Dean’s Message

The renaissance taking place in the overall health sector in the Kingdom does not coincide with the pharmaceutical services available at the present time, where pharmaceutical services are still incapable of coping with this renaissance. This is due to the suffering of the pharmaceutical service sector from the severe shortage in the number of pharmacists and the level of service provided to patients, where studies affirmed that the job market in Saudi Arabia needs more than seventeen thousand pharmacist to work in different health sectors until 1445 H (2026), and that the job market is also suffering from a shortage of qualified personnel specialized in the area of Pharmaceutical Sciences.

Given the importance of upgrading the level of pharmaceutical sciences and the research skills, the College of Pharmacy has initiated an Annual Research Day to encourage faculty members, graduate students and undergraduate students to actively participate in the research process. This integration is pioneer to the academic culture in Saudi Arabia, and it is expected to move the research environment to an advanced level.

Finally, I would like to thank the organizing committee, faculty and administration members, as well as participating students for the great effort they had to put in order to make this idea a reality. Last but not least, I would like to extend special thanks to Dr. Hisham Aljadhey, Vice-Dean for Academic Affairs, for initiating this event.
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Pharmacy Student Union
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POSTERS ABSTRACTS
(Deriyah campus)
A1A1. FORMULATION AND CHARACTERIZATION OF DOMPERIDONE SOLID LIPID NANOPARTICLE (SLN)

Salman Almalki and G. Shazly

PURPOSE: Domperidone is a dopamine-receptor (D2) antagonist, widely used in the treatment of motion sickness. It is poorly water soluble and has low absorbability after oral administration, leading to poor bioavailability of 15%. In addition, it is supplied at low dose (10 mg) and has low molecular weight (425.9), requiring long term treatment and repetitive dosing which make this drug an interesting candidate for development of solid lipid nanoparticle (SLN). SLN are colloidal lipid systems, which have been proposed for several administration providing controlled release profiles for many substances. The purpose of the present investigation was to prepare and evaluate DOM loaded solid lipid nanoparticles (DOM-SLN).

METHODS: Domperidone SLNs were prepared using 4 different lipids (stearic, softisan, dynasan and imwitor). Briefly, the aqueous solution containing sodium deoxycholate, tween80 was heated to 80°C, then under mechanical stirring the solution was added to the lipid melted at the same temperature. The stirring was kept to form solid lipid nanoparticles.

RESULTS: The thermal analysis data revealed disappearance of the melting peak of domperidone in all SLNs and this indicated complexation of domperidone within the lipids. The mean particle size were found to be 576.4, 190.7, 348.5 and 619.5 nm for dynasan, stearic acid, imwitor and softisan SLN respectively. The entrapment efficiencies were 40.3, 69.4, 50.8 and 47.1 for dynasan, stearic acid, imwitor and softisan SLN respectively. DSC studies revealed that DOM was in an amorphous state. In vitro release studies demonstrated that all formulations exhibited a controlled release over a period of 24 hrs.

CONCLUSIONS: Domperidone solid lipid nanoparticles were successively prepared using hot method.

A1B1. QUALITY CONTROL STUDIES OF AUGMENTIN GENERIC EQUIVALENTS IN SAUDI ARABIA MARKET

Omar A.S. Al-Saidan, Abdullah S.F. Al-Dosseri, and Ibrahim Aljuffali

Purpose: Amoxicillin is an antibacterial drug widely used against gram-positive and gram-negative microorganisms. The aim of the current study is to compare the quality attributes of five generic products that contain amoxicillin 500mg and clavulanate 125mg, these products are available in Saudi market.

METHODS: five Generic products were collected from the local market. Quality attributes such as Dissolution, friability, hardness and weight variation were tested according to the United States Pharmacopeia (USP 34) monograph.

RESULTS: The pharmaceutical quality of these generic products of Augmentin was ensured. Products were tested for hardness, friability, weight variation, and dissolution. The friability of these five products was found to be within pharmacopeia limit (<1%). The weight variation of all products was within range. For hardness testing, only one generic product was out of specification. In first 15 minutes four generic products was 100% release and one generic was out of specification.

CONCLUSIONS: All tested generic products of Augmentin were comparable using standard pharmacopeial testing. The weight variation and friability both were within pharmacopeia limit except for one generic product. Dissolution also passes the pharmacopeial requirement for these generic products.

A1B2. ENHANCEMENT OF EX VIVO INTESTINAL TRANSPORT OF GLICLAZIDE USING FLEXIBLE LIPOSOMES

Khaled Almansour, Ahmed Alshamrani, Abdullah H. Al-Omran, and Ibrahim Aljuffali
**PURPOSE:** Gliclazide is a commonly used oral hypoglycemic agent. Gliclazide suffers from slow intestinal absorption and the low permeability which can be attributed to poor membrane permeability. The main purpose of this project was to evaluate flexible liposome containing a lipod S 100 and Sodium Deoxycholate (SDC) or Tween 20 to enhance intestinal permeability of the poorly water-soluble and poorly permeable drug (Gliclazide).

**METHODS:** The liposome vesicles were prepared using film hydration method. Gliclazide containing liposome were evaluated for size, size distribution and loading efficiency. Drug permeation studies for the formed vesicles were conduct ex vivo using rat intestinal sacs.

**RESULTS:** The mean particle size of Gliclazide-loaded liposome (using Tween 20) was 469 nm with a polydispersity index of 0.141. For Gliclazide liposome (using SDC), the mean particle size was 552 nm with a polydispersity index of 0.174. The entrapment efficiency of Gliclazide liposome (using Tween 20) was 50.3%, and for Gliclazide liposome (using SDC) was 43.47%. Gliclazide-loaded liposome (using Tween20) show significant increase in the cumulative amount of Gliclazide transported across the intestinal sac from 2.03 mcg (using Gliclazide solution) up to 3.31 mcg by Gliclazide-loaded liposome (using Tween 20). Gliclazide-loaded liposome (using SDC) didn’t show significant change in drug permeability.

**CONCLUSIONS:** The permeability of Gliclazide was significantly influenced using flexible liposome (using Tween 20). Further studies to evaluate the role of such formulation will be conducted to improve in vivo Gliclazide absorption.

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**A1C1:** DEVELOPMENT AND CHARACTERIZATION OF FLEXIBLE LIPOSOMES CONTAINING PRAVASTATIN: DEPENDENCY ON THE TYPE OF SURFACTANTS

Mohammad Al-Hussain, Mohammad Al-Gahtani and Mohamed Badran

**PURPOSE:** Pravastatin (PRV) is used in the treatment of hypercholesterolemia. The active form of pravastatin is open hydroxyl-acid so that its hydrophilicity is markedly higher than that of other Statins. Unfortunately, the oral bioavailability of the pravastatin is low due to degradation in the stomach and incomplete absorption. Therefore, several approaches were developed to improve the bioavailability of the PRV including from inhibition of Pgp to nanoparticles and microparticles. So, we investigated the in vitro release properties of different flexible liposomes containing pravastatin, which used to enhance oral bioavailability of PRV. Since this is a preliminary study, enhanced bioavailability will not be addressed here and will be explored in the following series of studies.

**METHODS:** The three types of flexible liposomes containing, Tween80, Tween20 and sodium deoxycholate in comparison with conventional liposomes were prepared. All of the tested vesicular systems were characterized in terms of size distribution, polydispersity index, entrapment efficiency and surface morphology. All formulae were assessed in vitro release using Franz diffusion cell fitted with artificial membrane, (cellulose membrane). This will be followed by in vivo evaluation of PRV the promising formulae and comparison of the effects with that of the commercially available product.

**RESULTS:** showed that all of the used vesicular systems were able to have almost spherical shapes with low polydispersity (PDI<0.3) and nanometric size range. Also, these systems had low drug entrapment efficiency (EE%) as expected for hydrophilic drugs. In vitro PRV release data showed that flexible liposomes were able to give a statistically significant improvement of PRV release from cellulose membrane. Moreover, the flexible liposomes, prepared with Tween 20, were also able to deliver a higher total amount of PRV.

**CONCLUSIONS:** The enhancement of PRV release was possibly attributable to the vesicle composition of flexible liposomes.

---

**A1C2:** PENETRATION ENHANCEMENT OF ITRACONZOLE USING ULTRADEFORMABLE LIPOSOMES

Mohammad Al-Wuhaib and Mohamed Badran

**PURPOSE:** The objective of this study was to prepare ultradeformable liposomes containing poorly water soluble drug, itraconazole (ITZ), by using surfactants.
Tween 20 and Tween 80 and bile salt, sodium deoxycholate.

METHODS: The effect of these ultra deformable liposomes on the in vitro (trans) dermal delivery of hydrophobic ITZ was investigated. All of the tested vesicular systems were characterized in terms of size distribution, morphology, zeta potential, and vesicle stability. The influence of these systems on the in vitro rat skin penetration and skin deposition of ITZ was studied by in vitro diffusion experiments in comparison with conventional liposomes.

RESULTS showed that all of the used vesicular systems were able to have almost spherical shapes with low polydispersity (PDI<0.3). Also, these systems had a good drug entrapment efficiency and stability. In vitro skin penetration data showed that flexible liposomes were able to give a statistically significant improvement of ITZ deposition in the skin in comparison with conventional liposomes. Moreover, the ultra deformable liposomes, prepared with sodium deoxycholate, were also able to deliver to the skin a higher total amount of ITZ to the receptor. In addition, conventional liposomes showed high deposition of ITZ in stratum corneum.

CONCLUSIONS: thus suggesting that the ultra deformable liposomes have ability to deliver ITZ to the skin layers, which was strictly correlated to the vesicle composition.

A1D1. PREPARATION AND EVALUATION OF DEXTROMETHORPHAN EXTENDED RELEASE MATRIX TABLETS USING Different Grades of HPMC

Ibrahim Eid, Salman Alsaif, Mohsen Alonazi, Abdulmajeed Al-Olayet and Ibrahim El-Bagory

PURPOSE: The objective of the study is to evaluate Dextromethorphan (DM) extended release matrix tablets using different grades of HPMC K15M in different concentrations.

METHODS: DM tablets were manufactured by direct compression method using KORSH single punch machine with 8 mm shallow concave punches. The prepared tablet was then evaluated for their weight uniformity, thickness, hardness and friability. In vitro drug release was performed over 12 hrs.

