC method was developed on a reverse phase C18 system connected to a PDA detector using ammonia buffer and acetonitrile as the mobile phase.

Results:
The isolated markers were used as reference standards. The HPLC results showed a distinct variation in alkaloid content in each of the analysed Sceletium plant material and dosage forms.

Conclusions:
The HPLC results showed wide variation in alkaloid content in all of the Sceletium plant material samples and dosage forms analysed.

NS-P-005

THE BEHAVIOR ANALYSIS OF PEOPLE USE TRADITIONAL CHINESE MEDICINE FOR HEALTH PROTECTION IN TAOYUAN COUNTY

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In Taiwan, people used to take the traditional Chinese medicine(TCM) as the Health-Care Food in daily life. The purpose of this study was to analyze the habit of the people to take TCM in Taoyuan by the questionnaire. We randomized sampling the people by the proportion of population in Taoyuan. The total 1,003 residents were enrolled. The contents of the questionnaire included where to purchase, why to need, how frequency and for what reason. The effective questionnaires were 841 occupied 83.8% (1,003). The data were analyzed by using frequency table. The investigation revealed that people likes to purchase herbals in 'Chinese medicine pharmacy' near their household (58.9%), in 'the specific Chinese medicine pharmacy' (39.2%) and in 'the Chinese medicine clinic' (30.3%). In addition, people purchasing herbs by themselves, thinking occupied 43.2%.'Commended by relatives and friends 'occupied 29.1%, 'Introduced by the Chinese medicine pharmacy physicians' occupied 23.8%. As for the frequency of utilization in one year, ' 2-6 times ' occupied 52.0%, ' once or below ' occupied 25.5% and ' 7-12 times' occupied 12.9%. Finally, for the reason why people take TCM, 'nutrition in winter' occupied 50.5%, 'dispel the fatigue, regain energy' was 39.5% and 'increase the flavor of the food 'occupied 39.1%. In conclusion, people take TCM as health care food ordinarily.

NS-P-006

ANALYZE AND INVESTIGATE PEOPLE'S BEHAVIOR OF USING THE TRADITIONAL CHINESE MEDICINE IN TAOYUAN

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The traditional Chinese herbs are not only used to treat the disease, but applied progressively to people's daily health care recently. The purpose of this study is to investigate the differences between 'People who use traditional Chinese medicine' (abbreviated as A group), and 'People who don't know how to use traditional Chinese medicine' (abbreviated as B group) about their behavior of using the traditional Chinese medicine or the herbal cuisine. The persons we study were randomized sampling according to the proportions of population of TAOYUAN, 1870,000 persons of 13 villages. Then we obtained the relevant materials by the questionnaire for each one. The content of the materials was compared with in age?gender and villages. We used Cross Tabulate to analyze the materials. The total number of questionnaires attained was 1003 and the effective number was 986. There were 86.7% of the persons belongs to group A, and only 13.3% of the persons belongs to group B. In group A: the age level of 50-59 years old was the most population occupied 92.7% (178 persons). The most proportion of group B was in the 20-29 years old, occupied 21.4% (238 people). In group A: the proportion of the female using the traditional Chinese medicine (58.2%) was greater than the male (28.7%). There was no difference between people who live in villages or towns. Conclusion: People using the traditional Chinese medicine in TAOYUAN, the age level of 50-59 years old was the most population. The female like to use the traditional Chinese medicine than the male. In villages and towns of TAOYUAN, there was no statistically difference.

NS-P-007

THE ENHANCING EFFECT OF TOTAL SAPONIN FROM ACANTHOPHYLLUM SQUARROSUM ON THE PERMEATION BEHAVIOR OF CACO-2 CELL LINES

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Acanthophyllum squarrosum is one of 23 species of the section oligosperma which is endemic to Iran. Its roots, named Chubak, have been traditionally used as a detergent for washing clothes and dishes. In the present study, we have tried to extract and purify the total saponin from roots of the plant and evaluate its ability to enhance the absorption of a drug model, 5(6)-carboxyfluorescein in Caco-2 cell line.

After collection and identification of the plant roots, Acanthophyllum squarrosum total saponin (ATS) was extracted and isolated using several chemical and chromatographic methods. Then, its in vitro absorption enhancing effects was determined using Caco-2 cell line model. The ability of the saponin to enhance drug passage through Caco-2 cell membrane was assessed using a diffusion cell apparatus and confocal laser scanning microscopy (CLSM) technique. The results were compared to data from QTS, SLS, BC and some bile salts.

