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Abstract 001

Exploring Pakistani Nurses' Knowledge and Obstacles Encountered when Administering Resuscitation Medication: A Cross-sectional Analysis

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Background: Medication errors are one of the most common causes of patient morbidity and mortality and it places an immense burden on healthcare system. Insufficient knowledge of nurses is considered a major factor in drugs administration errors leading to compromised patient safety. **Objectives**: This study aimed to evaluate nurses' knowledge regrading resuscitation medication administration. **Methods**: A cross-sectional study was conducted among nurses working in public and private hospitals of Lahore city (10 private, 6 public and 2 teaching hospitals). Nurses were recruited using a convenient sampling method during a period of three months (March-June 2021). A pre-validated, self-administered questionnaire was used to collect data. The data were analyzed using SPSS version 27. **Results**: A total of 409 nurses were included in the study of which, 55.3% were found to have adequate knowledge (score >70%) of resuscitation medications, while 44.7% had insufficient knowledge. Increasing age and experience ($p<0.001$), being in a public hospital, ($p=0.032$) and ACLS training ($p=0.006$) was associated with significantly better knowledge. Major obstacles faced by nurses during the administration of resuscitation medication were "Interruption of drug administration procedure when other tasks need to be handled" (75.6%), "Insufficient knowledge" (69.4%), and "Hesitation to ask questions" (67.7 %). **Conclusion**: Pakistani nurses were found to have inadequate knowledge regarding resuscitation medications administration. Hospital administration must ensure that nursing staff receive resuscitation medications-related training. Moreover, they should encourage nursing staff to obtain BLS and/or ACLS trainings as this will reduce medication errors events and improve patient safety.

Abstract 002

The Role of The Clinical Pharmacist In A Case of Losartan-Induced Faintness And Dysarthria

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Background: A common first-line antihypertensive drug, losartan is well absorbed after oral administration and goes through a significant first-pass metabolism. Losartan frequently causes headaches, dizziness, lethargy, nausea, vomiting, blurred vision, and anemia as adverse effects. **Objective**: Here, we present a case of a 59-year-old Yemeni woman, who took losartan and developed faintness and dysarthria. **Method**: The patient was initiated with 50 mg daily oral losartan monotherapy for diagnosed moderate hypertension. After 12 days of taking the drug, she presented to the emergency department in Saudi German Hospital in Sana'a city with dizziness, faintness, dysarthria, lightheadedness with generalized weakness. The in-hospital neurological specialist suspected the patient had a transient ischemic attack. On examination, her blood pressure was found to be 150/86, and her heart rate 72. The patient was treated in the hospital as a stroke patient for five days and discharged with stroke medications. After discharge, on the second day, the patient has the same previous symptoms. There was no evidence of any other possible metabolic, infective, organic, or other pathologic causes giving rise to dysarthria, except losartan itself. **Results**: A clinical pharmacist discovered adverse drug reaction probability was "probable" that oral losartan was responsible for the development of faint and dysarthria in this patient. The drugs for hypertension were changed by the clinical pharmacist to amlodipine 5mg. After 3 days, the patient was stable, and the symptoms resolved. **Conclusions**: This case report suggests that losartan could induce faintness and dysarthria as side effects

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Abstract 003

Factors Associated with Mortality of COVID-19 Patients with Hypertension: A Cross Sectional Study

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Background: Hypertension is one of the predisposing factors for prolonged hospitalization, intensive care, and death among COVID-19 infected patients. Hence, it requires special attention, particularly for older patients vulnerable to increased risk of COVID-19-related health problems. **Objective**: This research aimed to determine the factors associated with mortality of COVID-19 patients with hypertension. **Methods**: A cross-sectional study was performed at a tertiary care hospital in Karachi, Pakistan, from May to October 2021. COVID-19 patients with known hypertension were included in the study by evaluating patients' medical record. Mann Whitney U test and Chi-Squared tests were performed to compare patients in death and recovered groups. The significance level was set at 0.05. **Results**: Out of 299 COVID-19 patients with hypertension, the majority were females (58%), median [IQR] age of 63 [55-70] years, with co-existing diabetes (49.5%). The mortality was associated with age groups (p=0.036) and baseline severity (p=0.001). Clinically, fever (p=0.005), shortness of breath (p=0.003), respiratory rate (p=0.026), and oxygen saturation (p<0.001 were found to be associated with death. Laboratory examinations such as total leucocytes count (p<0.001), neutrophils (p<0.001), C-reactive proteins (p<0.001), D-dimer (p=0.005), ferritin (p=0.016), lactate dehydrogenase (p<0.001), and procalcitonin levels (p=0.001) were significantly higher among death cases. The mortalities were comparatively lower (p=0.002) among angiotensin converting enzyme inhibitors (ACEI) or angiotensin receptor blockers (ARB) consumers. **Conclusion**: Our study concluded that older age, severe illness with poor oxygen saturation, shortness of breath, higher inflammatory markers and need of mechanical ventilation were associated with the mortality among COVID-19 patients with hypertension.

Abstract 004

Treatment Outcomes of Pulmonary Tuberculosis: A Retrospective Study in District Headquarter Hospital, Pakistan

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Background: Pakistan shares the 61% burden of Tuberculosis (TB) in WHO's Eastern Mediterranean Region. **Objective**: This study aimed to identify the predictors and factors associated with unsuccessful treatment outcomes of pulmonary tuberculosis (PTB). **Methods**: A retrospective study was conducted in the DHQ, Hospital Bannu, Khyber Pakhtunkhwa, Pakistan from 1st January 2014 to 31st December 2018. Data were collected from TB registers, and TB medical personal files using National TB program (NTP) guidelines for Pakistan. Drug-resistant and drug-susceptible TB patients were included. SPSS 23.0 was used for analyzing the data. Logistic regression analysis was done to determine the final predictors of unsuccessful treatment outcomes. **Results**: A total of 1426 patients were included in the study. The success ratio of the treatment was observed to be 60.7% among PTB patients. The odds of unsuccessful treatment outcomes were higher among patients who were 15 or younger (95% CL: 1.02-5.89; AOR = 1.24) and patients aged 16 to 25 years (95% CL: 1.448-3.42; AOR = 2.228). Patients with comorbidities like diabetes (95% CL: 1.43-3.84; AOR = 2.86;) showed a significant association with unsuccessful treatment outcomes. The patients having symptoms like sweating (95% CL: 1.62-14.51; AOR = 4.86) and hemoptysis (95% CL: 1.35-6.76; AOR = 3.03) were predictors of the unsuccessful treatment. **Conclusion**: This study reveals that the ratio of unsuccessful treatment outcomes is still high. Younger patients, with comorbidities, and with symptoms like sweating and hemoptysis were predictors of unsuccessful treatment.

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Abstract 005

Drug Resistance Pattern, Prevalence and Risk Factors for Resistance to Second Line Anti-Tuberculosis Drugs in Balochistan, Pakistan

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Background: Pakistan is high burden drug resistant tuberculosis (DR-TB) country according to World health Organization Global Tuberculosis report 2021. For devising a treatment regimen and optimizing empirical drug therapy, the local epidemiology and drug resistance patterns are needed to be considered. **Objectives**: To evaluate drug resistance pattern, prevalence and risk factors for resistance to second line anti-tuberculosis drugs (SLD) among DR-TB patients in Balochistan, Pakistan. **Methods**: This was a cross-sectional study conducted at programmatic management unit of DR-TB (PMDT) of Fatimah Jinnah Chest and General Hospital, Quetta. Where 354 patients of DR-TB patients irrespective of their age, TB site and drug resistance pattern were included in the study. A standardized data collection form was used to collect patients' socio demographic, microbiological and clinical data. Data was analysed by SPSS 20. A p-value <0.05 was taken statistically significant. **Results**: Among the subjects, majority were females (61.7%), belonged to the age group 19-30 years (36.7%), were previously treated for TB (95.8%) at public sector hospital (42.7%) and did not suffer from any other comorbidity (88.7%). The study participants were resistant to a median of three anti-TB drugs (range 1-8). The most common type of DR-TB was multi DR-TB (77.1%), followed by mono DR-TB (18.1%), extensive DR-TB(3.1%) and poly-DR (1.7%). A total of 147 (41.5%) patients were resistant to any second line anti-TB drug (SLD). Among SLD, the resistance was high for fluoroquinolones (38.4%), followed by ethionamide (4.8%) and injectable SLD (4.2%). Upon multivariate binary logistic regression analysis previous treatment of cat-II regimen had statistically significant association with resistance to any SLD (OR=5.273, 95%CI=1.098-25.316). **Conclusion**: The high degree of SLD resistance observed particularly to fluoroquinolones is distressing. Testing cat-I failures for drug resistance rather than putting them on cat-II treatment and more restrictive policies to control non-prescription sale and indiscriminate use of fluoroquinolones are recommended.

Abstract 006

Pharmacy Students' Readiness and Preparedness to Contribute During Disasters: A Cross-Sectional Two Institutional Study from the UAE

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Background: Pharmacists' involvement in disaster management has been acknowledged in the literature where they can be engaged in various clinical and non-clinical services. The scope of pharmacy education globally has been shifted towards competency-based education where more training and skilled base programs had been added to pharmacy colleges' curricula. The current pharmacy education in UAE is undergoing various changes with more weightage for experiential learning. However, none of the current BPharm study plans incorporate medicine disaster management and preparedness. **Objectives**: To investigate the pharmacy students' knowledge, attitude, and readiness to contribute during disasters in the United Arab Emirates (UAE). **Methods**: A quantitative, descriptive, cross-sectional study was conducted in two pharmacy colleges in the UAE using a pre-validated electronic questionnaire distributed through students' official university emails and reminders through WhatsApp. Data were collected using simple random sampling from February 2021 to November 2021. The questionnaire consisted of four sections: demographic information, knowledge, attitude, and readiness to practice with perceived barriers. **Results**: A total of 258 pharmacy students responded to the survey. The majority were fourth-year students (51.2%, n = 132) with a mean (sd) age of 20.46 years [SD ±2.35]. years. The average score for total knowledge was 155.3 (60.2%), with no statistical differences between groups. The median (IQR) scores for total attitude, total readiness to practice, and barriers to disaster medicine were 4. **Conclusions**: There is a need to assess and improve the current level of knowledge, preparation, and readiness of pharmacy students through educational modules targeting various skills such as teamwork, emergency response, etc. into pharmacy curricula and assessing their impact.

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MALAYSIAN Journal *of* Pharmacy

Abstrat 007

Top 30 Drugs Associated with Acute Kidney Injury (Aki) Cases: A Real-World Pharmacovigilant Study

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Background: Spontaneous adverse events reporting databases are an invaluable resource for pharmacovigilance analysis and post-marketing medication safety monitoring. One of the largest spontaneous adverse drug events reporting systems in the world is the United States Food and Drug Administration (FDA) Adverse Event Reporting System (FAERS). **Objective**: To find the top 30 drugs associated with AKI in FAERS. **Methods**: Data set used for the period of January 2004 to September 2021. Cases of AKI were identified using the Standardised Medical Dictionary for Regulatory Activities (MedDRA) Queries (SMQs), using the acute renal failure SMQ coded 20000003, composed of 19 Preferred Terms (PT) with a narrow scope. The lower limit of a two-sided 95 per cent credibility interval for the Information Component (IC025) was applied to detect and rank signals of drugs associated with AKI. **Results**: The top 30 drugs associated with AKI in descending order as drug name (count of reactions,IC025): Dihydroxyaluminum sodium carbonate (1608,3.48); Aprotinin (2653,3.08); Protamine sulfate (1064,2.82); Dexlansoprazole (8345,2.79); Iobitridol (102,2.75); Glucarpidase (68,2.72); Serelaxin (17,2.66); Pancuronium (428,2.63); Human plasma preparation (761,2.47); Bismuth subsalicylate (1297,2.45); Brincidofovir (32,2.37); Telavancin (47,2.25); Remdesivir (837,2.22); Methoxyflurane (14,2.21); Protamines (157,2.18); Elvitegravir (2676,2.16); Econazole (1213,2.14); Cidofovir (234,2.13); Milrinone (588,2.13); Nitroprusside (250,2.12); Lomeprol (100,2.11); Bictegravir (1735,2.11); Cobicistat (3065,2.10); Tenofovir alafenamide (4387,2.07); Fenoldopam (29,2.07); Foscarnet (555,2.06); Citric acid (728,2.05); Diethylene glycol (7,2.05); Tenofovir disoproxil (11003,2.05); Mannitol (881,2.02). **Conclusion**: This report lists drugs that require further investigation to determine their risk of AKI.