RESULTS: Dextromethorphan (60 mg) matrix tablets were manufactured with different concentrations (10, 20 and 30%) of HPMC K15M and HPMC 15. The crushing strength and friability tests were improved as the concentration of polymer increased. However, HPMC K15M based formulations showed significantly (p <0.05) higher crushing strength and lower friability than the other formulations. This indicates that the HPMC K15M polymer has a good binding characteristic. The release of DM from tablets was significantly (p<0.05) prolonged with an increased HPMC K15M content in the tablets. The release was decreased as the HPMC 15 level in the matrix increased. Drug release is controlled by the hydration of HPMC, which forms a gelatinous barrier layer at the surface of the matrix.

CONCLUSIONS: The release of DM from the formulation containing 30% of HPMC 15 was found to be 100% after 10 hours this was attributed to an increase in polymer proportion and hence an increase in the viscosity of the gel layer and thus increase the diffusional pathlength. This could decrease the diffusion of the drug leading to a reduction in drug release rate.

A1E1. INFLUENCE OF SOLVENT, STABILIZER, AND STABILIZER'S CONCENTRATION ON THE PHYSICAL PROPERTIES OF PLGA NANOPARTICLES

Riyad Alzahrani and Aws Alshamsan

PURPOSE: Poly(lactic-co-glycolic acid) PLGA is a biodegradable polyester that is approved by the FDA for human use. It has been widely used for several medical applications including microspherical vehicles for sustained release. However, the effect of the preparation conditions on PLGA nanoparticles (NPs) has not been fully understood. This study aims to investigate the influence of solvents and stabilizers used during PLGA NPs preparation on their size and surface morphology.

METHODS: PLGA NPs were prepared using oil/water emulsion-solvent evaporation technique. Approximately, 40 mg PLGA (50:50) (M.Wt ~ 40-75 kDa) were dissolved 500 µl dichloromethane (DCM) or chloroform and then emulsified on 3 ml of 1%, 3%, 6%, or 9% of polyvinylalcohol (PVA) or polyvinylpyrrolidone (PVP). The organic solvent was evaporated by medium stirring for 2 h and the NPs were washed 3 times in deionized
water before freeze drying for 3 days. Surface morphology was determined by scanning electron microscopy (SEM), while size distribution was determined by dynamic light scattering (DLS).

**RESULTS:** All particles were in the range of 500-200 nm. A trend was noticed in both stabilizers groups, where particle size decreases as the stabilizer's concentration increases in spite of the solvent used in the organic phase. Moreover, DCM produced smaller particles compared to chloroform in all groups, which might be attributed to the slower rate of evaporation of chloroform compared to DCM. Finally, NPs generated by the use of chloroform have smoother surface compared to DCM groups, which can be attributed to the higher interfacial tension generated between the aqueous phase and the organic phase in the case of chloroform.

**CONCLUSIONS:** This study sheds the light on the influence of preparation condition on PLGA NPs properties. Controlling PLGA NP size and morphology may have a potential impact in tailoring the medical application of such particles. Nonetheless, further studies are needed to corroborate the current outcomes, which we are currently conducting in our lab.

**A1F1. DEVELOPMENT AND CHARACTERIZATION OF SIMVASTATIN LOADED LIPOSOMES: EFFECT OF CHOLESTEROL CONCENTRATION**

Abduleelah M. Aldaweesh, Saud A. Almawash and Abdullah H. AlOmrani

**PURPOSE:** Simvastatin, one of the widely used hypocholestermic agents, exhibited low and variable bioavailability (<20%) due to its poor water solubility, intestinal permeability, and first pass metabolism effect. Vesicular drug delivery systems such as liposomes observed attractive results in enhancing drug solubility and permeability. Therefore, preparing simvastatin-loaded liposomes may contribute in solving problems associated with simvastatin water solubility and intestinal permeability. Accordingly, this project is aimed to investigate the effect of the presence and absence of cholesterol on the liposomes with respect to particle size and simvastatin loading efficiency and release.

**METHODS:** Simvastatin-loaded liposomes were prepared utilising two different techniques; thin film hydration method and freeze-thawing technique. For film hydration method, lipoid S-100 and simvastatin were dissolved in chloroform/methanol solvent system in the presence and absence of different concentrations of cholesterol. Solvent system was evaporated under 60 °C using rotator evaporator machine. The formed film was rehydrated with ten millilitres of water. Regarding freeze-thawing method, the same previous liposomal compositions were also used to prepare liposomes in which these compositions were dispersed in 10 mL of water, warmed to 60 °C followed by rapid freezing by liquid nitrogen and re-thawed again. The cycle of freeze-thawing was repeated six times. The resultant liposomes from the two mentioned techniques were undergone probe sonication for one min to reduce their particle size.

**RESULTS:** The results of particle size revealed that the film hydration method yielded small vesicle size for simvastatin-loaded liposomes prepared without cholesterol. However, presence of cholesterol resulted in an increasing in the size of the vesicles. In case of freeze-thawing method, a trend of increasing in the vesicle size due to increasing the amount of cholesterol was observed. The entrapment efficiency of simvastatin in different liposomes was irregular with liposomes containing the highest amount of cholesterol being entrapped the largest amount of simvastatin. The data of simvastatin release showed that the presence of cholesterol make liposomes more rigid compared to that prepared in the absence of cholesterol.

**CONCLUSIONS:** Liposomes showed a promising delivery system to enhance the solubility of simvastatin. Method of preparation and presence of cholesterol significantly affected the characteristic of liposomes with respect to particle size and entrapment efficiency and release of drug.

**A1F2. ENHANCING THE DISSOLUTION OF MELOXICAM USING SPRAY DRYING TECHNIQUE**

Faris Abdullah Al-Motairi, Abdulmajeed S. Al-Nusairy, and Abdullah H. Alomrani

**METHODS:** Meloxicam was prepared as a fine powder by spray drying technique. Meloxicam powder was loaded into the spray drying system along with an aqueous solution of a wicking agent. The wicking agent was added to increase the surface area of the powders and enhance the dissolution rate. The resulting powders were then subjected to a dissolution study to determine the dissolution rate and compare it with the dissolution rate of the raw material.
**PURPOSE:** Meloxicam (MLX), a potent non-steroidal anti-inflammatory drug (NSAID), is frequently used for patients with joint and bone diseases including rheumatoid arthritis, osteoarthritis, and ankylosing spondylitis. Similar to many NSAIDs, MX is practically insoluble in water and is classified as class II according to the Biopharmaceutical Classification System (i.e., low aqueous solubility and rapid absorption through the gastrointestinal tract). Surfactants and hydrophilic polymers are frequently used to promote dissolution rate of low water soluble drugs. However, high weight ratio of polymer to drug (up to 5:1) was used in different studies to enhance dissolution rate of meloxicam. Therefore, the current study is designed to reduce such high ratio of polymer by employing three polymers together seeking for potential effect. Based on the above-mentioned information, the objective of this study is to enhance the dissolution rate of meloxicam utilizing spray-drying technique in the presence of PEG6000, pluronic F68, and gelucire (MLX SD).

**METHODS:** MLX gelucire50/15, PEG6000, and pluronic F68 in weight ratio of (1:0.5:0.5) and (1:0.25:0.25) were dissolved in sufficient amount of dichloromethane/methanol solvent system and spray dried at inlet temperature 45°C. The spray-dried MLX was characterized with respect to their particle size using laser diffraction analyzer and thermal behavior using DSC and in vitro release in 0.1N HCL and phosphate buffer (pH = 7.4).

**RESULTS:** The thermal analysis data of the spray-dried MLX with polymers revealed the absence of the melting peak of MLX (figure 1). This may indicate that MLX has lost its crystalline form and being in amorphous form. Figure 2 exhibited the particle size of the resulted MLX SD. It was found that the particle diameter of MLX SD is around 500 nm. Figure 3 and 4 showed the in vitro release of the unprocessed MLX and the MLX SD in 0.1N HCL and phosphate buffer pH 7.4, respectively. It was found that the release rate of MLX SD in case of phosphate buffer is 10-folds than that of unprocessed MLX. However, in case of 0.1N HCL, the release rate from MLX SD is not significantly different from that of unprocessed MLX.

**CONCLUSIONS:** The spray-dried MLX in the presence of PEG6000, Gelucire50/13, and Pluronic F86 resulted in enhancing the dissolution rate of MLX in phosphate buffer pH 7.4 reaching 100% of the investigated dose MLX SD results in enhancing the dissolution of MLX.

**AIG1. ENHANCING PERMEABILITY OF CIPROFLOXACIN BY USING SLN**

Ehab Alsharif, Bassam Ali, Hazza Alghamdi, Ali Lardhi, Alaa Edeen B. Yassin, G. Shazly, M. Badran

**PURPOSE:** Solid lipid nanoparticles (SLN) have emerged as novel modified release systems for several drugs. Ciprofloxacin HCl (CIPRO), a broad-spectrum antibacterial agent, is more absorbed from the stomach and the proximal part of the small intestine. CIPRO, being poorly soluble and poorly permeable, is classified as class 4 drug. The incorporation of CIPRO into solid lipid nanoparticles was proposed to enhance the drug permeability and consequently allow the use of lower doses resulting in lower dose-dependent adverse effects.

**METHOD:** SLN were prepared by double emulsion-solvent evaporation technique (w/o/w) using triglyceride esters, Softisan 154 or Dynasan™ 118 along with soyalecithin as the lipid parts. The prepared SLN were evaluated for their particle size and distribution, particles net charge, and entrapment efficiency. The in vitro drug release was monitored in phosphate buffer pH 7 for 48 hours. The thermal behavior of the prepared SLN was observed utilizing Differential Scanning Calorimetry (DSC) and compared drug free SLN as controls.

**RESULTS:** The results showed that the applied can be successfully used for the preparation of CIPRO-loaded SLN. The particle sizes were in the range from 271.4 nm ± 13.5 for F1, 253.1 nm ± 10.3 for F2, and 232.7 nm ± 6.8 for F3. The size distribution was in a narrow range from 0.060 for F1, 0.314 for F2, and 0.238 for F3. The entrapment efficiency was 19.6%, 25.42%, and 27.3% for F1, F2, and F3, respectively. The thermal behavior and particle size analysis of Cipro SLN are showed in Figures 1, 2 and the in vitro release pattern of Cipro SLNs are exhibited in figure 4.