The extracted material showed a relatively high surface activity. Its surface tension lowering effect was comparable to that from synthetic surfactants. In Caco-2 cell lines, ATS induced a significant increase ($p<;0.05$) in 5(6)-carboxyfluorescein transport through the membrane. Furthermore, confocal laser scanning microscopy proved the presence of CF in the individual cells. The results suggest that ATS is an efficacious absorption enhancing agent which acts through both paracellular and transcellular routes of passive diffusion pathway.

NS-P-008

HERBAL ROW MATERIAL MARKETIN SERBIA AND MONTENEGRO

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In Serbia and Montenegro 3000-4000 plant species are growing. From 450 up to 700 are used traditionally. 280 wild growing plant species are subject of trade. Former Yugoslavia was an important exporter of herbs and essential oils, but in last two decades, the amount of collected plants decrease: 3500 t (1993) - 500 t (1997). From that period, this aspect of economic activities starting to grow up again, mainly in the form of little and medium factories and family business. From 2000-2005 export of row plant material valued 2-3 millions $ per year. The main export business was done in the Belgrade aerie (1/3 up to ½ of activities). The most abundant exported products are chamomile, peppermint, gentian (natural populations are protected from 1956.), linden and marshmallow. Except gentian and linden, the others are obtained from field production. The main collecting of wild growing plant is in the West and East Serbia, while the main field production is at north part in Vojvodina. The area of plantations is quite modest; 2000 hectares in 2003. In near future this kind of plant production has to be improved. Good agricultural practice has to be implemented as well as some part of organic production. Officially, the collection of wild growing plants is under control of national institutions (Ministry for Environmental Protection; Institute for Nature Protection). We are trying now to implement a Good collecting practice, to make certification of some clean regions and to build some brands ('linden flower from Serbia', 'sage from Njeguši-Montenegro'). At the other side, some protected (temporary or permanent) aeries have to be developed.

S&M imports lot of plant materials, mainly extracts. Except distillation of essential oil, industrial extraction and production of standardise extracts is at beginning. In future, the main goal is development of industry for higher phases of manufacturing of row materials. This has to lead to export fewer quantities of more valuable and profitable goods.

NS-P-009

STUDIES ON ANTI CANCER (ANTI LEUKEMIC) ACTIVITIES AND PHYTO CHEMICAL CONSTITUENTS OF SOLANUM KHASIANUM L. USING MODERN ANALYTICAL METHODS WITH SPECIAL REFERENCE TO THE PREPARATION OF16-DEHYDROPREGNENOLONE ACETATE FROM SOLASODINE

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Steroidal compounds either extracted from plant or animals now attains best and even more attraction among the researchers for the treatments of ailments of human being.the steriodal compounds which we have got as the gifts from the plant origin now help us to improve the mode of treatment o fhuman beings, in various ways.The steriodal compounds which are already exist in plant kingdom ,first we have to isolate them in pure form , and then we have to study their pharmacological actions in details.
My present research work also follows the the same observations as explained above.In my research work , I have isolated , a steroidal glycoalkaloid 'Solasodine' in pure form, from the the fruits of Solanum khasianum (plant identified in C.I.M.A.P, LUCKNOW, INDIA).The yield of SOLASODINE was 5% on dry wwight basis.
Another interesting finding of my study was that nSolasodine is successfully converted into OF16-DEHYDROPREGNENOLONE ACETATE , which is a starting material for for AntiFertility and Anti Inflammatory Cortocosteroidal drugs like Betamethasone. The Percentage conversionwas about 73% from Solasodine.
I have also isolated the 'Oil'from the seeds of Solanum Khasianum and the oil contained 'Stearic Acid'. The RT value of Stearic Acid was cinfirmed by Gas Chromatography.I have also isolated two long chain Fatty Alcohols from the toluene layar of the extract of Solanum Khasianum L..
The most interesting finding of my work is that SOLASODINE is said to have 'ANTI CANCER ACTIVITY' against Human Myeloid Leukemia celllines(U937).It is seen that it cuan compete with Anti CanCer Drug 'ARA-C'(94.96%@40µL)[%OF NHIBITION (C-A or T /C) *100] .C1,C2.C3,C4 ARE THE CONTROL (WITHOUT DRUG)
2.A1,A2,A3,A4 ARE THE STD. ANTICANCER DRUG(ARA-C)
3.T1,T2,T3.T4 ARE THE TEST DRUG AT DIFFERENT CONCENTRATION (SOLASODINE HYDROCHLORIDE)
Solasodine can also be used for Cox I/II inhibition too.