Abstrat 008

Assessment of Patient Safety Culture among Healthcare Providers in A Tertiary Hospital at Johor Bahru, Malaysia

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Background: Drug-related problems (DRPs) are drug-related events that lead to inadequate medical care or to harm patients. **Objective**: This study aims to determine the types, frequency, and settings of DRPs among hospitalized patients. **Methods**: A cross-sectional study with clinical pharmacist intervention was conducted between June 2013 and November 2015. Patients who were admitted to the medical wards, Intensive Care Unit (ICU), and Coronary Care Unit (CCU) at University of Science and Technology Hospital in Sana'a, Yemen, were interviewed and their medical records and medication orders were assessed for DRPs by the clinical pharmacist who provided pharmaceutical care services inpatient settings. **Results**: A total of 3307 DRPs were identified after evaluated 957 patients, with an average of 3.5 DRPs/patient. The most frequently encountered DRP type was indication problems (29.2%, n=965), followed by adverse drug events (26.2 %, n=867), and dosing errors (25.3%, n=838). This study also showed that 15.3% (n=506) of patients required frequent monitoring, and 4.0% (n=131) of patients needed education and counselling. The most frequent DRPs were identified in ICU (43.6%, n=417), followed by CCU (30.9%, n=296), and medical ward (25.5%, n=244). **Conclusion**: Certain types of DRPs are common among patients in the hospital, especially in critical settings. Therefore, measures to tackle these types of DRPs should be taken.

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MALAYSIAN Journal *of* Pharmacy

Abstract 009

The Health-related Quality of Life and Treatment Satisfaction Among Tacrolimus Treated Patients Post-Renal Transplantation in Riyadh, Saudi Arabia

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Background: Renal transplantation (RTP) has a higher quality of life than dialysis. However, kidney transplant recipients frequently experience some adverse effects accompanied by immunosuppressive treatment, which negatively affect the physical and mental health-related quality of life (HRQoL). **Objectives**: To evaluate the HRQoL and treatment satisfaction among tacrolimus-treated patients post-RTP and to determine the effect of other demographic, clinical, and social factors on their HRQoL and treatment satisfaction. **Methods**: A convenience sample of 100 renal transplant recipients on tacrolimus-based regimens from January 2017 to September 2019 in the Security Force Hospital in Riyadh, Saudi Arabia, were enrolled in this study, quality of life and treatment satisfaction were prospectively analyzed using Kidney Disease Quality of Life Instrument-SF36 (KDQOL-SF36) and Treatment Satisfaction Questionnaire for Medication (TSQM 1.4) after one month & 6 months of RTP. **Results**: A total of 100 renal transplanted patients, 78%, were male, mean age was 45.3 ± 13.87 years. The most comorbidities before RTP were hypertension, 39.7%, dyslipidemia, 37.5%, and diabetes mellitus, 23.2%. Young male patients with high education levels had high scores. The mean scores of KDQoL in patients with dyslipidemia and diabetes were significantly decreased (P<0.05). Also, mean scores of TSQM 1.4 (side effects of the treatment) and KDQoL in acute cellular rejection patients were significantly decreased than those without renal rejection (P<0.05). **Conclusions**: Tacrolimus-treated patients showed some improvement in the overall HRQoL and treatment satisfaction after 6 months of RTP. A multidisciplinary team should integrate psychological health professions to encourage renal transplant recipients to adapt better.

Abstract 010

Tuberculosis: Risk Factors, Developing Drug-Resistant, Treatment Outcomes and Survival Trend in Hospital Pulau Pinang, Malaysia: A Retrospective Study

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Background: Multi-drug resistant tuberculosis (MDR-TB) has emerged as a serious health issue worldwide. Although TB incidence is declining, mortality rate is in increase. **Objectives**: To investigate the factors associated with the development of MDR-TB and mortality among TB patients. **Methods**: A retrospective cohort study, carried on Hospital Pulau Pinang, Malaysia. Medical records of TB patients treated and followed up for 6 months from 2014 till 2018 were reviewed. By using SPSS version 23.0. Cox regression model was used to identify the factors associated with MDR-TB occurrence and mortality among TB patients. **Results**: Out of 351 TB patients, 325 (92.6%) patients were drug-susceptible TB and 26 (7.4 %) patients were MDR-TB. Among drug-susceptible TB patients, 245 (75.4%) patients achieved successful outcomes and 73 (22.5%) passed away. In multivariable Cox regression, drug abuse (p-value= .034, HR= 1.836, 95%CI= 1.019 – 3.309), high levels of white blood cells (p-value= .000, HR= 1.102, 95%CI= 1.057 – 1.148) and urea (p-value= .002, HR= 1.029, 95%CI= 1.011 – 1.047), and low levels of platelets (p-value= .000, HR= .996, 95%CI= .995 - .998) and albumin (p-value= .006, HR= .964, 95%CI= .940 - .990) were significantly associated with mortality. Moreover, relapsed cases (p-value= 0.044, HR= 3.035, 95%CI= 1.028 – 8.957), alcohol consumption (p-value= 0.000, HR= 7.591, 95%CI= 3.097 – 18.610) and being single (p-value= 0.000, HR= 6.817, 95%CI= 2.599-17.879) were significant risk factors for MDR-TB development. **Conclusion**: The success rate achieved in the study site (75.4%) was encouraging but still less than WHO target (85%) and still has a room for further improvement.

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Abstract 011

Incidence and Management of Adverse Drug Events Among Drug-Resistant Tuberculosis Patients: A Prospective Study Results From A High Burden Country

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Background: Management of Drug-resistant tuberculosis (DR-TB) involves a higher frequency of adverse drug events (ADEs) needing effective and timely response, which if left untreated may result in a higher rate of loss to follow up of drug-resistant patients. **Objectives**: Prospective study was aimed at identifying the incidence, cause, and management methods for ADEs along with risk factors among DR-TB patients at Nishtar Medical University Hospital, Pakistan. **Methods**: Prospective DR-TB patients, enrolled during January 2016 to May 2019, were evaluated for ADEs as per National TB Program criteria, Pakistan. Multivariate logistic regression was used to assess the independent variables ADEs occurrence. **Results**: Among 271 DR-TB patients, majority of the patients were males (51.3%), aged being < 50 years (77.5%), weighed > 40 kg (69%), urban residents (51.7%), married (70.8%) and non-smokers (88.6%) and females were 49.7% of the cohort. Among patients, 55(18.5%) patients did not experience any ADEs, while at least 15(5.5%), 33(12.2%), 55(20.3%) and 53(19.6%) patients encountered one, two, three and four ADEs, respectively. Gastrointestinal disturbances (66.7%) and electrolyte disturbances (55.7%) remained one of the highest reported ADEs during therapy, followed by arthralgia (49.1%), psychiatric disturbance (39.4%), ototoxicity (24%), sleep disturbances (17.7%), pruritic reactions/rash (12.9%), dyspnoea (12.5%), and tinnitus (8.8%). Baseline pulmonary cavitation (p-value 0.001, OR 3.419; 95% CI (1.694 - 6.902) was significantly associated with ADEs occurrence among DR-TB patients. **Conclusion**: Overall nearly 81.2 % of the DR-TB patients encountered therapy related ADEs. The higher frequency of Amikacin-related temporary hearing loss leading to the treatment modification among patients is of concern. ADEs were high among the study cohort, however, managed efficiently.

Abstract 012

Qualitative Assessment of Knowledge, Attitude and Practice of Healthcare Practitioners About Precision Medicine Among Cancer Patients in Lahore, Pakistan

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Background: Precision medicine (PM) allows healthcare practitioners (HCPs) to give treatment according to the patient's genetic findings taking into consideration the physiological and environmental characteristics. PM is a relatively new treatment approach in Pakistan. Therefore, it is important to investigate the level of awareness, attitude, and challenges faced by HCPs during practicing PM for cancer treatment. **Objectives**: the present study aims to explore the level of awareness, attitude, and challenges faced by the HCPs during the treatment of cancer using PM approach. **Methods**: Phenomenology-based qualitative approach was used. Face-to-face in-depth interviews were conducted using the purposive sampling approach among oncologists of Lahore, Pakistan. The data were analyzed using thematic content analysis to identify themes and sub-themes. **Results**: Sample size saturation achieved with 14 physicians. Out of these,11 were aware of PM. They were keen on training to hone their skills and agreed currently on providing PM. HCPs believed PM was expensive and given to affluent patients only. Other impeding factors include cost, lack of knowledge, and drug unavailability. **Conclusions**: Despite basic knowledge and will to practice, resource and cost constraints were marked as significant barriers. Additional training programs and inclusion into the curriculum may help to implement PM in the future. Health authorities need to ensure a cheaper PM treatment available to cancer patients.

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Abstract 013

The Impact of Education Level Over Adoption of Standard Operating Procedures Against Sars-Cov2 Infection Among the COVID-19 Booster Dose Recipients in Pakistan

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Background: Generally, the public does not comply with the standard operating procedures against COVID-19 after getting vaccinated. **Objective**: This study was conducted in Pakistan, to identify the impact of education level on the adoption of standard operating procedures against SARS-COV2 infection among the COVID-19 booster vaccine recipients. **Methods**: This cross-sectional survey was conducted online among the Pakistani population from 18th June to 8th July 2022. The tool was designed by using online Google forms. Various demographic and attitude related questions were included in the questionnaire. The association between dependent and categorical independent variables was determined by using the chi-square test. The significance was measured at $P < 0.05$. Statistical analysis was performed by using IBM SPSS Statistics (v 23). **Results**: A total of 196 respondents were obtained with a total of 75% of them being male, the mean age +SD was 29.38 + 6.3 years. Among them, 85.7% of respondents were from urban areas. It was highlighted that 38.8% of respondents were infected with COVID-19 before. All respondents had received their booster shot. The positive attitude toward wearing a face mask ($P < 0.001$), hand sanitization ($P < 0.001$), and social distancing ($P < 0.001$) was significantly associated with higher education ($\geqslant$ graduation). **Conclusion**: Education level was noted to have a significant impact on a better understanding of the importance of the adoption of standard procedures against SARS-COV2.

Abstract 014

Public Awareness and Perceptions on The Corona Virus (COVID-19) in Duhok Province/Kurdistan Region, Iraq

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Background: Novel Corona Virus Disease (COVID-19) effectively took the world by storm, resulting in a huge pandemic worldwide as declared by the World Health Organization. Global attempts have been made to prevent the spread of the disease through governmental policies, regulations and personal actions that rely on public awareness. **Objectives**: The aim of this study is to assess the awareness, perceptions, and anxiety of the public regarding this pandemic. **Methods**: A web-based (google forms) survey with random sampling was conducted using a questionnaire developed for this study. The questionnaire consisted of 4 sections including demographics, awareness about transmission methods and prevention measures, public perceptions about information source, and perceived anxiety from COVID-19. **Results**: A total of 1426 responses were received with male number slightly lower than female (n=706, 49.5%). The participants in our survey had good knowledge and awareness as they had an overall mean score of 3.58. Participants living in urban areas, that had university-level education and/or were 30-40 years of age had higher knowledge than their peers. Social media and the internet were the main sources of information for about 49.6% of the participants. Unlike other studies, the majority of the participants did not have pandemic-related anxiety as Coronavirus news did not worry them and it has not affected their sleeping and eating habits. **Conclusion**: The public in this study has good general knowledge and awareness about COVID-19. However, some myths still need to be highlighted and corrected to increase public awareness and reduce the chance of infection.