**CONCLUSION:** Ciprofloxacin HCl was successfully loaded into SLNs by double emulsion-solvent evaporation technique (w/o/w). The in vitro release tests showed sustained release from the SLNs.
B- Department of Pharmaceutical Chemistry

A2A1. ANTI-HISTAMINIC DRUGS

Mohammed Althonayan and Abdulrahman Alobaid

PURPOSE: Histamine is a chemical produced by the body that aids in immune response and acts as a neurotransmitter. In response to foreign pathogens in the body, histamine is produced by basophills, a type of WBC’s, and mast cells, cells in the connective tissue with similar characteristics to basophils. Histamine helps fight off infection by making capillaries more permeable to white blood cells that fight pathogens. We have 4 histaminic receptor with different functions of each one. H1 function is Allergic responses, H2 is for Gastric secretion, H3 is for CNS receptors, and H4 still under clinical trial.

METHODS: Using studies about antihistamines in US and observe the 4 different classes of receptors and its function. Explain the mechanism of action of each blocker, side effects, and show the synthesis and chemical structure. I choose 15 patients (in Dallah Hospital) and ask them about some antihistamines medications like: Flutab, Zantac, to know how is their Health awareness about this medications.

RESULTS: - we know the goal of designing second generation which is to reduced ability to penetrate the CNS and decreased affinity for central histamine receptors. I found all of 15 patients know about the side effect about the choosen medications (Flutab, Zantac) but they don’t know about the precautions about it.
-H4 receptor is new discovery but still under clinical trial which act on immune cells.

CONCLUSIONS: Increase awareness about antihistamine medications in pharmacy by writing the precautions in table like in medication causes sedation “don’t drive” “don’t use operating machinery.” Or in Zantac: ask the patient if he has liver or kidney disease give him alternative medication.

A2A2. CNS DEPRESSANTS

Abdulrahman Alzahrani and Abdulrahman Alobaid

PURPOSE: The aim of this research is to identify the CNS depressant’s classes and to show the mechanism of action for each one. Then, the research focused on the indications of each drug including the side effects.

METHODS: For this research I collected the information using previous studies on the subject. Also, trusted websites were used to complete this research.

RESULTS: The research showed that some classes had two generations of drugs, the first one had many side effects which were avoided upon the second generation of drugs which increased the usage of the second generation due to having less side effects than the first generation and, some drugs are used as synergic effect with other drugs.

CONCLUSIONS: While this research managed to explain the mechanism of action for most drugs perfectly, it had difficulties doing the same thing with side effects. So, there should be more in-depth studies concerning side effects for more accuracy.

A2A3. ANALGESICS

Mujally Alsaiary and Abdulrahman Alobaid

PURPOSE: Analgesics consisted of two types, namely: 1. Narcotics: Analgesics this type of work on the central nervous system and causes insensitivity to pain, fainting and sleep. The biggest disadvantage of this type of analgesic drug is addictive to users. Examples: Codeine, Morphine, etc. 2. Non- narcotics: Analgesic drug has no effect as powerful as narcotics in terms of reducing pain, but this drug does not cause addiction. This drug also has the effect of antipyretic (lowers body temperature). Example: Aspirin, ibuprofen, etc. So you no longer confused with the so-called analgesics, which foremost do not consume more than the prescribed dose, because it can cause side effects.

METHODS: Studing and research in general analgesics and show the major classes. Explain the mechanism of action, side effects, and show the synthesis and chemical structure. I asked some pharmacists about the impact of painkillers and patients who use analgesics on a permanent basis.

RESULTS: Knowledge of the main reasons for the use of analgesics and continue the search for the production of analogues and used. We identified the side effects of
analgesics in general and everyone is convinced by, but nevertheless is used for this type of medicine.

CONCLUSIONS: Advances in therapy of pain have been slow, but better trial design will address this producing, it is hoped, safer, and more effective drugs in the near future.

CAUTION: We must use caution if using these products, especially narcotics because of lethal damage in the event of misuse or overdose.

C- Department of Pharmacognosy

A3B1. PHYTOCHEMICAL AND MICROBIOLOGICAL SCREENING OF VARIOUS EXTRACTS OF SARCOSTEMMA ARABICUM (ASCLEPIADACEAE)

Nawaf Al-Motairi, Mohammed Al-Harbi, Abdul Malik Al-khalif, Thaar Al-Qahtani and Nasir Ali Siddiqui

PURPOSE: Microbes are one of the most prevalent causes of many diseases and to counter their effects are available many modern drugs in the market. These modern drugs affect the human body in one way or the other. Therefore we tried to explore some potent alternatives to the modern drugs as anti-infective agents and also to investigate the nature of phytochemicals responsible for such activities.

METHODS: Plant material is collected from north area of Saudi Arabia (Hail) and dried in sun. The aerial parts and root Of Sarcostemma arabicum is separated and coarsely powdered then extracted by maceration method using different solvents. All the extracts were screened for phytochemical constituents using specific chemical tests for identification (10). The same extracts were screened for antimicrobial activity by using agar-dilution technique according to method described by Mitsche et al (11) at concentration 1 mg/ml and incubation time was 24 h at 37°C.

RESULTS: Phytochemical screening of Sarcostemma arabicum showed the presence of Carbohydrates, glycosides, phenolics, flavonoids and steroidal compounds in different extracts. All the extracts have been examined for antimicrobial activity against 6 microorganisms of significant importance. The root extract of ethanol and chloroform exhibited potent antibacterial activity against Staphylococcus aureus and Bacillus subtilis. 

CONCLUSIONS: The root extracts seems to be promising for antibacterial action. From the literature survey it can be deduced that there are good chances of some novel compounds in root part. Further in depth study on the parameters investigated in the present experimentation need to be designed and explored for isolation of pure antimicrobial compounds from the active fractions.

A3C1. EVALUATION OF ANTIOXIDANT ACTIVITY OF SELECTED MEDICINAL FOODS USED IN SAUDI ARABIA

Abdulelah aljallal - Hassan alshehrri - Raed alturki, and Ramzi Ahmed Mothana

PURPOSE: Plants still remain a prime source of drugs for the treatment of different diseases. Antioxidative plants are being investigated as possible treatment for neurodegenerative diseases such as Alzheimer’s disease, Parkinson’s disease, amyotrophic lateral sclerosis, as a way to prevent hearing loss and lower risk of heart diseases. Therefore, the aim of this work was to investigate the antioxidant activity of the ethanolic extracts of some food plants used frequently in Saudi Arabia.

METHODS: Four plants were purchased from the local market of Riyadh, namely Zingiber officinale Roscoe, (ginger), Hibiscus sabdariffa L. (Roselle), Nigella sativa L. (black seed) and Allium sativum L. (garlic). The Identification was done at the Pharmacognosy department, college of Pharmacy, King Saud University. The plants were extracted with methanol by using the Soxhlet extractor. The obtained methanolic extracts were filtered and evaporated by using a rotary evaporator and freeze dryer. The dried extracts were stored at -8 0C until tested. The antioxidant activity was tested using two in vitro assays namely, the 1,1-diphenyl-2-picryl-hydrazyl free radical (DPPH*)-scavenging assay and the β-carotene-linoleic acid assay.

RESULTS: According to the data obtained, significant differences were observed among treatments for antioxidant activities. The results obtained from the
preliminary analysis showed that the antiradical and antioxidant activity of ginger was the highest in comparison to other extracts. *H. sabdariffa* and *N. sativa* extracts showed also a strong antioxidant activity (79 and 67%) respectively. Both extracts effectively scavenged (DPPH) radical. They exhibited a 96 and 64% scavenging effect at a concentration of 500 µg/ml. The *A. sativum* extract showed surprisingly only moderate or weak antioxidant activity in both assays.

**CONCLUSIONS:** In conclusion, the results in the present study are agreed to some extent with the traditional uses of the plants investigated. Our results further support the idea that these medicinal foods can be promising sources of potential antioxidant agents. The use of such antioxidants e.g. *Zingiber officinale*, *Hibiscus sabdariffa* and *Nigella sativa* may be useful in the prophylaxis of certain diseases, e.g. inflammations, Alzheimer’s disease, heart disease, stroke, arteriosclerosis, diabetes and cancers.

**A3D1. CYTOTOXIC ACTIVITY OF CERTAIN UNORGANIZED DRUGS**

Thamer N. Al-Harbi, Mohammed A. Al-Qahtani, Sultan A. Al-Harbi, and Atallah F. Ahmed

**PURPOSE:** Natural products have been the most productive source of potential bioactive leads for drug development. Simple *in vitro* assays can be a useful tool to preliminary screen and evaluate the cytotoxic activity of plant-derived natural products. In this work, the methanol-soluble fraction of three plant-derived oleogum resins, viz. myrrh, asafoetida, and mastic; pine resin (colophony), aloe-derived latex; bee-made propolis; and the methanolic extracts of black pepper and agarwood were evaluated against the growth of two genetically engineered yeast mutants and HepG2 cancer cells.

**METHODS:** High quality samples were purchased from local herbal stores. All samples were extracted with methanol, quantitatively filtered, and evaporated to yield the methanol-soluble fractions or extracts. Using genetically-modified yeast strains: rs322 (topoisomerase I-deficient strain) and rad52 (topoisomerase II-deficient strain); and hepatocellular carcinoma (HepG2) cells, the cytotoxic activity of methanol-soluble fractions of the eight drugs could be evaluated. In the first assay, the anticancer lead is that create a zone of inhibition ≥6 mm against rs322 and rad52 mutant yeasts wider than that induced against the control wild yeast strain. The cytotoxic potentiality of the drugs against HepG2 was determined by the metabolic reduction of a tetrazolium salt to a formazan dye (MTT assay) which corresponds to the degree of reduction in the viability of cancer cells.

**RESULTS:** It was found that the methanol-soluble fraction of myrrh, asafoetida, and black pepper exhibited zone of inhibition 6-8 mm against the growth of the topoisomerase I and II-deficient yeast mutants (rs322 and rad52, respectively) at 2 mg/ml, wider than that induced against the growth of the wild (topoisomerase I and II retained) yeast strain. The three materials also showed basic antifungal potentiality against the wild yeast strain (inhibition zone 16-20 mm). In the second assay, only DMSO-soluble fraction of mastic, among others, showed week cytotoxicity (30% inhibition) against HepG2 cancer cells at concentration 100 µg/ml.

**CONCLUSIONS:** Methanol-soluble extract of black piper, asafoetida, and Myrrh showed significant cytotoxicity activity, probably through DNA-damaging mechanism. The fact that the other plant-derived natural products, which were previously reported to possess cytotoxicity against cancer cell lines and were apparently negative in the present work, suggests that they act by different mechanism than DNA-damage. The three materials can be also considered as antifungal, due to its inhibition capacity against the wild yeast strain.