NS-P-010

EVALUATION OF ANTI-INFLAMMATORY AND ANTI-CANCER PROPERTIES OF SYNTHETIC HYDROXYCINNAMIC DERIVATIVES

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Among polyphenolic compounds, hydroxycinnamic acids (e.g. ferulic and caffeic acids) are a well-known group of phytochemicals present in human diet in significant amounts involved in the defense against deleterious oxidative damage. In the present study, the anti-inflammatory (cycloxygenase-2, COX-2, inhibition) and anticancer properties of the synthetic hydroxycinnamic derivatives trans-3-(3,4,5-trihydroxyphenyl)-2-propenoic acid (A), trans-ethyl(3,4,5-trihydroxyphenyl)-2-propenoate (B) and diethyl 2-(3,4,5-trihydroxy-phenylmethylene)malonate (C) were evaluated. COX-2 activity was measured using a colorimetric assay kit (Cayman Chemical, Ann Harbor, MI, USA) and the cytotoxicity against cancer (mammary gland adenocarcinoma, MDA-MB-231) and non-neoplastic (skin fibroblasts, BJ) human cell lines was also evaluated using standard assays (1,2). At the concentration studied (100 µM) two of the hydroxycinnamic derivatives (A and B) presented significant COX-2 inhibitory activity (94.0 ± 2.3%, n=8; 76.6 ± 10.8%, n=8, respectively), values similar to those obtained with the potent anti-inflammatory drug used as standard (indomethacin; 95.7 ± 1.8%, n=8). Moreover, these compounds (A and B) also presented the highest cytotoxic effect against the cancer MDA-MB-231 line (down to a cell viability of ca. 60 %,). In conclusion, compounds A and B seem to be potent anti-inflamatory and anti-cancer agents.

NS-P-011

DETERMINATION OF THE TOXICITY OF THE PSILOCIBE CUBENSIS FUNGI THROUGH THE BIOASSAY OF ARTEMIA SALINA LEACH.

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The Psilocibe cubensis is one fungi of the Agaricaceae family, much spread out in the entire planet, however its preferred habitat is bovine dung. The Psilocibe cubensis has hallucinogenic effect had the presence of its main alkalis: Psilocibin and Psilocin. The Artemia salina Leach is a brine shrimp, widely known as indicating of toxicity in a bioassay that uses the concentration that kills 50% of the animals (LC50) as parameter of evaluation of the toxicology activity. Our work had as objective to carry through the determination of the toxicity of the Psilocibe cubensis mushroom through the bioassay with Artemia salina Leach. For the attainment of the larvae, cysts of Artemia salina had been placed in saline water (pH 8,5 and 29°C) under artificial illumination for 48h. Solution was prepared in salt water, Cremophor, Tween 80 a 5% and dried extract of the mushroom. Tested concentrations were 50, 100, 250, 500, 750, 1000µg/mL. Added 5ml of these concentrations in assay pipes and were added of 10 the 12 larvae. The test was carried through in quadruplicate and two stages. A group has controlled was prepared contends only the solvent, the tensoactive and the larvae. The set in incubation under artificial light for 24h was left and after this period live and dead larvae were counted. The LC50 was determined in accordance with the statistical method Probitos. The result disclosed that the Psilocibe cubensis LC50 of the is 853.3717µg/ml, as the toxic potentiality for the Artemia salina Leach is situated until the band of 1.000µg/ml the Psilocibe cubensis has a light toxicity between the moderate one.

NS-P-012

DETERMINATION OF THE TOXICITY OF THE PSATHYRELLA TUBERCULATA FUNGI THROUGH THE BIOASSAY OF ARTEMIA SALINA LEACH.

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Our work had as objective to carry through the determination of the toxicity of the Psathyrella tuberculata mushroom through the bioassay with Artemia salina Leach. For the attainment of the larvae, cysts of Artemia salina had been placed in saline water (pH 8,5 and 29°C) under artificial illumination for 48h. Solution was prepared in salt water, Cremophor, Tween 80 a 5% and dried extract of the mushroom. Tested concentrations were 50, 100, 250, 500, 750, 1000µg/mL. Added 5ml of these concentrations in assay pipes and were added of 10 the 12 larvae. The test was carried through in quadruplicate and two stages. A group has controlled was prepared contends only the solvent, the tensoactive and the larvae. The set in incubation under artificial light for 24h was left and after this period live and dead larvae were counted. The LC50 was determined in accordance with the statistical method Probitos. The result disclosed that the Psathyrella tuberculata LC50 of the is 745.58048µg/ml, as the toxic potentiality for the Artemia salina Leach is situated until the band of 1.000µg/ml the Psathyrella tuberculata has a light toxicity between the moderate one.