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Abstract 015

Practice and Associated Factors Determination of Antibiotics Self-Medication Among Community Residents in Boyolali, Indonesia

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Background: Antibiotic resistance (ABR) is a global crisis mainly driven by antibiotic overuse and misuse, including self-medication. Determining the associated factors of antibiotics self-medication (ASM) is crucial to take necessary preventive measures. **Objective**: This study investigated the prevalence, practice, and factors associated with ASM in the general community residing in Boyolali, Indonesia. **Methods**: This cross-sectional study was conducted using a validated questionnaire with the cluster sampling method applied to select households. ASM behaviour variables were determined using the multivariate logistic regression analysis. **Results**: During the study, 961 respondents participated (46.9% male and 53.1% female). ASM prevalence was 16%. Amoxicillin (50.0%) and tetracycline (33%) were frequently used as antibiotics for self-medication for diseases of non-bacterial infections. The reasons for ASM were mainly personal experience and not consulting with a doctor to save money. Most respondents reported that antibiotics could kill viruses (84.3%) and reduce fever (73.2%). They do not know that antibiotics must be bought after being prescribed by a doctor (66.8%), do not know how to use antibiotics correctly (63.5%), and do not know that inappropriate use of antibiotics will cause ABR (35.1%). Age, marital status, employment status, antibiotic access knowledge, and antibiotic misuse were significantly associated with ASM ($p<0.05$). **Conclusion**: This study determined 16% ASM, but the tolerance to ASM should be zero. Because any single percent of ASM could spread ABR widely among the whole community. Educating and encouraging people to avoid ASM is recommended to prevent ABR development and spread among societies.

Abstract 016

Implementing PharmindBot on Facebook for Pharmacy Research Purposes: An Artificial Intelligence-Based Chatbot

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Background: The world is moving fast towards digital transformation as we live in the fourth industrial revolution (4IR) and artificial intelligence (AI) era. Conversational chatbots were used successfully in healthcare. In 2019-2020, a conversational chatbot (PharmindBot) linked to the Pharmind page on Facebook® was designed and successfully implemented. More than 170,000 fans subscribed to PharmindBot until December 2021. PharmindBot has been used effectively to reach thousands of healthcare professionals (pharmacists, nurses and physicians) in the Arab region who interacted with educational posts published on the Pharmind public page on Facebook®. **Objective**: To implement a chatbot called "PharmindBot" that runs on Facebook® to reach thousands of healthcare professionals and to collect data for research purposes. **Methods**: PharmindBot was successfully implemented on the Facebook® platform following three sequential steps. Firstly, ChatPion was installed on the Pharmind website. Secondly, the PharmindBot application (app) was developed on Facebook®. Finally, PharmindBot app was integrated with the Pharmind Chatbot system. Evaluation: Auto-reply by PharmindBot was tested using a test post which published on the Pharmind page on Facebook® asking followers to leave pre-defined keywords. PharmindBot ability to collect and save data was tested by asking testers to fill an online survey within Facebook Messenger® for quantitative data and to answer predified series of questions for qualitative data. **Results**: PharmindBot was tested on 1000 subscribers who interacted with it. Almost all testers (n= 990, 99%) obtained a successful reply from the chatbot after sending a pre-defined keyword. However, very few subscribers (n=10, 1%) did not get any responses. The chatbot replied privately to almost all public comments (n=985, 98.5%). No missing data was found when the chatbot was used to collect quantitative and qualitative data. **Conclusions**: Pharmindbot reached thousands of healthcare professionals and provided them with automated responses. The chatbot also collected qualitative and quantitative data effectively and efficiently with little costs.

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Abstract 017

Medication Management Review Clinic in Jordan: Development and Review of First Two Cases

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Background: Developing nations still lacks medication management review services like their developed counterparts. **Objectives**: We describe first two cases in the leading medication management review service in Amman, Jordan. **Methods**: This is a descriptive study with two case reports. A team of 3 clinical pharmacists developed necessary forms, visited pharmacy locations, and ensured compliance with medication management service criteria. Patients were recruited if they have 1 chronic condition, 4 chronic medications, 12 medication doses, or been hospitalized in the last 1 month. Moreover, patients who had undiagnosed signs and symptoms which may have been due to drug-induced disease also qualified for the service. Clinical pharmacist then identified, prevented, and resolved all drug-related problems. All patients pay a flat fee of 10 Jordanian Dinars per 15-minute interview. **Results**: We present our first and second cases from the service. Case I is 73-year-old diabetic woman who is demented and forgetful with faecal and urinary incontinence as well as visual and auditory hallucinations. Case II is 77-year-old diabetic man with morning oedema, hypertension, hypothyroidism, and benign prostatic hyperplasia. Case I had acute kidney injury while Case II had chronic kidney disease (CKD stage 3). Case I & II received 13 & 12 medications, respectively, with both having 7 clinical pharmacy interventions including prescribing new items. Both patients improved on follow-up with forgetfulness mitigated in the first and oedema resolved in the second. **Conclusions**: We have a great demand for medication management services in Jordan and our preliminary evidence predict huge benefits.

Abstract 018

Atorvastatin Therapy Among Egyptians: A Cross-Sectional Study Among Community Pharmacists

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Background: Atorvastatin is the most prescribed statin globally. Community pharmacists are among the most accessible healthcare professionals in providing information and services on rational medication use. **Objective**: The study aims to investigate the opinions of community pharmacists on the response to atorvastatin amongst Egyptian outpatients. **Methods**: This is a cross-sectional survey aimed at community pharmacists across Egypt's five main regions. A survey link was provided via Google Forms® to 1500 pharmacists via email, contact number, or social media platforms. It comprised five sections: 1) demographics, plus pharmacists' experience concerning 2) dyslipidemia, 3) atorvastatin prescriptions, 4) causes of variations in therapy outcomes, and 5) atorvastatin-related adverse reactions. Participation was voluntary and informed consent was obtained. The Chi-square test of independence was used to evaluate differences in response frequencies. The significance cut-off value was set at 0.05. **Results**: A total of 1444 respondents completed the survey. The elderly were most reported to get prescriptions for dyslipidemia (69.5%). More than half (58%) reported that females presented more with dyslipidemia. Over two-thirds (87.3%) agreed that atorvastatin was the most prescribed statin in their pharmacies. The majority (93.1%) believed that patient-related differences influenced atorvastatin therapy outcomes (e.g., lipid profile). Many respondents (25.9%) agreed that drug-drug interactions influenced these outcomes the most. Elevation of hepatic enzymes was rated differently across Egypt's regions (p= 0.037). **Conclusions**: This study shows that the majority of pharmacists reported atorvastatin as the most frequently prescribed statin. Most pharmacists

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attributed variations in treatment outcomes to drug-drug interactions with atorvastatin.

Abstract 019

Spray Dryer and Electrospray Techniques Assisted Encapsulation of Insulin in Microparticles Coated with Pectin Microbeads for Colon-Targeted Oral Drug Delivery

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Background: The current diabetes therapy for type-1 and to large extent type-II, relies mainly on subcutaneous insulin injections. However, frequent daily injections may lead to low patient compliance and substantial inconvenience. Electrospray technique can quickly obtain uniform and spherical particles with the diameter of interest by applying an electric field on the feed needle tip. Electrospray and spry dryer techniques introduce an effective encapsulation, batch-scalability and reproducibility in particles production. **Objective**: This study aimed to formulate a colon-targeted system to deliver insulin orally by preparing insulin-chitosan microparticles coated with pectin microbeads (INS-Cs-MPs coated PMBs). **Method**: The insulin was encapsulated in chitosan microparticles prepared by the spray drying technique. Then, the microparticles were coated using pectin polymer through the electrospray technique based on the ionic gelation. The optimization of the insulin-loaded chitosan microparticles was performed based on the chitosan concentration, inlet temperature, and feed flow rate. Meanwhile, the physiochemical properties of pectin microbeads were controlled by studying the crosslinking time, feed flow rate and high voltage of the electrospray equipment. **Results**: The optimized microparticles were successfully prepared with particle size, yield, drug loading, and zeta potential of 1.06 ± 0.8 µm, 47.23 ± 0.5%, 7.6 ± 0.1%, and +21.61 ± 1.49 mV, respectively. The INS-Cs-MPs coated PMBs were also successfully prepared with size, sphericity, and aspect ratio of 0.73 ± 0.15 mm, 0.05 ± 0.07, and 1.85 ± 0.14, respectively. The microbeads demonstrated desirable water uptake, erosion and swelling as the microbeads were completely dissolved in the simulated colon fluid. The drug release of microbeads had lower release than the microparticles in the simulated gastric. **Conclusion**: The results suggest that the produced INS-Cs-MPs coated PMBs system with the suitable particle size (0.73± 0.15 mm) is a promising system for colon-targeted oral insulin delivery. Additional work is needed to evaluate the cell cytotoxicity of the microbeads as well as the efficiency of lowering glucose level in-vivo.

Abstract 020

Screening Electrospinning Critical Parameters for Fibres Production: Excipients' Nature

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Background: Electrospinning is a heat-free manufacturing technique employing high voltage upon polymer solution/melt to produce nano- and microfibres which is governed by several parameters such as excipients (i.e., polymers, salts) and needle types used (i.e., single and coaxial needles). **Objective**: This study investigated the electrospinnability of four polymers via single-needle and coaxial electrospinning with highlights on electrolyte (using NaCl) to improve the conductivity of polymer solution. **Methods**: Different polymers namely Polyvinylpyrrolidone (PVP) K29/32 (10%), PVP K90 (10%), Polyvinylalcohol (PVA) (5-10%), and Hydroxypropylmethylcellulose (HPMC) (1-3%) were electrospun under conditions of 1 mL/hr, 5-15 kV and 15 cm needle-to-collector distance, final fibres were subjected to optical microscopy analysis. Electrospinnability of HPMC was further investigated with the addition of 0.5% sodium chloride (NaCl). **Results**: In single-needle electrospinning, unlike PVP K29/32, PVP K90 showed excellent electrospinning abilities, PVA concentrations increment were directly proportional to the production of beadless and uniform nanofibres, whereas HPMC has poor electrospinnability with and without salt addition. With coaxial electrospinning PVP K90 as sheath, the formation of wet and beaded nanofibres was significant for PVA and HPMC whereas beadless and uniform nanofibres were produced with HPMC 1.5% and 0.5% NaCl. **Conclusion**: It can be inferred that the type of polymers and their concentrations are crucial variables in electrospinning. Salt addition also played a vital role in producing good nanofibres at low concentrations when incorporated with natural polymers collectively with coaxial electrospinning.

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Therefore, this preliminary screening gives insights into the important variables needed to be optimised in electrospinning technique.