**A3E1. CHROMATOGRAPHIC INVESTIGATION OF FLAVONOIDAL CONTENT OF SOME MEDICINAL PLANT**

Abdulaziz ALqahtani, Abdulmajeed Aljomiyah, Ali Almuntashiri, Rakan Aalamer, Omar Bawazir, and Prof. Ashraf Khalil

**PURPOSE:** Investigate the flavonoidal content of widely used herbs; Cumin, Licorice, Chamomile, Onion and Orange, Training students on data collection, acquiring skills in TLC analysis, and exploring the potential use of some of the herbs for production of flavonoids.
METHOD: Few grams of each powdered herb were extracted by alcohol (95%), evaporated under reduced pressure. The concentrated extracts were subjected to Thin Layer Chromatography (TLC, Silica gel GF254, Merck) using the following solvent systems:
1) Toluene/MeOH (10:2) for Cumin and Liquorice and (8:2) for Chamomile
2) CHCl3/MeOH/H2O (90:10:1) for Orange and Onion
3) Acetic acid/ H2O (45%) for Onion and 20% for Orange [Cellulose plates].
The Chromatograms were visualized under UV-light (366 nm) and sprayed by 5% NaOH aq. solution, then photographed.

RESULTS: The results of TLC experiment revealed a high flavonoidal content of these herbs especially Onion scales and Cumin.

CONCLUSION:
1) TLC is a useful analytical tool for identification of flavonoids (As evident from TLC chromatograms pictures), and can be used in Quality Control of Herbal Drugs.
2) These herbs are rich in Flavonoids (especially onion scales and cumin) and are strongly recommended for use in food/drink.

Orange scales are a good source for production of flavonoids for manufacture of pharmaceutical forms.

D- Department of Pharmacology & Toxicology

A4A1. CLINICAL PREDICTIVE VALUE OF BIOLOGICAL MARKERS IN TRIPLE NEGATIVE BREAST CANCER SAUDI FEMALES

Mohamed A. Al-Qinyah, Abdullah S. Al-Hamed, Khaled M. Bin-Saleh, Hussain N. Al-Hammami and Mohamed M. Sayed-Ahmed

PURPOSE: Triple Negative Breast Cancer (TNBC) is an aggressive subtype of breast cancer (BC) that lacks the expression of estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor-2 (HER-2). Despite TNBC represents only 15% of all types of BC, it accounts a large number of metastatic cases and deaths. Because of the poor prognosis and the high rate of metastasis, local and systemic recurrence associated with TNBC, researchers have been actively looking for target therapies and innovative therapeutic strategies to effectively treat this aggressive disease. Molecular targets and predictors for the treatment of TNBC do no currently exist. Accordingly, this study has been initiated to investigate the differential expression of biological markers in TNBC and Non-TNBC Saudi females that might be utilized as potential targeted-therapy and/or predict sensitivity to currently available chemotherapeutic regimens.

METHODS: To achieve the ultimate goal of this study, a total of 200 formalin-fixed and paraffin-embedded (FFPE) breast cancer samples were selected and divided into 3 groups; control benign and normal breast tissues (20), TNBC (80) and Non-TNBC (100). Expression of mRNA in FFPE tissues was performed using RT-PCR for the following genes; poly(ADP-ribose)polymerase (PARP-1), topoisomerase-2A (TOPO-2A) and vascular endothelial growth factor (VEGF).

RESULTS: In TNBC cases, mRNA expression of PARP-1, TOPO-2A and VEGF genes were significantly increased as compared to Non-TNBC cases. Expression of PARP-1 gene showed positive correlation with tumour grade.

CONCLUSIONS: Data from this study suggest that: (1) TNBC patients will be more benefited from PARP-1 and TOPO-2A inhibitors as well as antiangiogenic and antimetastatic therapies. (2) Inhibition of the expression of these target genes is emerging as one of the most exciting and promising targeted therapeutic strategies to treat TNBC in which the intended targets are DNA repair, tumour angiogenesis and metastasis.

A4B1. IMPACT OF QUERCETIN ON CISPLATIN-INDUCED DNA DAMAGE AND APOPTOSIS

Al-shammari HS, Al-shammari FH, Al-enzy HS, Al-enzy MB, Al-mutrafi AR and Attia SM

PURPOSE: An ideal chemotherapeutic treatment would selectively attack cancer cells without causing toxicity on normal tissues. Unfortunately, this ideal selectivity has not yet been reached by traditional chemotherapy, which
is known to affect both neoplastic and proliferating normal cells. The objectives of the current study are to determine whether non-toxic doses of quercetin can ameliorate genomic DNA damage and apoptosis induced by the anticancer agent cisplatin in non-tumor murine cells.

**METHODS:** Male mice were acclimatized for 2 days and divided into nine groups consisting of 10 mice each, set up as follows: Group 1: mice served as a control group and treated daily with the vehicle for 7 consecutive days. Groups 2 and 3: mice were treated with quercetin in a dose of 50 or 100 mg/kg, respectively, once a day, for 7 consecutive days. Group 4: mice were injected with a single dose of 4 mg/kg cisplatin alone. Groups 5 and 6: mice were treated with quercetin at a dose of 50 or 100 mg/kg/day, respectively, once a day, for 7 consecutive days and 4 mg/kg of cisplatin was administrated on the day 7, one hour after regular quercetin exposure. Group 7: mice were injected with a single dose of 8 mg/kg cisplatin alone. Groups 8 and 9: mice were treated with quercetin at a dose of 50 or 100 mg/kg/day, respectively, once a day, for 7 consecutive days and 8 mg/kg of cisplatin was administrated on day 7, one hour after quercetin exposure. 24 hours after cisplatin treatment, bone marrow cells were collected in tubes containing foetal calf serum. End points studied; The Comet assay and micronucleus test were undertaken in the current study as markers of DNA damage. Apoptosis was assessed by the occurrence of a hypodiploid DNA peak using propidium iodide staining. Oxidative DNA damage was assessed by DCFH-DA probe.

**RESULTS:** Quercetin was neither cytotoxic nor genotoxic in mice at doses equivalent to 50 or 100 mg/kg for 7 consecutive days. Pre-treatment of mice with quercetin significantly reduced cisplatin-induced DNA strand breaks in a dose dependent manner as detected by Comet assay. Likewise, pre-treatment of mice with quercetin significantly reduced the frequency of micronuclei formation dose dependently. Moreover, the mitodepression induced by cisplatin was also restored in the quercetin pre-treatment group; however, this amelioration was not significant when compared to the values observed in the group treated with cisplatin alone. Quercetin also markedly decreased the degree of apoptosis in cisplatin-treated animals. Accumulation of DCF fluorescence were profoundly abrogated by quercetin and decreased to the levels significantly different from the levels of these parameters in the cisplatin treatment alone.

**CONCLUSIONS:** This study provides for the first time that quercetin has a protective role in the abatement of cisplatin-induced DNA damage and apoptosis in somatic cells of mice that reside, at least in part, in its radical scavenger activity. Cisplatin has a direct effect on nucleophilic bases in DNA, an important component of its anti-tumor activity, and this will be unchanged by any manipulations that alter the redox reaction. The improvement in mitotic activity of bone marrow cells of animals pre-treated with quercetin in cisplatin toxicity may focus attention on the beneficial effect of quercetin to overcome one of the most serious problems in cancer chemotherapy, which is the bone marrow suppression and related immunosuppression. Therefore, quercetin can be a promising chemoprotective agent and might be useful to avert secondary tumor in cancer patients and medical personnel exposing to cisplatin.

**A4C1. EFFECT OF SUNITINIB, A TYROSINE KINASE INHIBITOR, ON THE EXPRESSION OF CARDIAC HYPERTROPIC AND CYTOCHROME P450 GENES IN RATS**

Faris S. Alnezary, Saad E. Alobid, Raed A. Alotaibi, and Hesham M. Korashy

**PURPOSE:** Sunitinib (SUN) is a recently FDA-approved anticancer tyrosine kinase inhibitor for the treatment of renal cell carcinoma and gastrointestinal stromal tumors. Although SUN has improved survival rates in cancer patients, cardiotoxicity has been reported as a significant side effect. Several mechanisms have been proposed by which SUN causes cardiotoxicity. Yet, the potential effects of SUN on cardiac hypertrophic genes and the role of cytochrome P450 (CYP) enzymes in SUN-induced cardiotoxicity have never been studied. Accordingly, we hypothesized that SUN induces cardiotoxicity by increasing the expression of hypertrophic genes, particularly atrial natriuretic peptide (ANP), β-myocin heavy chain (β-MHC), and cardiotrophin-1 (CT-1) through CYP-dependent pathway. The main objective of the current study was to investigate the ability of SUN to modulate...
the expression of cardiac hypertrophic genes and CYP enzymes in rat.

**METHODS:** Wistar Albino (WA) rats (180-200 gm) supplied by the Animal Care Center at College of Pharmacy, were divided into four groups of 6 rats each. The rats were treated for 15 days with increasing concentration of SUN (0, 1, 2.5, and 5 mg/kg). After the indicated time interval, all rats were sacrificed and thereafter homogenized. Total RNA was isolated using TRIZol reagent followed by cDNA synthesis. The mRNA expression of hypertrophic and CYP genes were determined by Real-Time Polymerase Chain reaction (RT-PCR).

**RESULTS:** Treatment of rats with SUN for 15 days significantly induced the mRNA expression of ANP and β-MHC only at the highest concentration tested by approximately 5-fold. However, CT-1 mRNA was not significantly altered by SUN. On the other hand, SUN induced CYP1A1 and 1A2 mRNA expression levels only at the lowest concentrations, suggesting an inverse-correlation of the hypertrophic genes and CYP expression.

**CONCLUSION:** SUN induces cardiotoxicity by increasing the expression of hypertrophic genes, ANP, β-MHC, and CT-1, through CYP-independent pathway.

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**A4D1. ANTITUMOR ACTIVITY OF THYMOQUINONE AGAINST MEDULLOBLASTOMA CELLS**

Ali S. Al-Shamrani, Abdulaziz S. Al-Saleh and Abdelkader E. Ashour

**PURPOSE:** Medulloblastoma is the most common malignant brain tumor in children, with a very bad prognosis. Survivors undergoing treatment suffer from serious therapy-related side effects. Therefore, safe and potent therapeutic agents are urgently needed. Thymoquinone (TQ); the main bioactive component isolated from Nigella sativa, has been shown to exhibit anticancer activities against various tumor cell lines, although it is minimally toxic to normal cells. This indicates the high potential of TQ to inhibit medulloblastoma cell growth, as well. Therefore, we sought to determine its anticancer activity against the medulloblastoma cell line (Daoy).