NS-P-013

COMPARATIVE STUDY OF ESSENTIAL OILS OF CYMBOPOGON CITRATUS (D.C.) STAPF CULTURED IN MINERAL OR ORGANIC MANURES USING THE THIN LAYER CHROMATOGRAPH

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Cymbopogon citratus (D.C.) Stapf, popularly known as west lemongrass, is an aromatic plant originated from India, which belongs to Poaceae family. Because they grow in different climatic conditions, they are found in several countries, including Brazil. They present several pharmacological activities well known by the folk medicine, one of them as a tranquilliser. The essential oil of the west lemongrass is widely used in the pharmaceutical, cosmetic and food industries. The aim of this study was carried out to investigate the changes in the essential oil composition of the west lemongrass when they are cultivated in two different manures, mineral and organic. The essential oil of Cymbopogon citratus (D.C.) Stapf cultured in mineral or organic manures, collected from the medicinal Plant HORTO of CESUMAR, was extracted by hydro-distillation and analysed by the thin layer chromatograph (TLC), using silica gel TLC plates as stationary phase, hexane/ethyl acetate 9.2:0.8 as eluent, 2 % sulphur vanillin as spray reagent. Next, the plates were dried in incubator at 105oC for few minutes. The presence of dyes was observed and the Rf of each dye was calculated. In all samples analysed a citrine and yellow (Rf 0.18) and purpure dyes were observed. However, only the essential oil from the plants cultured in mineral manure presented rusted colour dye (Rf 0.27) and brownish dye (Rf 0.40). The results suggest that there are differences between the oils from plants cultivated in mineral manure to that of organic manure, showing that the manure conditions influence in the plant metabolism.

NS-P-014

EFFECTS OF SOLIDAGO CHILENSIS MEYEN EXTRACTS ON INFLAMMATION INDUCED BY DIFFERENT PHLOGISTIC AGENTS IN THE MOUSE PLEURAL CAVITY.

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Objective: The present study evaluated the antiinflammatory effects of S. chilensis rhizome extracts on the inflammatory response induced by different phlogistic agents (bradykinin: BK, histamine: HIST or substance P: SP) on the mouse model of pleurisy.

Methods: Non-fasted adult Swiss mice, aged 2 months, were used throughout the experiments. Previous studies in our laboratory showed that the best doses that inhibited the cell migration and exudation were: aqueous extract (Aq, 25mg/Kg, i.p.), or two fractions isolated from aqueous extract: 1) buthanolic (But, 25mg/Kg, i.p.) or 2) aqueous residue (RAq, 50mg/Kg, i.p.) administered 0.5h before pleurisy induction. These doses and time of pretreatment were used to analyze the leukocytes and exudation 4h after the pleurisy induction by BK (10nmol/cav.), HIST (100mcg/cav.) or SP (20nmol/cav.) administered by intrapleural route. Significant differences between groups were determined by analysis of variance (ANOVA), Dunnett's or Student's t tests. Values of P<;0.05 were considered significant.

Results: In the pleurisy induced by BK, HIST or SP, the extracts inhibited leukocyte migration (P<;0.05), mononuclears (P<;0.05) and neutrophils (P<;0.05). The extracts studied did not inhibit the exudation in the mouse model of pleurisy induced by these phlogogens (P>;0.05).

Conclusions: These results demonstrate that Solidago chilensis has an important antiinflammatory effect, inhibiting cell migration in the acute mouse model of inflammation induced by different phlogistic agents. This antiinflammatory effect may be attributed to the two fractions (buthanolic and aqueous residue) isolated from the aqueous extract.

NS-P-015

EFFECT OF SOLIDAGO CHILENSIS MEYEN EXTRACTS ON THE PROINFLAMMATORY CYTOKINE LEVELS IN THE MOUSE MODEL OF PLEURISY INDUCED BY CARRAGEENAN.

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Objective: The present study evaluated the antiinflammatory effects of S. chilensis rhizome extracts in the acute mouse model of inflammation induced by carrageenan. Methods: Non-fasted adult Swiss mice, aged 2 months, were used throughout the experiments. Previous studies in our laboratory showed that the best doses that inhibited the cell migration and exudation were: aqueous extract (25mg/Kg, i.p.), or two fractions isolated from aqueous extract: 1) buthanolic (25mg/Kg, i.p.) or 2) aqueous residue (50mg/Kg, i.p.) administered 0.5 h before pleurisy induction. These doses and time of pretreatment were used to analyze the inflammatory parameters (leukocytes, exudation, tumor necrosis factor alpha (TNFa), interleukin-1-beta (IL-1b), macrophage inflammatory protein-2 (MIP-2) and neutrophil chemokine (KC) levels) 4 h after the pleurisy induction by Cg (1%/cav., i.pl.). Significant differences between groups were determined by analysis of variance (ANOVA) or Student's t test. Values of P<;0.05 were considered significant. Results: The extracts inhibited leukocytes (P<;0.01), neutrophils (P<;0.01), TNFa (P<;0.05), IL-1b (P<;0.05) and MIP-2 levels (P<;0.05). Only the aqueous extract decreased the exudation (P<;0.01). The extracts studied did not change the mononuclear cell influx or KC levels in the mouse model of pleurisy induced by Cg (P>;0.05). Conclusions: These results demonstrate that the rhizome extracts of S. chilensis have an important antiinflammatory effect, inhibiting leukocytes due to neutrophil influx. This effect seems to be related to the inhibition of the proinflammatory cytokine levels: TNFa, IL-1b and MIP-2, have an important role in the leukocyte chemotaxis.