Abstract 021

Bioavailability and Pharmaceutical Analysis of Novel Chocolate Based Ibuprofen Formulations

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Background: Chocolate chewable tablet and suspension dosage forms are considered an excellent taste masker and easy to swallow, making them a favourable dosage forms for the elderly and children. However, limited research is currently available relating to the effect of chocolate on the bioavailability of drugs *in vivo*. **Objective**: the present study is to compare the pharmacokinetic profile of the non-steroidal anti-inflammatory drug (ibuprofen) in its conventional suspension form with those incorporated into novel chocolate-based dosage forms. **Method**: High Performance Liquid Chromatography-Ultraviolet (HPLC-UV) was validated to be used for the determination of ibuprofen in rat serum. The chocolate-based ibuprofen granules (solid suspension and co-crystals of ibuprofen and chocolate), provided by UCLAN, were triturated in a mortar and then suspended with (0.25%) methocelTM solution. Each different formulation along with conventional ibuprofen control was orally gavaged into Sprague-Dawley rats (n=8) then blood samples at different time intervals were collected, treated and analysed using statistical software. **Results**: Analysis of the *in vivo* data revealed a significant reduction ($p<0.05$) in the maximum serum concentration of ibuprofen from 65.540±6.673µg/ml when ibuprofen was administered alone to 43.366±9.589µg/ml and 45.816±7.620µg/ml when ibuprofen was incorporated into the co-crystals or solid suspension chocolate matrices, respectively. On the other hand, there were no significant differences found in the area under concentration curves to 8 hours and to infinity time between the different formulations. **Conclusion**: Finding from this study give indication on possible sustained effect of ibuprofen when incorporated into the different chocolate matrices and the great potential those novel formulations could possess.

Abstract 022

Isorhamnetin Decreased The Expression of HMG-CoA Reductase and Increased LDL Receptors in Hep G2 Cells

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Background: Isorhamnetin is a flavonoid component existed in many plants. It has many biological functions, including anti-tumor, anti-oxidant and anti-inflammatory effects. Previous *in vivo* studies showed that isorhamnetin lowered serum cholesterol in rats fed with cholesterol-enriched diet. However, cholesterol-lowering mechanism is still unknown. **Objective**: We investigated the hypocholesterolemic effect of isorhamnetin in cholesterol biosynthesis *in-vitro*. Material and **Methods**: Human hepatocellular carcinoma cell line, HepG2, was used in the study. The effect of isorhamnetin on the expression of hydroxymethylglutaryl CoA reductase (HMG-CoA reductase) and LDL receptor (LDLR) genes and proteins was investigated by real time polymerase chain reaction (RT-PCR) and Western blot while ELISA was used to study of isorhamnetin oxidative stress status. For all tested parameters, one-way analysis of variance (ANOVA) was used, p value less than 0.05 was considered significant. **Results**: Isorhamnetin inhibits the proliferation of HepG2 cells in time-dependent manner, IC50 100 µM, 53 µM and 40 µM at 24, 48 and 72 hours, respectively. Isorhamnetin downregulated HMG-CoA reductase gene expression significantly. Also, all tested doses of isorhamnetin downregulated LDLR expression and produced no change in membranous LDLR protein expression. In cell lysate, LDLR was increased by all studied concentrations of isorhamnetin. Isorhamnetin at 100 µM decreased intracellular HMG-CoA reductase compared to vehicle-treated control. Furthermore, isorhamnetin increased superoxide dismutase activity and reduced H2O2 level, due to catalase activity. **Conclusion**: Isorhamnetin may have beneficial effects on cholesterol mechanism. Future detailed studies are needed to investigate the effect of Isorhamnetin on LDLR degradation.

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Abstract 023

A Novel BAK-BAX-CDK1 Signalling Complex Links Activation of The Spindle Assembly Checkpoint to Apoptosis

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Background: Antimitotic anticancer drugs, such as Taxol, disrupt microtubule formation and prevent microtubule-kinetochore attachments to activate the mitotic checkpoint (also known as the Spindle Assembly Checkpoint). In response to mitotic checkpoint switch-on, a key cell cycle regulator cyclin-dependent kinase 1 (CDK1) is chronically activated resulting in mitotically arrested cells. One consequence of prolonged mitotic arrest is the initiation of cell death via a well-characterised signalling pathway called mitochondrial apoptosis. **Objective**: In this study, we aim to identify the cytoplasmic signals that link mitotic checkpoint activation to cell death. **Methods**: This study was conducted using a variety of molecular and cell biology techniques, including subcellular fractionation, immunoprecipitation, western blotting, cell death assays, flow cytometry, immunofluorescence microscopy and mass spectrometry. Human cancer cell lines HeLa wild type, U2OS, HCT-116 wild type, HCT-116 BAK/BAX double knockout cells, and diploid RPE1 cells were used. **Results**: This study discovered previously unknown connections between CDK1 and proapoptotic proteins BAK and BAX. Our findings indicate that activated CDK1 forms an apoptotic complex with the pro-apoptotic proteins BAK and BAX during prolonged mitotic arrest. The phosphorylation of the mitochondrial based anti-apoptotic proteins Bcl-2 and Bcl-xL and the induction of cell death are dependent on BAK and BAX-mediated delivery of activated CDK1 to the mitochondrion. **Conclusions**: The interactions between cell cycle regulator protein CDK1 and key pro-apoptotic proteins BAK and BAX identify the cytoplasmic signals that link mitotic checkpoint activation to apoptosis.

Abstract 024

Antihyperglycemic Activity of Standardized *Swietenia Macrophylla* Seed Ethanolic Extract in Type 2 Diabetic Rats

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Background: Swietenia macrophylla (S. macrophylla) (family Meliaceae) has been widely used traditionally as antioxidant, antidiabetic, antimicrobial and anti-inflammatory agents. **Objective**: Swietenia macrophylla seed ethanolic extract's (SMEE) antihyperglycemic activity was investigated in type 2 diabetic (T2D) Goto-Kakizaki (GK) rats. Two limonoids, swietenine and 3,6-O,O-diacetylswietenolide with antihyperglycemic properties in SMEE were quantified using HPLC method. **Methods**: Two doses (250 and 500 mg/kg) were used for treatment. Oral glucose tolerance test (OGTT); body weight profile; and antihyperglycemic activity of SMEE on T2D GK rats were studied. A reverse-phased analytical HPLC method was developed for simultaneous identification and quantification of the two limonoids. Separation peaks were monitored at flow rate of 1.0ml/min with a low-pressure gradient elution with mobile phase (A) water, 70 to 10 % (B) and acetonitrile, 30 to 90 %, over 36 minutes and UV detection at 220 nm. **Results**: On day 15 of OGTT, the SMEE group at 500 mg/kg showed lower fasting blood glucose levels. Results: Antihyperglycemic test displayed a better and sustained glucose regulation over 7 hours in the SMEE group on days 1 and 8. Method validation of HPLC analysis attained good linearity ($r \geqslant 0.9970$) of calibration curves in the range of 1.56 -200 µg/mL. The content of swietenine and 3,6-O, O-diacetylswietenolide was 27.5 µg (2.75%) and 14.53 µg (1.45%) in 1 mg of SMEE. While LOD and LOQ were $r \geqslant 0.0975$ and 1.5625 µg/mL for both swietenine and 3,6-O, O-diacetylswietenolide. **Conclusion**: Quantification of

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swietenine and 3,6-O,O-diacetylswietenolide from SMEE and the in-vivo investigations verifies the S. macrophylla seed's antidiabetic properties in T2D rats.

Abstract 025

Increased *In-vitro* Binding of Di(5-Furfural) Ether, A Degradant Of 5-Hydroxymethylfurfural, With Endogenous Macromolecules: Experimental and Theoretical Approaches

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Background: Earlier studies have investigated the safety (including the DNA and albumin binding activities) of the food additive, 5-hydroxymethylfurfural. In contrast, there is a dearth of the safety assessment of its degradant, di(5-furfural) ether, which may pose a greater risk as it has been detected in parenteral solutions at concentrations greater than those of the intact additive. **Objective**: The aim of this study was a comparative *in-vitro* investigation of the binding interactions of 5-hydroxymethylfurfural and di(5-furfural) ether with albumin and ct-DNA. Materials and **Methods**: Di(5-furfural) ether was synthesised via thermal dehydration of 5-hydroxymethylfurfural. The binding of the compounds with albumin and ct-DNA were investigated using UV spectroscopy, viscometry, molecular docking and DFT calculations. **Results**: Photometric titrations showed that, when compared with 5-hydroxymethylfurfural, di(5-furfural) ether induced more pronounced perturbations in the spectra of albumin and DNA. The binding constants of di(5-furfural) ether to albumin and DNA respectively were 1.5 and 5 folds greater than 5-hydroxymethylfurfural. Docking also confirmed higher binding energies and stabilisation of di(5-furfural) ether complexes with albumin and DNA. The increased binding affinity of di(5-furfural) ether was attributed to its higher C/H ratio which facilitated an extensive network of hydrophobic interactions with Tyr149, Leu237, Ala290, Ile289, Arg194 residues of BSA Site I and minor groove of DNA. DFT calculations showed that the higher electrophilicity of the di(5-furfural) ether might enhance its interaction with the negatively charged DNA backbone. **Conclusions**: In comparison to 5-hydroxymethylfurfural, di(5-furfural) ether showed increased binding and stability of resultant ligand-protein complexes formed with albumin and DNA.

Abstract 026

Pharmacophore Modelling, Molecular Docking, and Molecular Dynamics Simulation to Identify Potent Inhibitors of Alpha-Synuclein Aggregation

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Background: Aggregation of α-synuclein is strongly implicated as an underlying pathogenesis of Parkinson's disease (PD) and its inhibition has been demonstrated as one of the strategies PD treatments. However, the few inhibitors of α-synuclein applied in clinical conditions elicit unpleasant side effects, making a search for better candidates significant. **Objectives**: This study is aimed at identifying potent inhibitors of α-synuclein aggregation from natural product interbioscreen (IBS) databases. **Method**: Using ligand-based Pharmacophore modeling, Glide XP docking, molecular dynamics, and pk-CSM pharmacokinetics prediction parameters were applied in silico for identification of potential ant-PD compounds. **Results**: The top-ranked pharmacophore model was validated with Gunner-Henry (GH) scoring method and enrichment factor (EF) of 0.87 and 23.43 respectively, making it ideal model for database screening. The Pharmacophore model with features HHHHHHDDDDA identified 100 hits from "877,377 IBS database. The top ranked docked compounds, STOCK2S-85121, STOCK3S-13122, STOCK2S-57139, STOCK75-07150, & STOCK4S-24924 demonstrated docking scores of -4.789, -4.451, -4.413, -4.365, & -4.227 compared to reference compound (levodopa) with docking scores of -3.556 kcal/mol respectively. Molecular dynamics via root mean square deviation and fluctuations further revealed STOCK2S-85121 having better stability in the binding pocket compared to other ligands. **Conclusion**: Therefore, STOCK2S-85121 is recommended for further evaluation as potential anti-PD agent.

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Abstract 027

Theophylline Causes Regression of Endometriotic Implants in a Rat Surgical Model

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Background: Endometriosis is one of the most frequent diseases in gynaecology. Currently therapies are unsatisfactory. **Objectives**: The present study evaluates the effectiveness of theophylline as a treatment for endometriosis. **Methods**: The effect of theophylline on regression of endometriotic implants was studied in a rat surgical model. Two squares of 4 x 4 mm of open uterus were sutured in the peritoneal cavity. After 28 days, the size of cyst was measured by a caliper and treatment started for 21 days with theophylline. At the end of treatment cyst size was measured again. Light and electron microscopic studies were performed in addition to TUNEL assay for the assessment of apoptosis. **Results**: Theophylline 10 and 15 mg/kg reduced endometriotic cyst size by 52% and 66%, respectively. Histologically, the stroma was highly vascularized especially around glandular tissue and heavily infiltrated with inflammatory cells in animals that received vehicle as the only treatment. In ovarictomized rats, glandular tissue was highly reduced. In rats treated with theophylline, glandular tissue within stroma of cysts was scarce, fibrosis was localized directly under the luminal epithelium and mixed inflammatory cells were seen in the stroma and in cyst lumen. No significant difference in mast cells degranulation in theophylline-treated group was encountered. Furthermore, apoptosis was detected in stroma of cysts of rats treated with theophylline. Ultrastructural studies revealed active mast cells with reduced electron density of their granules in theophylline-treated and control groups. **Conclusions**: Theophylline causes regression of endometriotic implants and increases apoptosis without affecting mast cell degranulation.