**METHODS:** We assessed the antiproliferative activity of TQ against Daoy cells by 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide (MTT) assay. We also investigated the effect of TQ on cell cycle progression by measuring the DNA content of the Daoy cell population using flow cytometry. Further, we evaluated the effect of TQ on mRNA expression of P53 and caspase-3 genes by real-time polymerase chain reaction (RT-PCR) assay.

**RESULTS:** TQ treatment resulted in inhibition of Daoy cell growth in a dose-dependent manner (6-50 μM). RT-PCR results showed that TQ significantly increased the mRNA expression of two pro-apoptotic genes, P53 and caspase-3. Further, cell cycle analysis by flow cytometry showed increased accumulation of sub-G1 phase cells (indicator of apoptosis) in TQ-treated compared to control-treated cells.

**CONCLUSIONS:** Altogether, these preliminary findings show for the first time that TQ is a potential anticancer drug for medulloblastoma and reveal that TQ may elicit such effect by inducing apoptosis of medulloblastoma cells.

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**A4E1. ANTI-INFLAMMATORY DRUGS**

Abdussalam Al-Harbi and Dr. Kamal hesien

**PURPOSE:** Comparison of potency of A,B,C and D drugs regarding as anti-inflammatory activity.

**METHODS:** Animals used: rats (Wistar rat). Weight range: (150-300). Chemicals used: for induction of inflammation: 10% aqueous formaldehyde (dose 2ml per paw). Anesthetic used: urethane (25% solution in water). Dose: 1,25g/kg (intra peritoneal).

**RESULTS:** The potency of the studied compounds after 1 hour seemed to be: A > D > C > B. After 2 hours: A > C > D > B.

**CONCLUSION:** Different positive activity for these compounds after 1,2 hour by reduce the volume of paw oedema by different mechanisms.

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**A4E2. EFFECT OF KYNURENIC ACID ON PREGNANCY OUTCOME IN RATS**

Khalid Kurdy and Kamal Hesien
PURPOSE: Investigation about the safety of Kynurenic acid during pregnancy.

METHODS: Pregnant rats were treated daily starting on day 8 up to day 17 of pregnancy daily at dose of 5mg/kg(I.P). Rats were anaesthetized with chloroform till death. The lower abdomen was opened and the uterine horns were cut longitudinally. Fetuses and placentae were removed and weighed. The corpora luteae were counted. The fetuses sex was determined. The male/female ratio was calculated. Control pregnant animals were injected with empty syringe (I.P) daily as done to the treated animals.

RESULTS: The results of this study revealed that treatment of rats with Kynurenic acid during the period of embryogenesis did not affect significantly any of the pregnancy outcome parameters measured. Thus, It did not affect the number of fetuses, weight of fetuses, ratio of male to female, weight of placentae and number of corpora luteae.

CONCLUSIONS: Kynurenic acid seemed to be SAFE if taken during pregnancy.

A4F1. INHIBITION OF 5-LIPOXYGENASE IN RAT WHITE BLOOD CELLS BY DICLOFENAC: A POSSIBLE CLINICAL RELEVANCE

Abdullah Al-Shehri, Ahmad Majrashi, Mohammed Hakami ,And Mohammed Al-Zahrani , And Mahmoud Mansour

PURPOSE: Diclofenac is a non steroidal antiinflammatory. Since, leukotrienes (LTs) are important mediators in inflammatory process, therefore, the effect of diclofenac on LTs formation by rat white blood cells were investigated.

METHODS: White blood cells isolated from rats were preincubated with different concentrations of diclofenac (10 and 100 µM) for 15 min. and subjected to A23187 stimulation for 5 min. Leukotrienes B₄ and C₄ were estimated by HPLC.

RESULTS: Preincubation of white blood cells with two different doses of diclofenac (10 and 100 µM) for 15 min before being subjected to calcium ionophore A23187 stimulation provoked a significant inhibition of both leukotriene C₄ (LTC₄) and leukotriene B₄ (LTB₄) generation in a concentration-dependent manner as compared to diluent-treated control cells.

CONCLUSIONS: diclofenac acts as 5-lipoxygenase enzyme inhibitor and prevent the formation of inflammatory mediators. These data may support that the hypothesis that diclofenac acts as a potent antiinflammatory drug.

A4G1. ANTITUMORAL ACTIVITY OF TRANS-RESVERATROL

Mohammed Alkhudairy, Saud Alessa, Suliman Alhammad and Ayman Gamal eldin

PURPOSE: 1- To show the effect of resveratrol as a promising chemopreventive agent on different types of cancer. 2- To explain the different possible mechanisms of resveratrol as a chemopreventive agent.

The last couple of decades have seen a tremendous increase in interest in the biological properties of natural products as a means to identify novel compounds that could have potential in clinical medicine. Resveratrol is a natural polyphenolic compound with powerful antioxidant properties, it appears to exert extensive beneficial effects on numerous human organ and system. One of these effects is its chemopreventive properties. Epidemiological studies strongly suggest that may act as a cancer chemopreventive compound. It has the ability to inhibit the growth of several cancer cell lines and tumors. Several mechanistic pathways that could account for cancer prevention activity of resveratrol have been explored ,suggesting that resveratrol may affect either initiation, promotion and progression of cancer process. Relevant hypothesis include inhibition of cytochrome P450 enzymes, antioxidant, and anti-inflammatory activities and effect on cell cycle cell proliferation and apoptosis. Resveratrol inhibits CYB1A1, thus inhibiting metabolic activation of pro-carcinogens such as polycyclic aromatic hydrocarbons, benz[a]pyrene and dimethyl benz[a]anthracene. The effect seems to be due either to direct inhibition of enzymatic activity or to the inhibition of signal transduction mediated by the aryl hydrocarbon receptor. Levels of 8-hydroxy-2'-deoxyguanosine, a known marker of oxidative DNA damage ,are also reduced in vivo by administration of resveratrol. Resveratrol inhibits constitutive
cyclooxygenase-1 (COX-1) but not induce COX-2 by its anti-promotion effect. Also it exerts its pro-apoptotic effect on tumor cells only, while normal cells remain unharmed through its anti-progression effect. Resveratrol derivatives having more selective and potent antiproliferative activity by inhibition of mammalian DNA polymerases. Regarding lung cancer, fluorescence microscopy and flow cytometric analysis showed that treatment with resveratrol resulted in induction of apoptosis. It inhibited the growth of human lung carcinoma A549 cells and resulted in a concentration-dependent induction of S-phase arrest in cell-cycle progression, marked inhibition of phosphorylation of Rb and concomitant induction of Cdk inhibitor p21^{CIP1/WAF1}, which is transcriptionally up-regulated and is p53-dependent. In liver cancer, it strongly inhibited cell proliferation and that Fa0 cells were more sensitive than HepG2 cells. It appeared to prevent or delay the entry to mitosis, while the number of the cells in S- and G2/M-phases increased. It decreased cell proliferation without evidence of cytotoxicity or apoptosis. While in thyroid cancer, resveratrol suppresses proliferation of thyroid and other head and neck cancers. The treatment of papillary thyroid carcinoma and follicular thyroid carcinoma cell lines with resveratrol led to apoptosis, which accompanied activation and nuclear translocation of ERK1/2. It increased the cellular abundance of p53, serine phosphorylation of p53, and abundance of c-fos, c-Jun mRNAs.

A4H1. DETERMINATION OF MERCURY LEVEL AMONG EXPOSED PEOPLE LIVING AROUND MINING AREA IN SAUDI ARABIA

Mohammed Aldakheel, Abdullah Alghammas, hammed Almalki, Ibraheem Attafi, and Saleh Albakheet

PURPOSE: The human activities have increased the environmental contamination that also increased the extent of exposure not only to occupational workers but also to the population living nearest to such area. Mining activity is one of human activity released heavy metal to soils, including mercury. Mercury exposure is the most concern of environmental contamination. Since mercury is well known to be associated with adverse health effects from occupationally exposed persons. Recently, the Soil pollution around Mahad AD’Dahab Mine has been evaluated and it was found that the mining activities were positively contributed to the soil heavy metals pollution in such area and higher than their background values. Questions regarding the level reach to the general population body living nearest to polluted area continue to be raised. To address this issue, one needs information regarding the concentration reach to blood when exposure to such area and its possible consequences for health in the general population. Therefore, we determined mercury level among people who are living around mining area (Mahad AD’Dahab city) and comparing them with people living far away from such area (Riyadh city).

METHODS: 10 exposed and 10 matched non-exposed with age from 20 to 40 years, male gender and with living history at least 5 years in such area were selected for our study. We exclude any volunteer smoking; taken supplementation and with chronic diseases. Whole blood samples were collected from the vein into EDTA tube and stored in -20°C fridge for analysis. The mercury concentration was determined in the whole blood by using a Direct Mercury Analyzer. 50 µl of whole blood used to analysis of mercury, the procedure is described in EPA Method 7473.

RESULTS: The results of measurement of mercury concentrations in exposed and non-exposed people showed extremely significant higher mercury concentrations in exposed people compared to non-exposed (P<0.0001). It is, therefore, clear that people living around mining area were more susceptible to mercury contamination and its adverse health consequences.

CONCLUSIONS: The present study revealed that the people living nearest to mining areas were significantly greater in mercury concentrations. Since mercury has cumulative effects that would cause delayed effects to exposed people. Therefore, the continuous exposure to mercury increases the health risk of people living long time around polluted areas. It is therefore inadvisable to live nearest polluted area to avoid potential risks to human health arising from the accumulation and persistence of mercury. Moreover, exposed people should be warned of the serious consequences of living around such areas.
A4I1. THYMOQUINONE SUPPLEMENTATION PROTECTS AGAINST ACETAMINOPHEN INDUCED-HEPATIC AND RENAL DAMAGE IN RATS.

Alhassan A. Hamzi, Ali A. Al-Barqi, Saleh A. Al-Shami, and dr. Mahmoud N. Nagi

PURPOSE: Thymoquinone (TQ), an active ingredient of Nigella sativa, has been reported to protect against oxidative damage of several organs including liver, kidney, heart, brain and others. The purpose of this study is to evaluate the pretreatment effects of TQ against acetaminophen-induced liver and kidney damage in rats.

METHODS: Adult male Wistar albino rats were divided into 4 groups. Rats in the first group were served as control. Rats in the second group were received TQ (50 mg/L in drinking water) for 5 days. Animals in the third group were injected with a single dose of acetaminophen (1000 mg/kg, i.p.). Rats in the fourth group were received TQ (50 mg/L in drinking water) for 5 days before a single dose of acetaminophen (1000 mg/kg, i.p.). 24h after treatment, animals were anesthetized in ether chamber before blood was drawn from the retro-orbital vein. Blood samples were allowed to coagulate at room temperature and then centrifuged to obtain serum. All samples were stored at −20 °C until analysis.