NS-P-016

STUDY OF ANTIINFLAMMATORY EFFECT OF SOLIDAGO CHILENSIS MEYEN AQUEOUS EXTRACTS IN TWO MODELS OF INFLAMMATION, IN MICE.

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Objective: To evaluate the effects of Solidago chilensis aqueous extracts (Ae) on the following inflammatory parameters leukocyte, neutrophils, mononuclears and exudation, induced by Cg in pleurisy and air pouch mouse models.

Methods: The rhizomes of S. chilensis were collected in Caibi, Santa Catarina, Brazil, in March of 2005. The pleurisy was induced by 0,1ml of carrageenan (Cg 1%) administered by intrapleural route as described by Saleh et al., 1996. The inflammatory parameters (leukocyte, neutrophils, mononuclears and exudation) were analyzed 4h after. In the air pouch, different groups of animals received 1.5ml of air by three alternate days for air pouch formation and on the sixth day, the inflammation was induced by 0,5ml of Cg (1%/cav.) administered by subcutaneous route same as described by Schramm et al., 2000. The same parameters were analyzed 24h after. In both models Ae (10-200mg/kg) was administered by intraperitoneal route 0.5h before the Cg. To study the exudation, 0,2ml of Evans blue dye (25mg/kg) was administered by the intravenous route 1h before the Cg. Significant differences between groups were determined by analysis of variance (ANOVA), or by Dunnett's or Student's t tests.

Results: In the pleurisy induced by Cg, the Ae inhibited leukocyte migration (P<;0.01), neutrophils (P<;0.05) and exudation (P<;0.05). In the air pouch the Ae inhibited leukocyte migration (P<;0.01), neutrophils (P<;0.01) and exudation (P<;0.05).

Conclusions: These results demonstrate that Solidago chilensis aqueous extract had a similar antiinflammatory effect on both studied models, in mice. The observed effect was pronounced in relation to cell migration and exudation.

NS-P-017

COMPARATIVE STUDY OF ANTIINFLAMMATORY EFFECT OF PASSIFLORA EDULIS VARIATIONS FLAVICARPA AND GLYCINE MAX (L.) IN THE MOUSE AIR POUCH MODEL.

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Objectives: To analyze and compare the antiinflammmatory effects of Passiflora edulis of the type flavicarpa (Pe) and Glycine max (L.) (Gm), in an acute model of the mouse air pouch (ap).

Methods: The aqueous extracts and the butanolic fraction from both Pe and Gm were obtained from the leaves and were administered by intraperitoneal (i.p.) route. In the ap, groups of animals received 1.5 mL of air for 3 alternate days in order to provoke air pouch formation, and on the sixth day, the inflammation was induced by carrageenan (Cg 1% 0.5mL/cav.). The following inflammatory parameters (leukocyte influx, neutrophils, mononuclears and exudation) were analyzed 24h after. Dexamethasone (Dexa: 0.5mg/kg, i.p.) was also included in this protocol. Statistical differences between groups were determined by analysis of variance (ANOVA) and complemented with either Dunnett's or Student's t tests.

Results: Pe was effective in inhibiting the air pouch leukocyte influx and neutrophils ($P<0.05$) in the inflammation induced by Cg. The butanolic fraction of Pe administered 0.5h before Cg was also effective in inhibiting the leukocyte influx and neutrophils ($P<0.05$). The aqueous extract, as well as the butanolic fraction of Gm, were not effective in inhibiting the same studied inflammatory parameters ($P>0.05$). The Dexa also inhibited the leukocyte levels, neutrophils, mononuclears and exudation.

Conclusion: Take'n together; these results provide evidence of the antiinflammatory effects of the Passiflora edulis variation flavicarpa, but not the variation Glycine max (L.), in the mouse model of the air pouch.