Abstract 028

Complementary and Alternative Medicine (CAM) Use in Insomnia: Current Update on Knowledge, Attitude, and Perception (KAP) Among the Community in Malaysia

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Background: 10-30% of adults have chronic insomnia, while 9 out of 10 Malaysian have insomnia. CAM therapy can be one of treatment for insomnia other than the conventional treatment. **Objective**: This study aims to evaluate the current update on KAP toward CAM therapy use in insomnia among the community in Malaysia. **Method**: A self-administered, face-validated online questionnaire was distributed among 396 participants aged 18 years and above recruited using convenience sampling between January and May 2022. The questionnaire consists of 5 sections: demographic, pattern usage of CAM therapy, knowledge, attitude, and perception of CAM therapy for insomnia. Section 1 and 2 consist of multiple-choice questions while each KAP part comprises 5-6 items Likert scale questions. The overall score for each KAP section is calculated and the level is classified by using Bloom's cut-off point. Descriptive statistics were performed using SPSS version 22 and the data were presented in frequency and percentage. Results: Most of the respondents were single (81.3%), female (68.9%) university students (74%) with bachelor's degree (63.4%). Most respondents have never experienced insomnia (58.3%) and thus never practiced CAM therapy for insomnia (82.3%). Music-based intervention (n=36) and fixed sleeping patterns (n=55) are some reported CAM therapy practiced by insomniac respondents. **Results**: it showed that participants have a positive perception (53.8%) and good knowledge (61.6%) of CAM therapy and insomnia but a moderate attitude (50.3%) toward CAM therapy for insomnia. **Conclusions**: CAM therapy is not widely practiced among Malaysian and health education programs aimed at improving the public's understanding of CAM therapy for insomnia is needed.

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Abstract 029

Health Benefits of Honey: Knowledge, Attitude and Perception (KAP) Among the Community in Malaysia

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Background: According to current scientific research, honey may be beneficial and protective in treating various medical illnesses. **Objective**: To evaluate the KAP toward the health benefits of honey among the community in Malaysia. **Method**: A cross-sectional study was conducted using a self-administered, face-validated online questionnaire distributed among 400 participants aged 18 years and above recruited using convenience sampling between January and May 2022. The questionnaire consists of five domains: demographic characteristics, honey's usage patterns, knowledge, attitude, and perception of the health benefits of honey. Sections 1 and 2 consist of multiple-choice questions, while each KAP part comprises 2-7 items Likert scale questions. The overall score for each KAP section is calculated, and the level is classified by using Bloom's cut-off point. The statistical analysis in methods for this study was analyzed using the SPSS version 23. Descriptive statistics were performed using SPSS version 22, and the data were presented in frequency and percentage. **Results**: Most of the respondents were single (83.9%), female (58%) university students (36.5%) with bachelor's degree (66%). Among Malaysian, Tualang (n=218) is the most frequently consumed honey to suppress cough (n=342), with an expenditure of more than RM60 per month (n=162). Results also showed that participants have good knowledge (n=185, 46.3%), an optimistic attitude (n=275, 68.8%), and a positive perception (n=276, 69%) toward the health benefit of honey. **Conclusion**: The majority of the study participants were knowledgeable about honey, and awareness of its benefit must be directed to the public.

Abstract 030

Knowledge, Attitude, and Practice of Community Pharmacists Regarding Smuggled Medicines in Yemen

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Background: Smuggling is a global problem with detrimental effects on patients, community, and health system. **Objective**: This study aimed to assess community pharmacists' knowledge, practice and attitude towards smuggled medicines in Yemen. **Method**: A cross-sectional study was conducted among community pharmacists in Yemen between February and August 2020. Besides sociodemographic variables, community pharmacists' knowledge, practice and attitude were evaluated. Factors associated with knowledge of smuggled drug were analyzed using SPSS with a significance level of $P < 0.05$. **Results**: A total of 430 questionnaires were distributed, and 400 community pharmacists agreed to participate (93%). The majority of participants were male (89%), had Bachelor's degrees (66%), and had less than five-year experience (52%). Participants demonstrated good knowledge about smuggled medicines, which was significantly associated with participants' qualifications and years of experience. Notably, the majority of participants (92%) admitted that smuggled medicines are pervasive in Yemen. Although most participants (66%) were aware of the negative impact of smuggled medicines on patients' health, they had a negative attitude and poor practices. The most frequently smuggled drugs were anti-diabetic agents (42%), followed by antihypertensive agents (22%). Long-standing civil war in the country is the leading factor behind medicines smuggling. Others contributing factors are low economic status, affordability of smuggled medicines, and unavailability of licensed medicines. **Conclusion**: Although their good knowledge regarding smuggled medicines, community pharmacists in Yemen have a negative attitude and frequently deal with smuggled medicines. Extensive work by health authorities to increase the accessibility and affordability of medicines is required.

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Abstract 031

Gram-Negative Bacteria Susceptibility to Antibiotics Stratified by Gender

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Background: The use of antibiotics early in the course of treating illnesses can reduce morbidity and save lives. On the other hand, improper antibiotic use promotes the emergence and spread of bacteria resistant to treatment, hastening the development of bacterial resistance. An antibiogram is an easy and accessible way to assess the bacterial susceptibilities to different antibiotics. A hospital's cumulative antibiograms can mask discrepancies between patient demographics, hospital departments, or anatomical regions. **Objective**: The aim of the study was to describe the differences in gram-negative bacteria susceptibility of male and female patients in a public hospital in Qassim. **Methods**: The study included reviewing the bacteria susceptibility results that were collected from the laboratory department in the hospital from January 2021 to December 2021. **Results**: Two thousand four hundred seventy-two isolates were collected in the hospital. More than 52% of the bacteria in males and more than 58% of bacteria in females were gram-negative bacteria. The most prevalent gram-negative bacteria in male patients were Klebsiella pneumoniae, Escherichia coli, Acinetobacter baumannii, and Pseudomonas aeruginosa. The most prevalent gram-negative bacteria in female patients were Klebsiella pneumoniae, Escherichia coli, Pseudomonas aeruginosa, and Acinetobacter baumannii. **Conclusions**: The susceptibility of gram-negative bacteria to different antibiotics in female patients is different from males. So, it is important to assess the microbes that male and female patients have and to be aware of the bacterial isolates' patterns of antibiotic susceptibility before selecting the appropriate antibiotics.

Abstract 032

Descriptive Analysis of Adverse Drug Reactions Reports of Amoxicillin

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Background: Amoxicillin is one of the most antibiotics which is typically used for the treatment of bacterial infections, particularly respiratory tract infections. It is well-tolerated but could cause several complaints such as nausea, vomiting, and diarrhoea. It could also cause rare but serious adverse events such as anaphylactic reactions. **Objective**: The aim of the study was to identify the most common adverse events which are caused by amoxicillin. **Methods**: The present study was a descriptive study based on the reports that were submitted to the World Health Organization using the Vigi Access database. **Results**: It's found that 143008 reports were received till July 2022. The results found that about 49% of the reports were submitted in Asia. More than 59% of the patients were females.; and their age was between 18 and 64 years. The most reported adverse events were skin and subcutaneous tissue disorders (particularly rash and pruritis) (48%), gastrointestinal adverse events (such as diarrhoea, nausea, and vomiting) (12%), general disorders and administration problems (8%), and immune system disorders (7%). **Conclusion**: A regular evaluation of the safety of antibiotics such as amoxicillin should be implemented to facilitate the development of policies and guidelines to decrease the frequency of serious adverse events.

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Abstract 033

Assessment of Emotional Distress among Health Care Professionals at Different Hospitals in Sindh, Pakistan

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Background: During the coronavirus disease 2019 (COVID-19) pandemic, healthcare professionals (HCP) worked in a stressful environment, which affected their physical and mental well beings. Furthermore, the fear of swift transmission, inadequate equipment at healthcare facilities, and the non-serious attitudes of the public were the key factors to cause emotional distress among HCPs. **Objectives**: The study aimed to determine the impact of COVID-19 on healthcare professionals' concerns and emotional distress. **Methods**: A web-based a cross-sectional survey was conducted from October 1, 2020, to December 31, 2020. The questionnaire consisted of 16 items and was designed using Google Form and the link was promoted to HCPs through various social media platforms including Facebook, Whatsapp, and Telegram. Chi-squared and Kruskal Wallis tests were used to compared emotional distress among different variables. **Results**: A total of 368 respondents included; physicians (56%) aged between 18 and 37 (79%), working in public sector hospitals (67%) for less than five years (64%). HCPs were more concerned about their family members' health (72.0%) and 50.8% about their own (50.8%), whereas 35.3% reported being emotionally distressed. Our findings suggested that emotional distress was significantly associated with years of experience ($p = 0.048$) and working in the COVID-19 ward ($p = 0.010$). **Conclusion**: Our study concluded that the COVID-19 pandemic has increased the psychological pressure on HCPs and stressed them for their family's health. HCPs working in COVID-19 wards faced significant emotional distress compared with HCPs from other wards.

Abstract 034

Population-based knowledge, Attitude, and Perception Study for COVID-19 Vaccine in Sindh, Pakistan

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Background: COVID-19 vaccination is one of the most effective ways to immunize the population against COVID-19. However, there is vaccine hesitancy among the population in Pakistan. **Objective**: The aim of this study was to evaluate the knowledge, attitudes, perceptions, and willingness to receive COVID-19 vaccines among people in Sindh, Pakistan. **Methods**: An online survey was conducted in July 2021 using a validated survey questionnaire which was developed using Google Forms. The questionnaire consisted of 5 sections including demographic characteristics (5 items), knowledge (7 items), attitude (4 items), perception (5 items), and willingness for vaccination (1 item). The link was forwarded to the public using the snowball sampling technique. Chi-squared test and Kruskal Wallis tests were applied using SPSS (v.22) to compare the knowledge and attitudes among different variables. **Results**: A total of 926 respondents completely filled the questionnaire including; males (59%), aged 18-31 years (67%), and belonged to Hyderabad (38%). Majority of the respondents (60%) were university graduates and doing a private job (35%). More than half of the respondents had average knowledge and attitude towards COVID-19 vaccination (56% and 54%), respectively. Around 77% of respondents believed that everyone should get vaccinated and that health care workers should be given priority. The majority of respondents (81%) were willing to be vaccinated against COVID-19. **Conclusion**: Regardless of average knowledge, low positive attitude, perception about side effects of COVID-19 and poor healthcare facilities, people were willing to get vaccinated.

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Abstract 035

Causes of Drug Related Problems Among Chronic Kidney Disease Patients with Diabetes Mellitus and/ or Hypertension in Private Hospital, Yemen

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Background: Chronic kidney disease (CKD) is a worldwide health issue. Drug-related problems (DRPs) result from the coexistence of CKD and comorbidities, which increases hospital stay and healthcare costs as well as increasing the risk of morbidity and mortality. **Objective**: Identify and evaluate the DRPs and their causes among chronic kidney disease with Diabetes Mellitus (DM) and/or Hypertension (HTN). **Methods**: From 1 December 2021 to 28 February 2022, a cross-sectional study was carried out at the nephrology department of Science and Technology Hospital, Sana'a, Yemen. A total of 106 CKD patients with DM and/ or HTN were included in the study. Sociodemographic and clinical date was gathered from the medical records. The Statistical Package for the Social Sciences (SPSS) version 23.0 was used for data descriptive analysis. **Results**: Most of the included patients were males (74.5%) and non-elderly (54.7%). DRPs were found in 81.1% of recruited patients. A total of 233 DRPs were identified, with at least two DRPs identified for each patient. DRPs with the highest prevalence were drug selection (40%), dose selection (34.4%), and treatment duration (5.6%). The most common cause of drug selection (48.6%) was inappropriate drug selection, and the most common cause of dose selection (52.5%) was too low dose. **Conclusions**: DRPs are common in CKD patients with diabetes and/or hypertension. As a result, awareness of DRPs aids in identifying, resolving, and preventing potential DRPs, resulting in better patient care.