RESULTS: Acetaminophen resulted in a significant increase in serum alanine aminotransferase, creatinine and urea. TQ was effective against acetaminophen-induced hepatotoxicity as evidenced from the low levels of serum alanine aminotransferase. TQ was also effective against acetaminophen-induced nephrotoxicity as evidenced from the low levels of serum urea and creatinine.

CONCLUSIONS: TQ is effective when administered as supplemented regimen against acetaminophen-induced liver and kidney damage in rats.

A4J1. INFLUENCE OF AURORA-B BLOCKER (3-HYDROXYFLAVONE) ON HEP G2 CELL CYCLE BY FLOW CYTOMETRIC ANALYSIS

Bander Masoud Almalki; Abdulaziz Muffarh Alnofai; Umar Mohammed Altamimi, and Adel Rashad Abdallah

PURPOSE: Liver cancer is the fifth most frequently diagnosed cancer worldwide. Most chemotherapy poses a threat to the healthy living cells in the body, damaging normal healthy cells causing a lot of disturbances in the body. Therefore, looking for anticancer that have less side effect is an urgent need. 3-Hydroxyflavone (3HF), a biologically active flavonoid, has attracted extensive attention for its intramolecular excited-state proton-transfer (ESPT) and recently, it has been identified as a novel Aurora B inhibitor. The aim of the present work is to investigate the impact of 3-Hydroxyflavone on the cell cycle in HepG2 cell line (human hepatocellular carcinoma cell line) by flow cytometric analysis.

METHODS: HepG2 cell line was cultured under aseptic condition, grown in culture media in CO2-incubator, then incubated in vitro with different concentrations of 3-HF that was dissolved in DMSO. All control, vehicle and 3-HF treated cultures were subjected to either viability test for identification of possible antitumor activity by MTT technique or for flow cytometric analysis by flow-cytometer using propidium iodide (PI) stain.

RESULTS: 3-HF showed antitumor activity starting from 50 μM concentration reaching to 50% viability of HepG2 cells following 100 μM. Moreover, flow cytometric analysis revealed that 3-HF induced apoptosis in HepG2 cells by increasing the number of cell population in subG-phase in a concentration dependant fashion. The percentage of cells in S-phase also showed a significant decrease in 3-HF treated cultures in a concentration dependant fashion.

CONCLUSIONS: 3-HF as an Aurora blocker induced a powerful antitumor activity against HepG2 cells through induction of apoptosis and retardation of cell population that able to inter the S-phase.

E- Department of Clinical Pharmacy

A5A1. A NOVEL APPROACH TO MINIMIZE REPROACH
Amjad Al-Ahmed, Mohammed Al-Yami, Fakhr Al-Ayoubi, Ahmad Al-Hersi, Abdullatif Al-Ghaihab

PURPOSE: Patients’ adherence is considered a major concern to health care practitioners. Various strategies exist worldwide to educate patients about anticoagulant therapy, they vary from verbal, written, videotapes, group class and lectures. In KSA there is a lacking in studies taking into consideration applying technology and new interventions to improve patient adherence to medications. This has led to the accommodation of this study, to assess and improve cardiac patients adherence towards anticoagulants using new technology such as SMS as an intervention tool.

METHODS: Patient consent was sought by KFCC. A database containing all hospitalized or discharged patients on Dabigatran and/or Warfarin has been established using Microsoft Access. All atrial fibrillation patients that are eligible (102) were previously counseled using the usual method by a clinical pharmacist, then we called same patients by phone to fill the assessment questionnaire. Afterwards, an SMS, containing all the patient education instructions was sent to all 102 patients. Finally, we called the patients to get their feedback about our intervention. Data analysis were accommodated using SPSS V.17.

RESULTS: results revealed significant improvement in almost all the parameter we have set in our assessment questionnaire. After applying our intervention, results have shown ≥ 53% enhancement in the medication name parameter, ≥ 17% in the indication parameter and ≥ 33% in the false dose parameter. 88% of the sample rated the intervention as excellent and 98% want the intervention to proceed.

CONCLUSIONS: Applying SMS as an interventional tool is really a novel tool to enhance patient’s adherence to their medications and helpful in reminding patients/caregivers about their medications and in correcting so many discrepancies.

A5B1. COMMUNITY HEALTH AWARENESS: PHARMACY CLUB EXPERIENCE

Hazza’ H. Alghamdi, Waleed Alkhoudier, Wael Hamdy Sayed Mansy

PURPOSE: The more people know about key public health issues, the better their chance of early diagnosis and appropriate medical treatment. This simple fact was the driving force behind establishment of many of health clubs in many colleges in KSU. Pharmacy club is one of these clubs enrolled mainly in increasing community health awareness. To do so many campaigns was elaborated throughout the previous 2 years. These campaigns include: “Your Knowledge Protects You” campaign about poisoning at home, “Breath 100%” campaign about how to deal with Asthma and chest hypersensitivity”, and “Our Kidneys” campaign about the renal failure and how to protect from it. This study was designed to find out the extent and degree of community health awareness in response to several campaigns sponsored by pharmacy club.

METHODS: A total of 277 citizens in Riyadh city involved in this study. They were asked to fulfill a written questionnaire especially designed to obtain the main objectives of the study.

RESULTS: It was found that about 50% of participants heard about health clubs mainly from different campaigns held in different public places. Although 59% actively shared in the activities of these clubs, BUT more than 82% of them agreed that they get benefit from this participation. In a previous study it was found that 94% of students believe that pharmacy student should play an integral part of health education but unfortunately they didn’t have enough material and moral support to do so (71.5%).

CONCLUSIONS: It can be concluded that pharmacy club and other similar health clubs can play a key role in community health awareness especially in many aspects of health promotion services given to the community. But the Clubs needs to spread their activities more than now, to reach the other half of the society.

A5C1. CLINICIANS ATTITUDES AND CONCERNS TOWARD PIOGLITAZONE (ACTOS®) ASSOCIATED BLADDER MALIGNANCIES

Albogami Y, Alqahtani N., Almuteri A., Aljadhey H.

PURPOSE: Pioglitazone associated bladder tumors are being promoter for panic behavior among concerned
physicians. This study examines the clinicians behaviors and attitudes towards pioglitazone treatment and to testify how far they are applying the precautionary procedures prior to and post pioglitazone introduction.

METHOD: A self-administered questionnaire was distributed to specific group of physicians in randomly selected hospitals around Saudi Arabia either belong to private or governmental sectors in order to get their responses and concerns with regard to pioglitazone.

RESULT: 180 completed questionnaires were collected from 24 hospitals distributed around Saudi Arabia. About 40% of responded practitioners consider a baseline screening for bladder cancer pioglitazone initiation. Only 16.1% had a monitoring plan against any development of bladder tumors. However, 61.7% reported a discontinuation of the pioglitazone therapy in some patients. Weight gain 64% and lower limbs water retention 66.7% were the most reported causes of the discontinuation. 9% of discontinuation cases were due to either bladder cancer development or patients fears from such a risk.

CONCLUSION: The vast majority do not have a written protocol for baseline assessment for high risk patients. In addition, bladder cancer is a frightening issue with pioglitazone, therefore all concerned physicians must take the initiative and undergo their patients to strict testing and close monitoring against bladder cancer before and after pioglitazone initiation.
POSTERS ABSTRACTS
(Malaz campus)
B1A1. PROS AND CONS OF NANOTECHNOLOGY IN COSMETICS

Mona Al-Sulami, Moneerah Al-Qahtani, Rasha Al-Enezi, Reem Al-Qahtani, Samah Al-Moeni, and Hanaa Elsaghir

PURPOSE: To provide a comprehensive overview on the current knowledge regarding the pros and cons of some ingredients used in cosmetics applying nanotechnology, including: nanostructured lipid carriers (NLC), lutein, titanium dioxide (TiO₂), zinc oxide (ZiO₂), Silver (Ag) and silicon dioxide(SiO₂).

METHODS: We conducted our research as a review article.

RESULTS: NLC is a successful nanocarrier to be used in cosmetics such as Cutanvoa Nanorepair Q10 cream and Lutein. The topically applied TiO₂ and ZnO nanoparticles were located only in the upper stratum corneum and in some hair follicles, but were not found in the epidermis or the underlying dermis. SiO₂ interacts, changes the secondary structures of three functional proteins and inhibits their static and dynamic activities but in hair dying preparations, it enhances the fastness of hair washing and minimizes the allergic reactions compared to conventional dyes. Ag nanoparticles do not penetrate normal human skin if used in concentration of 0.5ppm and have no effect on HaCaT keratinocytes.

CONCLUSIONS: The in vitro studies approved the safety of nanoparticles to be used in cosmetics but we need more in vivo studies to confirm if there is penetration beyond the stratum corneum or not.

B1B1. THE STUDY OF UTILIZATION OF ROACCUTANE® ANTI-ACNE PRODUCT ON GROUP OF PATIENTS IN KINGDOM OF SAUDI ARABIA

Nour M. Alsobky, Shuruq H. Alknaani, Najwa A. Aldughayem, Nada S. Altheyab and Prof. Omaimah M.N. AL-Gohry

PURPOSE: This study was conducted due to the lack of information about utilization of systemic Roaccutane® among Saudi population, and occurrences of its administration.

METHODS: A literature review was conducted to develop a questionnaire that collects information related to side effects were experienced by users of Roaccutane®. The study was cross sectional, it was conducted through distribution of questionnaires and online survey, it was carried out from 2nd November 2011 to 4th December 2011 in acne patients from different regions of Saudi Arabia.

RESULTS: One hundred and six patients completed the survey; 58% were females and 42% were males. The mean age of respondents was 22 years. The sources of information about Roaccutane® and how they took it were diverse: the major source of information from patients was prescription from their doctor. The most common side effects were the mucocutaneous side effects (30.69%) and the least common were the neurological side effects (12.55%).

CONCLUSION: This study of Roaccutane® showed that: It is a very effective therapy for moderate to severe acne; however, treated patients suffer from side effects that could worsen the health condition. Also it showed that a portion of patients were not aware about the side effects they had from Roaccutane®.

B1C1. RECENT APPROACHES OF NANOTECHNOLOGY USED IN TARGETING CANCER

Alaa Alhamdi, Hanouf Alhaider, Reham Aldakhil, and Samar Afify

PURPOSE: The aim of the present review is to discuss and compare between different new targeted delivery systems recently developed in order to target and treat cancer. In this review, we will summarize the current state-of-the-art of gold nanoparticles in biomedical applications targeting cancer.

METHODS: (Review Article).

RESULTS: The targeted delivery of a drug should result in enhanced therapeutic efficacy with low to minimal
side effects. Biomedical nanotechnology can play an important role in this respect. Cancer nanotechnology is expected to change the very foundations of cancer treatment, diagnosis and detection. Nanomaterials, especially gold nanoparticles (AuNPs) have unique physicochemical properties, such as ultra small size, large surface area to mass ratio, and high surface reactivity, presence of surface plasmon resonance (SPR) bands, biocompatibility and ease of surface functionalization. Gold nanoparticles is unique in a sense because of its intriguing optical properties which can be exploited for both imaging and therapeutic applications. The future of nanomedicine lies in multifunctional nanoplatforms which combine both therapeutic component and multimodality imaging. But there are many potent antitumor drugs which are poorly soluble. This makes the formulation of these hydrophobic drugs problematic and challenging. Camptothecin (CPT) is one of the well-known examples. Owing to its hydrolytic instability and adverse drug interaction, many efforts have been centered on the development of intralipid formulations of CPT. Liposome is proven useful for CPT delivery. Similarly, NOBs are lipid-based nanoparticles. As illustrated, the central oil space of NOBs greatly facilitate the entrapment of hydrophobic CPT. These CPT-loaded NOBs are stable and exhibit a strong cytotoxic effects on HER2 nespovesitive tumor cells both in vitro and in vivo. More over the control and -release natural of NOBs is acknowledged by their internalization through endosomes in which they disintegrate at acidic PH. We conclude that NOBs consisting of natural biomaterials are promising for targeted delivery of hydrophobic drugs.

**CONCLUSIONS:** We believe that in next few years we will see numerous applications of nanotechnology based therapeutics and diagnostics in clinics. In addition, individualized medicine is another important area where nanotechnology can play a pivotal role. Due to cancer heterogeneity and development of drug resistance any particular targeted therapy may not be effective for every population of patients. Therefore, identification of new molecular markers/targets that will only be present on cancer cells would ideal for nanotechnology based targeted therapy. Thus, basic research both in the field of cancer biology and nanotechnology are essential to meet the challenges that the deadly disease cancer poses to human beings.

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**B1D1. FORMULATION AND EVALUATION OF COLON TARGETED DRUG DELIVERY SYSTEMS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUG INDOMETHACIN.**

Samia almalki, Mashaal alkatheri, Najah albederi, Sahar alghamdi and Kadaria alkhodairy

This study aimed to investigate the feasibility of both xanthan gum (XG) and guar gum (GG) controlling the release rate of the poorly water soluble drug, indomethacin (IDM) from colon target drug delivery systems. Binary mixtures of the drug and the hydrophilic carrier (Xanthan gum) in the ratios of 1:1 and 1:2 were prepared using three different approaches namely, physical mixture, co-grinding and solid dispersion. The synergistic or contraindicating effect of another hydrophilic carrier, guar gum (GG) added to the binary mixture was investigated. The tertiary mixture was prepared in the ratio of 1:1 IDM: XG: GG. The possible interaction between the drug and the gums in the solid states was detected by the differential scanning calorimetry (DSC). The prepared binary and tertiary systems were further evaluated for their flow properties and compressed into core tablets. The core tablets were coated with two different type of coat (inner and outer) The inner coat consisted of guar gum solutions of different concentrations (0.2, 0.4, 0.6, 0.8% w/v) to prevent the drug release in pH 7.4. Tablets were then coated with an enteric coat by dipping in 5% Eudragit (ER L100) ethanolic solution and then drying using hot air. The results revealed that the flow ability and compressibility of all the prepared powdered mixtures were improved in presence of XG. Release rate study indicated that the release of the drug is inhibited in pH 1.2 whereas, a low percentage of the drug was released in pH 7.4. In pH 6.8 the release profiles showed a sustained release of the drug over 18 hours.

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**B1E1. GUT-BRAIN AXIS (GBA) IN HUMAN DEVELOPMENTAL DISORDERS**
Amal Aleid, Nora Aladwani, Sara Almesnad, Wafaa Fatanni, Ghada Shaker

Although many people are aware of the communication that occurs between the gastrointestinal tract and the central nervous system (CNS), fewer know about the ability of the CNS to influence the microbiota or of the microbiota’s influence on the brain and behavior. In fact, there are more bacteria in the gut than there are somatic cells in the body. These resident bacteria are referred to as commensal microbiota, and their arrival during the first few postnatal days sets up a symbiotic association that is necessary to normal physiology. There is emerging evidence that gut microbiota influence behavior and CNS function. This commentary provides a brief overview of research related to gut–brain communication in a context that allows neuroscientists to consider the role of microbiota in their research related to CNS function and behavior.

Recent research efforts focused on the contributions of the gut microbiota to the etiology of human diseases have begun to shed light on its involvement in a number of complex diseases residing in organs outside the gut as brain disorder e.g. autism spectrum disorders. Very little is known about the etiology of autism. Extensive antibiotic use is commonly associated with late-onset autism, causing disruptions in the normal microbiota may allow colonization by microorganisms, or promote the overgrowth of neurotoxin-producing bacteria like Clostridium spp. This article brings into light the possible role of the human microbiome in the incidence of neurodevelopmental disorders.

B1F1. TARGETED NANOPARTICLE AS PROMISING DRUG DELIVERY PLATFORM

Doaa A. Bin-taleb, Alia S. Al-Saleh, Bushra A. Alrehaili, Sarah M. Abdul Hamid, Sahar G. Al-Ajmi, and Nahla S. Baraka

Over Recent years advancement in nanoparticles drug delivery is widely expected to change the landscape of pharmaceutical and biotechnology industries for the foreseeable future. Nanoparticles are solid colloidal matrix-like particles made of polymers or lipids. Generally administered by the intravenous route like liposomes, they have been developed for the targeted delivery of therapeutic or imaging agents. Their main advantages are the low number of excipients used in their formulations, the simple procedures for preparation, a high physical stability, and the possibility of sustained drug release that may be suitable in the treatment of chronic diseases. Nanomaterials have played a propitious role in delivering therapeutic molecules effectively to diseased sites. Furthermore, most nanomaterial surfaces can be decorated with targeting ligands, enhancing their ability to home to diseased tissues through multivalent interactions with tissue-specific receptors. Targeted liposomes, micelles and dendrimers incorporated with therapeutic molecules have displayed impressive anticancer effects in animal studies, and these nanomaterials are considered to be close to clinical translation due to their biocompatibility. A nanoparticle has emerged as a promising strategy for the efficient delivery of drugs used in the treatment of cancer by avoiding the reticuloendothelial system, utilizing the enhanced permeability and retention effect and tumor-specific targeting. These carriers are designed in such a way that they are independent in the environments and selective at the pharmacological site. These nanoparticles have the capability to reverse multidrug resistance a major problem in chemotherapy.

B4A1. ROLE OF NANO CONJUGATED METHOTREXATE, EPIGALLICATECHIN 3 GALLATE, GENE THERAPY AND BEES STINGS IN THE AMELIORATION OF RHEUMATOID ARTHRITIS COMPLICATIONS

Ahlam Al-Thubiti, Arwa Al-Eissa, Arwa Al-Mogheerah, Fatimah Az-Zahra Ibrahim, Wala Turkistani, and Laila Faddah

PURPOSE: RA is a chronic, inflammatory disorder affecting joints and causing disability. Treatment requires...
a combination of NSAIs, disease modifying antirheumatics, and steroids. This slows progression, but often fails to achieve satisfactory results.

**Combination of Lip-MTX, epigallocatechin 3 gallate (EGCG), gene therapy, and bees stings is our target.**

**METHODS:** Development of new biological agents interfering with cytokine-mediated inflammatory pathways and activation of synovial cells was used. Studies that used monoclonal antibodies against different (TNF-α) receptor proteins, provided convincing results. Although gene transfer was developed to treat inherited diseases by correcting genetic abnormality, it also treats acquired disorders. Bee venom contains melittin, that functions as an anti-inflammatory.

**RESULTS:** Development of new ‘biological’ agents that interfere specifically with cytokine-mediated inflammatory pathways and activation of synovial cells was followed as a therapeutic approach. Monoclonal antibodies against (TNF-α) provided convincing results. Gene transfer also provides new opportunities for treating acquired disorders. Lip-MTX exerted an anti-inflammatory effect on RA, it was less haematotoxic than free MTX. It was verified the cartilage preserving and chondroprotective action of EGCG. Bee sting slowed inflammation, improved circulation and bolstered the immune system.

**CONCLUSIONS:** Combination of different agents such as Lip-MTX, epigallocatechin 3 gallate, gene therapy and bees stings is beneficial against RA treatment.

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**H- Department of Clinical Pharmacy**

**B5A1. ADVERSE DRUG REACTIONS IN KING ABDUL-AZIZ MEDICAL CITY IN-PATIENTS: A RETROSPECTIVE ANALYSIS OF ADRS REPORTS**

AlAnood, AlHarbi, AlHnaief, AlShammari, Fatimah, AlYami, Maali AlRashid, Ohoud AlMadani, and Jawza AlSabhan

**PURPOSE:** To evaluate the Adverse Drug Reactions Reports system in National Guard Health Affaire in Saudi Arabia.

**METHODS:** Retrospective quantitively descriptive data analysis of ADRs reports term of reporter, seriousness, causality, and suspected drug involved and then, compare among the health care professionals in frequency and quality of reports.

**RESULTS:** Total ADRs reports received was 279 reports, most of them were by nurses (68.80%), doctors (29.06%), and pharmacists (2.13%). More ADR was reported in females (51.79%) than males (48.02%), and the highest number of reports were received from age group less than 19 years (32.62%). The drug classes causing ADRs, antibiotics caused 214 (76.70%), drugs acting on CNS 20 (7.17%), NSAIDs 8 (2.87%), antihistamine and anticancer 2 (0.72%), and others drugs which have different classes 33 (11.83%). Causality assessment which done by using Naranjo Scale shows that 145 (51.79%) were probable reactions, 112 (40.14%) were possible reactions, 13 (4.66%) were definite and only 9 (3.23%) were doubtful, while the severity assessment which done by using Karch and Lasagna Scale it reveals that 171 (61.29%) ADRs were only mild reactions.