Abstract 036

Assessment of Mortality Risk Predictors Associated with COVID-9 Infection in Pakistani Patients: An Observational Study

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Background: Mortality predictor's data in Pakistani COVID-19 patients is inadequate. Understanding relationship between clinical features, treatment trajectories, and mortality is critical for establishing a foundation for patient care. **Objective**: The study aimed to examine COVID-19 patients from March, 2021 until February, 2022 evaluating data such as patient demographics, comorbidities, clinical features, laboratory results, and drugs provided as mortality predictors related to COVID-19. **Methods**: In this retrospective observational study, data was acquired by evaluating the medical records of 1000 cases confirmed by PCR-test in Pakistani districts of Lahore and Sargodha. Chi-square and logistic regression analysis were performed using SPSS programme for statistical analysis. **Results**: Out of the 1000 cases, 288 people died. Males and those > 40 years had a greater mortality rate. 90.2% of those who were placed on mechanical ventilation perished (OR=124.267, CI95%, 65.959-234.119). Most prevalent complaints were dyspnoea, fever, and cough, with a strong connection between SpO2 <95% (OR=3.234, CI95%, 1.554-6.728) RR >20 bpm (OR=2.595, CI95%, 1.203-5.597), and death. C-reactive protein (OR=2.979, CI95%, 1.686-5.261) and d dimer (OR=1.659, CI95 %, 1.010-2.727) were found to be laboratory predictors of death. Patients with renal (OR=2.344, CI95%, 1.384-3.968) or hepatic impairment (OR=1.555, CI95%, 0.962-2.513) were additionally at risk of dying. Only antivirals were substantially related with a decreased risk of mortality (OR=0.475, CI95%, 0.235-0.959) among all drugs administered. **Conclusion**: Participants who died in the study were older, male with indications of respiratory distress or organ failure, and had elevated CRP or D-dimer levels. All of the characteristics described here were associated with death in COVID-19 infection.

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MALAYSIAN Journal *of* Pharmacy

Abstract 037

Development And Validation of a Guideline-Guided Prognostic Model of Mortality in Patients with First-Ever Acute Ischemic Stroke

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Backgrounds: Prognostic models help predict acute ischemic stroke outcomes and can guide risk and care stratification. **Objective**: This study developed and validated a guideline-guided prognostic model of mortality following a first acute ischemic stroke. **Methods**: The study recruited 899 patients with first-ever acute ischemic stroke from the Malaysian National Stroke Registry (NSR) from 2010 to 2020 and followed up for three months. The NSR guideline-guided key performance indicators were thrombolytic therapy, antiplatelet within 48 hrs, dysphagia screening, deep venous thrombosis (DVT) prophylaxis, anticoagulants for atrial fibrillation (AF), discharge on antiplatelets, discharge on lipid-lowering agents, stroke education, and rehabilitation. Multivariate logistic regression was used to develop the guideline-guided prognostic model. The model was validated using performance measures; the Hosmer-Lemeshow (H-S) goodness-of-fit (calibration) and the area under the receiver operating characteristic (AUROC) curve (discrimination). **Results**: The guideline-guided factors that significantly decreased the risk of mortality were antiplatelet within 48 hrs. (adjusted odds ratio, aOR, 0.40 [95% confidence interval, CI, 0.19-0.81), dysphagia screening (aOR, 0.30 [95% CI, 0.15-0.61]), antiplatelets upon discharge (aOR, 0.17 [95% CI, 0.08-0.35]), lipid-lowering agents upon discharge (aOR, 0.37 [95% CI, 0.17-0.82]), stroke education (aOR, 0.02 [95% CI, 0.01-0.05]) and rehabilitation (aOR, 0.08 [95% CI, 0.04-0.16]). The validation performance of model was AUROC=0.941 (95% CI, 0.92-0.96), H-L test=4.35 (p=0.630), Omnibus test=142.53 (p<0.001) and Nagelkerke R2 0.741. **Conclusion**: The guideline-guided prognostic variables predictive of mortality were antiplatelets within 48 hrs, dysphagia screening, antiplatelets upon discharge, lipid-lowering agents, stroke education and rehabilitation. The model demonstrated excellent performance, accurate discrimination and calibration with potential clinical utility.

Abstract 038

Evaluation of The Impact of Antibiotic Stewardship Program on Antibiotics Utilization as Surgical Prophylaxis at a Secondary Hospital in United Arab Emirates

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Background: Overuse or misuse of antibiotics, especially broad-spectrum antibiotics, may result in nosocomial infections, leading to increased mortality rate, extended hospital stay, and cost. The antibiotic stewardship program (ASP) is introduced to combat the irrational use of antibiotics. **Objective**: To evaluate the effectiveness of the newly implemented surgical antibiotics prophylaxis (SAP) guidelines. **Methods**: This study was a retrospective, hospital-based study conducted over five years (2017 to 2022), one year before and four years after implementation of ASP at Dibba hospital, United Arab Emirates. The study included adult patients who undergo surgical operations during the study period. **Results**: Out of 3290 patients included in the study,1756 received SAP. The percentage of patients who received SAP improved from pre-ASP 53.6% to 56.7% four years post-ASP. The most frequently used SAP in pre-ASP was amoxicillin with clavulanic acid (decreased from 44% to 0% in t), in contrast to Cefazolin (increased from 0% to 83%). The appropriate selection of SAP was improved from 42% to 97%, appropriate SAP timing increased from 81% to 98%, appropriate SAP duration was noticeably enhanced from 46% to 98%. The incidence of surgical site infection (SSI) decreased from 34.82% in pre-ASP to 7.99%, 17.91%, 5.40%, and 3.71% in the first, second, third, and fourth post-ASP years, respectively. **Conclusions**: Four years Implementation of SAP guidelines have significantly improved the rational use of antibiotics resulting in improved clinical outcomes.

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MALAYSIAN Journal *of* Pharmacy

Abstract 039

Clinicodemographic Characteristics Identification of Malaysian Patients with Rheumatoid Arthritis Using Biologic and Targeted Disease Modifying Anti Rheumatoid Drugs

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Background: Rheumatoid arthritis (RA) is considered a systemic inflammatory disease that can cause progressive joint destruction. The prevalence of RA is known to be 0.5 to 1 percent. Biologic and targeted disease modifying anti rheumatic drugs (DMARDs) found to be effective in RA treatment. **Objective**: This study aimed to identify the demographic and clinical variables among Malaysian RA patients receiving biologic and targeted DMARDs. **Method**: We conducted a retrospective cohort study at Serdang and Putrajaya Hospital from August 2021 until November 2021. 215 patients were selected randomly. Data collection included demographic and clinical features at four different times intervals. **Result**: In our study we found that RA population included 66.5% females and 33.5% males, with a mean age of 54.67 years old. We demonstrated that 46.5% were Malay, 38.6% Indian and 32 14.9% Chinese. 81.4% of patients had comorbidities that hypertension (49.8%) and osteoarthritis (46%) were common. Examination of data at baseline indicated that 54% were biologic naïve. Furthermore, 59.3% of RA patients received monotherapy. The results showed that 51.2%, received TNF inhibitor, whereas non-TNF inhibitors and targeted DMARDs was received by 32.1%, and 16.7% patients respectively. We demonstrated that the mean DAS28 ESR improved considerably across time points, $F(1, 214) = 4911.89$, $p < 0.001$. **Conclusion**: The results indicated that RA is a common disorder among Malaysian population and has a significant disease burden which females are more affected. Furthermore, we have observed that there was a significant clinical response improvement after initiation of biologic and targeted DMARDs.

Abstract 040

Safety Assessment of Biologic and Targeted Disease Modifying Anti Rheumatoid Drugs Among Malaysian Patients with Rheumatoid Arthritis

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Background: Rheumatoid arthritis (RA) treatment with biologic and targeted disease-modifying anti-rheumatic drugs (bDMARDs, tDMARDs) showed a significant clinical improvement, however these agents are associated with various adverse events (AEs), including infection, abnormal liver, and lipid function. **Objective**: To identify the safety issues of bDMARDs and tDMARDs among Malaysian RA patients. **Methods**: We conducted a retrospective cohort study of RA patients enrolled in Serdang and Putrajaya Hospital from August 2021 until November 2021. 215 patients who received bDMARDs and tDMARDs were selected randomly. Data included demographic and clinical features at four different times intervals. We used frequency and Friedman tests to analyse data. **Result**: This study included 66.5% females and 33.5% males with a mean age of 54.6 ± 10.162 years. Most of patients (83.3%) were treated with bDMARDs, whereas 16.7% received tDMARDs. Examination of lipid profile indicated a significant increase in LDL level $\chi 2$ (3, n=215) =31.034, $p<0.001$ and TG level $\chi 2$ (3, n=215) =133.169, $p<0.001$. Inspection of the median values showed an increase in AST level from baseline (median=19) to 12 months post therapy (median=21) and ALT level from baseline (median=15) to 12 months post therapy (median=19), demonstrating a substantial impact of these agents on liver profile enzymes including AST $\chi 2$ (3, n=215) =30.013, $p<0.001$ and ALT $\chi 2$ (3, n=215) =20.022, $p<0.001$. **Conclusion**: Our analysis found a potential impact of these agents on liver and lipid profile. These findings will help healthcare providers to identify AEs of these agents to prevent or manage them well.

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Abstract 041

Examining The efficacy of Biologic and Targeted Anti Rheumatic Drugs Among Malaysian Population with Rheumatoid Arthritis

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Background: Rheumatoid arthritis (RA) is considered a systemic inflammatory disease that can cause progressive joint destruction. Biologic and targeted disease modifying anti rheumatic drugs (bDMARDs, tDMARDs) showed an efficient impact in reducing disease activity score. **Objective**: To investigate the effectiveness of bDMARDs and tDMARDs among Malaysian RA patients. **Methods**: We conducted a retrospective cohort study at Serdang and Putrajaya Hospital from August 2021 until November 2021. 215 patients receiving bDMARDs and tDMARDs were selected randomly. Data collection included demographic and clinical features at four different times intervals. All data were analysed by SPSS software using frequency and repeated measure ANOVA tests. **Results**: A total of 66.5% (n=143) females and 33.5% (n=72) males with the mean age of 54.6 ± 10.162 were enrolled. The pattern of DMARDs prescription shows that out of 215 patients, 83.3% (n=179) received bDMARDs, while 16.7% (n=36) were treated with tDMARDs. Efficacy was evaluated using disease activity score of 28 joints (DAS28 ESR) at baseline and 3 different times intervals post therapy. We found that the mean DAS28 ESR improved significantly across time points, $F(1, 214) = 4911.89$, $p < 0.001$. The findings shows that the mean of DAS28 ESR statistically decreased from baseline (5.217 ± 1.355) to 3 months (3.929 ± 1.303; $p < 0.001$), 6 months (3.549 ± 1.304; $p < 0.001$) and 12 months (3.189 ± 1.076; $p < 0.001$). **Conclusions**: Findings from this observational study indicated a significant clinical response improvement after initiation of bDMARDs and tDMARDs among RA patients.

Abstract 042

Solvent System Effect on The Viscosity and Conductivity of Electrospinnable Polymer Solutions for Incorporation of Medicinal Herbal Extract

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Background: The existence of an electrospun sheath layer acts as a promising protective layer and has the potential to mask the bitter taste of herbal extracts. **Objective** (s): The aim of this research is to investigate the different solvent systems used in affecting the viscosity and conductivity of the electrospinnable polymer solutions, ultimately influencing the stability of the jet formation prior to fiber deposition. **Methods**: The electrospinnable polymer solutions were prepared using each solvent system of solely ethanol and a combination of ethanol and dimethylacetamide (4:1) with Eudragit L100-55 and Eudragit L100 polymer blends in the ratio of 1:0, 1:1, 1:3, 1:5, and 0:1 respectively. The viscosity and conductivity of all the aforementioned polymer solutions were measured. All the electrospinnable polymer solutions were electrospun with the core layer Carica papaya leaf extract in order to observe and capture the stability of jet formation during the electrospinning process using a smartphone camera. **Results**: Eudragit polymers with a solvent system comprising the combination of ethanol and dimethylacetamide (4:1) showed an increasing trend in both the viscosity and conductivity of the spinnable solution, as compared to those with ethanol solvent only. A more stable jet was formed using the spinnable solution with a solvent system comprising of ethanol and dimethylacetamide. **Conclusions**: The employed Eudragit sheath layer successfully served as a carrier system for Carica papaya leaf extract. This study elucidates the solvent system effect on the viscosity and conductivity of the spinnable solutions for stable jet formation.

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Abstract 043

Optimization of Polyhydroxyalkanoate Microparticles for A High Encapsulation of Rifapentine and Verapamil Using a Water-In-Oil-In-Water Double Emulsion Technique

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Background: The conventional WHO-consolidated treatment for tuberculosis involves the consumption of four antibiotics for a lengthy six months. This often results in skipped treatments, which gives rise to drug-resistant Mycobacterium tuberculosis. Thus, inhaled therapy using biocompatible polyhydroxyalkanoates is a feasible option. **Objective**: To optimize poly(3-hydroxybutyrate-co-4-hydroxybutyrate-co-5-hydroxyvalerate) [P(3HB-co-4HB-co-5HV] microparticles of size 1 to 3 microns for a high encapsulation of anti-tubercular drugs rifapentine and verapamil, in combination, using a water-in-oil-in-water double emulsion technique. **Methods**: P(3HB-co-4HB-co-5HV) microparticles were formulated using a water-in-oil-in-water (w1/o/w2) double emulsion method, where the parameters tested were the surfactant (w2-phase) types (i.e., polyvinyl alcohol, polyethylene glycol, Tween 80), surfactant concentrations (i.e., 1%, 2%, 3%, 5%), surfactant volumes (i.e., 10ml, 15ml, 20ml), internal water phase (w1) and oil phase (o) volumes (i.e., 0.5ml and 1ml, 1ml and 1.5ml), P(3HB-co-4HB-co-5HV) mass (i.e., 20mg, 40mg, 60mg, 80mg), and combined drug mass (i.e., 40mg, 80mg, 120mg, 200mg, 320mg, 400mg). The encapsulation efficiency was determined using high-performance liquid chromatography. **Results**: The highest encapsulation efficiencies were obtained for rifapentine and verapamil in polyvinyl alcohol, with a concentration of 2% (77.15±0.22% and 41.97±3.10%, respectively), and a volume of 20ml (85.14±2.25% and 56.33±2.62%, respectively), with a 0.5ml w1-phase and 1.0ml o-phase (94.29±0.57% and 69.15±1.52%. respectively), alongside a P(3HB-co-4HB-co-5HV) mass of 60mg (93.31±1.18% and 71.13±2.09%, respectively), and a combined drug mass of 400mg (95±0.51% and 74.07±3.09%, respectively). **Conclusion**: The optimal conditions for a high encapsulation of verapamil and rifapentine in P(3HB-co-4HB-co-5HV) microparticles are 200mg of verapamil in 0.5ml w1-phase, 200mg of rifapentine and 60mg of P(3HB-co-4HB-co-5HV) in 1ml o-phase, and 20ml of 2% polyvinyl alcohol as the w2-phase.

Abstract 044

Airway Smooth Muscles Relaxant and Mast Cells Stabilizing Activity of Some Medicinal Plants Used in Managing Asthma in North-western Nigeria

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Background: Cassia occidentalis whole plant (COWP), Jatropha curcas leaves (JCL), Ximenia americana Santalales leaves (XAL), and Eucalyptus citriodora leaves (ECL) have been revealed to be widely used by locals of North-western Nigeria for the management of asthma. **Objective**: This study was aimed at providing a pharmacological rationale for the ethnomedical use of these plants in the management of asthma. **Methods**: The four plants (COWP, JCL, XAL and ECL) were extracted with 70% ethanol using cold maceration extraction for 72 hours and the resulting extracts were screened using invitro models for their effects on the spontaneous contraction of isolated rabbit ileum strip; Histamine-induced pre-contracted isolated guinea pig ileum strip; Histamine-induced pre-contracted isolated guinea pig trachea chain; and on ovalbumin-induced peritoneal mast cell degranulation in Wistar rats. **Results**: The ethanol extracts of COWP, ECL, JCL, and XAL at 100 mg/mL remarkably relaxed spontaneous contractions of isolated rabbit ileum. Greatest relaxation was obtained with XAL. The four plants' extracts significantly ($p<0.05$) inhibited histamine-induced contractions of isolated guinea pig ileum. In addition, the extracts significantly inhibited ($p<0.05$) histamine-induced contraction of isolated guinea pig trachea. The ethanol extracts of COWP and JCL exhibited mast cell stabilizing effect in ovalbumin-induced rat peritoneal mast cell degranulation. However, ECL and XAL did not protect against ovalbumin-induced rat peritoneal mast cell degranulation. **Conclusions**: The four plant extracts (COWP, ECL, JCL, and XAL) possess broncho-relaxant activity, with only COWP and JCL exhibiting mast cell stabilizing activity in laboratory animals. The findings support the claim for the

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traditional use of the plants in inflammatory and allergic conditions including asthma.

Abstract 045

Protective Effect of Andrographolide On B-Amyloid Induced Toxicity in Transgenic Caenorhabditis Elegans

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Background: Alzheimer's disease is characterised by neuropathological hallmarks such as deposition of β-amyloid and neurofibrillary tangles. These misfolded by-products can trigger toxicity to the neurons, leading to neuronal death and memory loss. **Objective**: This study aims is to investigate the protective effect of andrographolide, the major bioactive diterpene of Andrographis paniculata in the β-amyloid1-42-induced phenotype and behaviour toxicity in transgenic C. elegans. **Method**: Transgenic C. elegans GMC101and CL2355, and their control strain CL2122 were used in the study. C. elegans GMC101, which expressed amyloid in muscle was treated with andrographolide (0.1,1,10 µM) from the egg stage and paralysis was scored 24 hr after upshifting the cultured temperature to 25 °C. The detection of β-amyloid and reactive oxygen species was done using Thioflavin-T and DCFDA fluorescent dye. C. elegans CL2355 which expressed amyloid in the pan-neuronal was treated with andrographolide (10 µM) from the egg stage and collected for behaviour study at 36 hr after upshifting the temperature to 25 °C. 1-butanol was used as the attractant. **Result**: The present study found that treatment with andrographolide (10 µM) significantly delayed the paralysis induced by β-amyloid in transgenic C. elegans GMC101. A lower amount of β-amyloid and reactive oxygen species was detected in transgenic C. elegans GMC101 treated with andrographolide. In the behaviour study of transgenic C. elegans CL2355, the abnormalities induced by β-amyloid were ameliorated by andrographolide. **Conclusion**: These findings indicate that andrographolide is a potential lead for further development as a protective agent against β-amyloid1-42-induced pathology in humans.

Abstract 046

In-Silico Study of 2-Phenoxy-N-(3,4,5-Trimethoxyphenyl) Acetamide Against Mutant p53 in Breast Cancer Drug Discovery

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Background: Cancer is the major cause of death in the world with approximately 10 million of death in 2020. Particularly, breast cancer is the second leading cause of death in women after lung cancer. p53 is a protein expressed by breast cancer cell, important for cancer cell apoptosis by regulating the expression of ERα, an oestrogen receptor that signalling proliferation of breast cancer. Unfortunately, the p53 has been mutated leading to the uncontrol of ERα expression along with an inefficient effect of tamoxifen as ER α antagonist. **Objective**: This study is aimed to investigate the potential effect of 2-phenoxy-N-(3,4,5-trimethoxyphenyl) acetamide as inducer of mutant p53 (PDB 2BIM) using in silico study. **Method**: The in-silico study was carried out using molecular docking method with AutoDock4 software. Lamarckian genetic was used as the searching algorithm to calculate the free energy of binding. The binding poses and chemical interactions were visualized using Biovia Discovery Studio 2021. **Results**: The result shows free energy of binding between ligand and protein is -7.24 kcal/mol demonstrating chemical interactions such as hydrogen bond with Ser116 and van der Waals interactions with Leu114, Gly117, and Thr123. **Conclusion**: The ligand is potential to be mutant p53 inducer.

Abstract 047

Potential of N-(naphthalene-1-yl)-2-phenoxyacetamide as Mutant p53 Reactivator: *In silico* Studies

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Background: Breast cancer is one of the main causes of death in women worldwide which luminal type A breast cancer is the most common case. Most of these cases have mutation in the p53 gene that inhibits the process of apoptosis

in cancer cells. **Objective**: This study aims to evaluate binding interaction between N-(naphthalene-1-yl)-2-phenoxyacetamide as the ligand with mutant p53 in the effort to find novel anti breast cancer. **Method**: The study was carried out by docking mutant p53 (PDB: 2BIM) with ligand using AutoDock 4.2. with Lamarckian Genetic at the searching algorithm to calculate the binding energy. Results: The type of chemical interaction is visualized using Biovia Discovery Studio 2021. **Results**: they demonstrates free energy of binding -7.52 Kcal/mol. This energy is contributed by conventional hydrogen bond with THR123, van der Waals with LEU114, THR140, CYS141, pi-sigma with CYS124, pi-lone pair with THR123, and pi-alkyl with ALA119, VAL122, and PRO142. **Conclusion**: The estimated inhibition constant (Ki) is 3.032 µM leading to a conclusion that the ligand is potentially active to reactivate mutant p53, there by it is a good lead compound for breast cancer drug.

Abstract 048

Effects of Fenugreek Seeds on Some Blood Parameters in Type 2 Diabetics Receiving Metformin and Glyburide

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Background: Type 2 diabetes mellitus is a metabolic disorder characterized by failure of glucose homeostasis with disturbance of carbohydrate and fat metabolism caused by Insulin Resistance. To overcome this disturbance, treatment with antidiabetic agents have been developed, and the interest in natural remedies have been increased. Recently the study of drug - food interactions in modifying treatment response is extensively investigated. **Objectives**: To evaluate the effects of natural substances such as Fenugreek on some blood parameters in patients with Type 2 Diabetes who were treated with Metformin and Glyburide. **Methods**: The study lasted for 8 weeks, the patients were divided into 2 groups: group F (n=53) was given Fenugreek Seeds in the form of soaked in boiled water at a dose of 10 g/day in combination with their treatment, group C (control n=45) received their treatment alone. Fasting Blood Sugar (FBS), Glycated Hemoglobin (HbA1c), Triglyceride (TG), Total Cholesterol (TC), High-Density Lipoprotein Cholesterol (HDL-C), Low-Density Lipoprotein Cholesterol (LDL-C) and Atherogenic Index of Plasma (AIP) were measured at the beginning and at the end of the study. **Results**: Results showed a significant decrease ($p < 0.05$) in HbA1c, TG and AIP levels in group F at week 8 in comparison with values at week 0 and in comparison to group C. There was an insignificant decrease ($p > 0.05$) in FBS, TC and LDL-C levels. While no change in HDL-C levels was observed. The effect of Fenugreek could be contributed to Galactomannan compound, which acts as inhibitor of intestinal Lipase, or to Saponins which inhibit the action of Bile Acids. **Conclusions**: The combination of Fenugreek with antidiabetic agents (Metformin and Glyburide) had showed hypolipidemic effects, so it could be a good addition in the management of patients with Type 2 Diabetes.