**CONCLUSIONS:** ADRs reporting system is a new system to applied in Saudi Arabia, which aim to decrease the ADRs and as a result morbidity and mortality due ADRs, for that it needs to be illustrated clearly and presented in effective way to get the greatest benefits from it. This type of system depend meanly on the medical staff and their awareness about the important of this program so, educational and communication programs among healthcare professional in the hospital is essential for success of this system . As a result of such program, preventive strategies, precaution, early detection, and such management that aims to improve the safety of medication use.

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**B5B1. ATTITUDE TOWARDS AND MISUSE OF OVER-THE-COUNTER MEDICATIONS DURING EXAMS AMONG HIGH SCHOOL AND COLLEGE STUDENTS IN RIYADH**

Al’a I. Albluwi, Dalal A. Alkhelb, Hajar M. Alsaleh, Haya M. Almalak MS, Hisham Aljadhey, and Mansour Mahmoud

**PURPOSE:** evaluate the attitude and misuse Behaviors of Over-the-Counter Medications among high schools and colleges students during exams in Riyadh.
METHODS: cross sectional study, statistics was obtained by using the Statistical Package for the Social Science (SPSS version 16).

RESULTS: A thousand and five hundred eighty university and none university students were surveyed. The majority of the respondents were females 1133 (71.1%) and 43.5% of the students were young (age group 15-17 years old). 47% of the students used medications during exam. A total of 1066 medications were used by the students. Half of them were paracetamol .92% trying medicine according to friend suggestions. 43.7% believe that overusing paracetamol will not cause liver toxicity and 54.3% use energy drinks during exam period.

CONCLUSIONS: Safe medication practice is very important to create a healthy generation in our Saudi society. Thus, educating the target age to prevent the misuse of OTCs during exams must be taken as an important intervention to reach the safest ways of using them.

B5C1. THE IMPACT OF A STRUCTURED EDUCATIONAL PROGRAM ON PATIENT KNOWLEDGE ABOUT THEIR WARFARIN THERAPY

Hatoon Al-Sudaus, Nouf Al-Meshal, Reem Al-Sultan, Sawsan Al-Moones, Ghada A Bawazeer, Emad K. Zayed, and Wiam Al Jasim

PURPOSE: Warfarin is the most widely prescribed oral anticoagulant for the management of venous thromboembolic disorders. It is also recognized as one of the high-risk medications causing significant hospital admissions due to adverse drug events. In this study, we aimed to assess the impact of a structured educational program on patient knowledge about their warfarin therapy.

METHODS: This study took place in KFMC. All eligible patients discharged on warfarin between the end of October to the 30th of November were approached. 32 Patients were allocated to 1 of 2 groups (intervention versus routine care) in a consecutive fashion. Patients assigned to intervention group received the structured education (described within the study) using mobile technology supporting a non-paper environment, the rest received routine KFMC-counseling. Upon discharge, patients were provided with a validated Arabic version of the Oral Anticoagulation Knowledge (OAK) test to assess their baseline knowledge. After 2 weeks, participants were followed on and re-tested (by phone calls).

RESULTS & CONCLUSIONS: A Structured educational program improve patient knowledge possibly because it covers all the essential information needed by patients. In usual care many of this information is not covered. However, larger studies are needed to fully evaluate the impact of patient education on anticoagulation and clinical outcomes.

B5D1. LEFT VENTRICULAR EJECTION FRACTION DYSFUNCTION IN BREAST CANCER PATIENTS RECEIVING TRASTUZUMAB AT A TERTIARY CARE HOSPITAL IN RIYADH, SAUDI ARABIA.

Doaa Abdullah Bagazi, Supervised by: Dr.Fouad ALNajjar, and Ted Morton

Purpose: To evaluate the relative frequency of left ventricular ejection fraction (LVEF) dysfunction in female breast cancer patients receiving trastuzumab. Secondary assessments include medical risk factors potentially affecting ejection fraction and compliance with recommended scheduled monitoring of LVEF.

Methods: We retrospectively identified and collected data for 38 women with HER2+ breast cancer undergoing adjuvant or metastatic treatment with Trastuzumab. Demographics, co-morbidities, cardiovascular risk factors: hypertension (HTN), diabetes (DM), dyslipidemia and tumor marker characteristics (HER2, ER & PR) were collected. Chemotherapy data (drug, dose, cycle number and date of given cycle) was included, with specific attention to anthracycline exposure. For the primary outcome of LVEF dysfunction, we collected details of LVEF monitoring: type of scan done (MUGA or ECHO), date and result. The development of any symptoms consistent with a cardiac toxicity was assessed for correlation with a reduction in LVEF and to exclude alternative causes.
**Results:** The 38 studied patients females had an average age of 44 years. There were 6 patients with hypertension, 7 with diabetes mellitus type II and 4 with dyslipidemia. They were otherwise generally healthy before and during chemotherapy. Twenty nine patients were on an adjuvant treatment protocol and 9 on a metastatic protocol. Sex patients has reduction in LVEF, 2 has a severe reduction (5.3%), forcing delayed administration of their chemotherapy cycle. Remaining 4 has a fluctuated EF and regaining to normal including 1 patient with palpitation and 1 with cough and pericardial effusion. One patient need to be closely monitored due to low QRS amplitude but with a normal LVEF of 50%. Patients under adjuvant or neoadjuvant anthracyclines along with trastuzumab show a slight increasing in risk of LVEF dysfunction. Hypertensive and diabetic patients show a slight increase in incidence of cardiac toxicity by about 14.16% respectively.

**Conclusion:** The incidence of developing LVEF dysfunction while being treated with trastuzumab was 5.3%. Cardiovascular co-morbidities or exposure to anthracyclines show a slight increasing in the risk of LVEF dysfunction. Hypertensive and diabetic patients show a slight increase in incidence of cardiac toxicity by about 14.16% respectively.

**B5F2. KNOWLEDGE, ATTITUDES, AND PRACTICES OF SAUDI MOTHERS REGARDING ANTIBIOTIC USE IN CHILDREN IN RIYADH**

Bashayer Sultan Al-Shehri and Lubna Al-Juffali

**Purpose:** Globally, the emergence of bacterial strains resistance to antimicrobial agents is considered as one of the most important public health concerns. The main driver for the development of antibiotic resistance is unnecessary prescription of antibiotics. A considerable body of evidence has demonstrated worldwide problems in knowledge, attitudes and behaviors among consumers which influence the antibiotic usage. This study aims to explore the Saudi mothers’ knowledge, attitudes and practices regarding antibiotic use for children in Riyadh.

**Methods:** a self-administered cross-sectional survey involving a consecutive sample of 379 eligible mothers (response rate=92) was conducted using a pre-tested
questionnaire at pediatric outpatient clinics in King Khalid University Hospital and Dr. Sulaiman Al Habib Hospital, from 12 and 26 November 2011.

RESULTS: More than half of respondents recognized that treatment for colds did not require antibiotics while only 19.3% indicated that antibiotics are effective on bacteria but not viruses. About 78.9% of respondents were aware of antibiotic resistance problem in relation to overuse of antibiotics. Mothers response showed a very high level of compliance and adherence to health care provider instructions, 79.9% were aware of the importance of completing the full doses of antibiotics even when symptoms of infection are improving.

CONCLUSION: A lack of understanding about antibiotic effectiveness is exists in community. Educational strategies and are needed to overcome the misconceptions in order to improve the use of antibiotics among the public.

B5G1. THE PREVALENCE OF THERAPEUTIC DUPLICATIONS AND DRUG INTERACTIONS IN OUTPATIENT PHARMACIES IN SAUDI ARABIA

Lama Alkhader, Malak Alowais, Sarah Alsaikhan, Shaima Kutbi, Amani Abushanab, and Hisham Aljadhey

PURPOSE: Medication related problems including therapeutic duplication (TD) and drug-drug interactions (DDIs) are major public health concern to patients and health care professionals. This study estimates the prevalence and factors associated with DDIs and TD among patients in community setting.

METHOD: A consecutive cross-sectional study was conducted in two (private and governmental) outpatient pharmacies. A structured questionnaire administered to collect demographics, independent and dependent variables and all medications that the patient possesses. This study estimates the prevalence and factors associated with DDIs and TD among patients in community setting.

RESULT: This study found that the percentage of DDIs is 47.8% and TD is 3.8%. The rate of potential DDIs is directly related to age, number of clinics from which the patient had a prescription in the past six months, and with presence of chronic diseases. However the rate is inversely correlated with the level of patients’ education. Analgesics were the most common class of medications that have potential DDIs. Regarding TD, number of pharmacies patients visit and patient counseling were the two factors that significantly correlated with drug duplication.

CONCLUSION: This study shows that potential DDIs are frequent among outpatient pharmacies and factors associated with TD and DDIs identified. The results will help in designing future interventions aims to improve medication safety in community setting.

B5I1. TIGECYCLINE UTILIZATION EVALUATION

Hanouf Al-Koait, Ahlam Al-Eid, Najla Al-Sabali, Huda Al-Soweihe, Yousef Al-Omi, and Nahla Al-Ageel

PURPOSE: Tigecycline is developed to overcome tetracycline resistance with broad spectrum activity as indicated for treatment of complicated intra-abdominal infections (cIAIs), complicated skin and skin-structure infections (cSSIs) and community acquired pneumonia (CAP). A drug utilization evaluation (DUE) was conducted to determine whether tigecycline was being used appropriately based on the FDA approved criteria.

METHODS: Random selection of 100 patients admitted to the hospital – intensive care unit (ICU) department to conduct a retrospective study (1st Jan 2010 to 2nd July 2011) at King Saud Medical City (KSMC). Clinical data collected from medical records and included; clinical diagnosis, microbiologic isolate identification with antibiotic susceptibility, concomitant antibiotics, justification of use, critical indicator, and outcome measurement. Cost of therapy calculated from quantity consumed by patients.

RESULTS: Our results revealed that patients who followed the FDA approved use of tigecycline were 72% (12% cSSIs, 39% CAP and 21% cIAIs) where unapproved use were 28%. Only 60% of patients followed the recommended dose and 16% of patients justified for hepatic impairment correction dose. Common side effects experienced were metabolic, hematologic and lymphatic and drug fever (78%, 77% and 68% respectively). Cost for approved use consumed...
about 2,857,500 S.R. and about 251,250 S.R. for inappropriate use of tigecycline.

CONCLUSIONS: Misusing and increasing in resistance and cost of therapy is a consequence of lack of tigecycline usage policy, thus under establishment policy should be conducted as for new updated notification of FDA approved uses.