Abstract 049

Investigating The Relationship Between Thyroid Disorders and Breast Cancer

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Background: Breast cancer is one of the most common invasive cancers in women in the world, there are several factors that may increase the chances of developing breast cancer. Thyroid disorders are also one of the most common diseases. Due to the high prevalence and incidence of breast cancer and thyroid disorders, it was important to study the relationship between these two diseases. **Objectives**: To investigate the relationship between Thyroid gland disorders and breast cancer in Aleppo Governorate, in order to determine if thyroid disorder is a predisposing risk factor for breast cancer. **Methods**: Evaluation of thyroid gland function in patients with breast cancer and age-matched control women without breast or thyroid disease (35-75 year). Breast cancer patients (n=68), and healthy controls (n=25). Thyroid hormones (FT4, TSH) assays were determined. **Results**: This study showed that the mean values of TSH level in women with breast cancer (3.7 ±3.56 µlU/ml) was higher significantly than healthy (1.7 ±0.9 µlU/ml), and there was non-significant increase in mean values of FT4 level between women with breast cancer (1.17 ±0.20 ng/dl) and healthy (1.1 ± 0.22 ng/dl). These Values were compatible with Subclinical Hypothyroidism. The percentage of those who had subclinical hypothyroidism and were diagnosed with breast cancer was (95.65%), which was higher significantly than those who had subclinical hypothyroidism from healthy controls (4.35%). **Conclusion**: The results showed a significant relationship between breast cancer and Subclinical hypothyroidism. Therefore, Thyroid function disorder could be considered as a risk factor for breast cancer, and early investigation of thyroid functions may contribute to reducing the progression and development of breast cancer.

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Abstract 050

Knowledge, Attitude, And Practice Assessment Of Lung Cancer Risk Factors Among Health Practitioners In Erbil, Iraq

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Background: Globally, lung cancer (LC) is the most prevalent cause of major cancer incidence and death in men. Nationally, LC is at a 23.3% incidence as per the Iraq-Global Cancer Observatory report in 2020. The mortality of LC is higher in low- and middle-income countries compared to developed high-income countries due to screening and early detection. Lung cancer screening (LCS) with low-dose computed tomography (LDCT) is effective at reducing lung cancer mortality **Objectives**: This study assesses primary care providers' (PCP) knowledge, attitudes, and practice related to LCS and the recent US Preventive Services Task Force guidelines in the public hospitals of Erbil, Iraq. **Methods**: Either hand-delivered self-filling or an online adopted questionnaire was used, which included dichotomous and five-point Likert-scale questions about providers' clinical practice, knowledge (20 items), attitudes (5 items), and beliefs (4 items). The questionnaire was provided in three languages: English, Kurdish, and Arabic. **Results**: Most of the participants (n = 150) were males (60.7%), with bachelor's degrees (62%), and a much lower percentage had higher education degrees (20%), among which (31.3%) were physicians, (23.3%) pharmacists, residents (15.3%), and (11.3%) nurses. (47.3%) stated that their academic curriculum did not cover lung cancer in training/workshop/research mode. Interestingly, (71%) and (49%) preferred to receive treatment/screening in the private sector for LC, respectively. The majority had no clear knowledge and attitude toward the presence of "guidelines" for screening referral and post-screening, while x-ray chest screening was the dominating screening preference practice. **Conclusions**: In terms of LC screening recommendations and post-screening guidelines, PCP are in need of sufficient training to make sharp decisions. Releasing national guidelines based on the USPSTF guidelines is a step forward.

Abstract 051

Prevalence of Tuberculosis Infection and Treatment Outcome in Babylon Province of Iraq; A Retrospective Study

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Background: About one-third of the world's population is infected by tuberculosis. It mainly affects the lungs (pulmonary tuberculosis) and also can affect other sites of the body (Extra-pulmonary tuberculosis). **Objective**: The main purpose of this study is to experience the prevalence of tuberculosis and the treatment outcome rate in Babylon of Iraq. **Methods**: Collection of data from medical records of tuberculosis patients retrospectively was conducted at the health centre from January 2016 to March 2021 in the Babylon province of Iraq. This study focused on the characteristics of TB patients; age, gender, type of Tuberculosis, and treatment outcome. Data analysis with SPSS version 26 by use (Frequencies and percentages Mean and SD, Pearson correlation, and Independent Sample t-test). **Results**: Total of tuberculosis patients (N= 1774) that registered at medical records of a health centre in Babylon. We found these results; female patients (n=948; 53.4%), as compared with those who are male patients (n= 826; 46.6%). The age group between 61 years old and older was recorded with the highest percentage (n=359; 20.2%) and the less percentage of those who are <10 years old (n=122; 6.9%). Site of infection, pulmonary tuberculosis (n= 992; 56.0%) and extra-pulmonary tuberculosis (n= 782; 44.0%). Treatment outcome are complete (63.7%), cure (24.1%), death (3.1%), default (0.5%), fail (0.3%), transfer (0.1%) and other (8.1%). Which successful treatment percentage (87.8%), while unsuccessful treatment (12.1%). **Conclusions**: In this study, we found that who is females infected with tuberculosis more than males. In addition, we found patients infected with Tuberculosis who are 61 years old have the highest percentage (n=359; 20.2%). While as for treatment outcomes, the successful treatment percentage (87.8%) and the unsuccessful treatment percentage (12.1%) in Babylon province, Iraq.

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Abstract 052

Adverse Drug Reactions in Hospitalised Children with Chronic Kidney Disease in A Paediatric Tertiary Care Hospital of Pakistan

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Background: Chronic kidney disease (CKD) in children is the major cause of morbidity and mortality. Treatment of patients with CKD is specific and complex, therefore are at increased risk of developing adverse drug reactions (ADRs). **Objectives**: To determine the incidence, causality, severity, and preventability of the ADRs in CKD paediatric patients. **Methods**: A Prospective observational study was conducted on 50 paediatric CKD patients with stages 3–5 admitted to the Nephrology ward of a tertiary care children's hospital for two months. Adverse drug reactions were recognized from patient reports, medical records, and interviewing parents and confirmed by the duty physician and nurse in charge. The causality, preventability & severity were assessed using Naranjo Scale, Schumock and Thornton scale, and Hartwig and Seigel Scale respectively. **Results**: Out of 50 patients, ADRs were observed in 11 patients, giving an incidence of 22%. Out of 11, 8 were females (72.72%) while 4 were males (27.27%). The mean age was 10.5±2.4 years. Patients have been prescribed 8 to 12 drugs. Female patients experienced the majority of ADRs. Most common ADRs were due to antibacterial (72.72%). Most of the ADRs were probable (45.45%), followed by possible (27.27%) and definite (27.27%) ADRs. All ADRs were preventable. Most of the ADRs (72.72%) were in the moderate category. **Conclusion**: The study concluded that the frequency of ADRs increase with polypharmacy. There is a need for active ADR reporting to improve drug safety in CKD paediatric patients.

Abstract 053

Development and Validation of RP-HPLC Method for the Detection and Quantification of Tamoxifen in Pure, and Lipid-Based Formulation

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Background: The available HPLC-UV methods for the tamoxifen evaluation are expensive, complicated, time consuming and their mobile phase is not compatible with lipid-based nanoformulations particularly in terms of participate formation. **Objectives**: developing and validating a simple, rapid, specific, and reproducible reverse phase HPLC–UV method for quantifying tamoxifen in pure and lipid-based formulations for drug qualification, release study, and stability studies. **Methods**: The separation was done using a reversed-phase Agilent® C18 (5µm x 4.6 mm x 150 mm) column, ammonium acetate buffer or solution (pH= 6.8 and 4.8 respectively) with acetonitrile as mobile phase at different ratios (v/v%). The system was operated isocratically at different flow rates and column temperatures. The sample injection volume was 10 µl, with a 10 min/sample running time. **Results**: The final method's optimized conditions were ammonium acetate buffer (pH = 4.8) and acetonitrile at 30:70 (v/v%) with a flow rate of 0.7 ml/min at 45°C oven temperature under 236 nm wavelength. Ammonium acetate buffer offers higher selectivity, while acetonitrile was considered over methanol due to its lower noise under such UV detection wavelength. The linearity was observed over the concentration range of 0.2 - 5 µg/mL (R2 > 0.9999). The limit of detection (LOD) and limit of quantification (LOQ) were 0.027 µg/ml and 0.082 µg/ml, respectively. The developed method was confirmed to be accurate, and precise. Moreover, parameters of theoretical plates (N > 1500), tailing factor (T ⩽ 1.5), and resolution (Rs > 3) were as per United States Pharmacopeia (USP). **Conclusions**: A reverse phase HPLC – UV method was successfully developed for the quantification of tamoxifen in pure and in lipid-based formulation under various *in-vitro* and *ex-vivo* assays.

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Abstract 054

Breast Cancer Risk Factors Among Public and Health Practitioners in Kirkuk, Iraq: The Evaluation of Knowledge, Attitude, And Practice

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Background: Breast cancer (BC) is one of the most common cancers that cause death among women, ranking second worldwide and first in Iraq according to Word Health Organization. It has different classes of hormonal or non-hormonal types that affects disease development by various mechanisms, which if not well detected at early-stage results in high rates of mortality. **Objectives** To measure knowledge and attitude about BC risk factors in Iraqi women, as well as the importance of periodic examination, and early detection in treating BC among healthcare provider at public hospital in Kirkuk. **Methods**: Either hand-delivered self-filling or online questionnaire was used which included dichotomous and five-point Likert-scale questions about public knowledge (30 items), attitudes (10 items), and healthcare providers' clinical practices (24 items), the questionnaire was provided in three languages English, Kurdish, and Arabic. **Results**: Total sample size was n = 300, (45.33%) were medical students. Interestingly, (6.66%) of the participants had a BC case, and (47.66%) know someone who has BC. (48.22%) of the participant had their first period at the age of 11 – 13 old, reflecting a high-risk factor among the population, while (43.56 %) had a positive attitude considering that breast cancer examination should start since puberty, and in a monthly manner (51.78). Despite the fact that (27.11%) state that self-examination is done via hand, yet majority were not sure how to conduct such examination reflecting knowledge gap. Interestingly, among health practitioners (61.33%) declare that they will refer to physician upon feeling any abnormality in breast tissue, yet, when asked to choose from the clinical breast examination standard list, answers were not precise. **Conclusions**: Women and health practitioner in Iraq below the age 30 are in need of awareness campaign to understand their level of risk factors, and significantly impact their lives by early detections.

Abstract 055

A Simple (Rp-HPLC) Method for The Detection and Quantification of Docetaxel in Bulk and Liquid Crystals Nanocarriers and its Validation

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Background: The available HPLC-UV methods for quantifying docetaxel evaluation are expensive, time-consuming, and not designed to quantify the drug in lipid-based formulations. **Objective**: To develop and validate a simple reversed-phase high-performance liquid chromatography (RP-HPLC) method for the determination of docetaxel in bulk and liquid crystals nano-formulation. **Methods**: The chromatographic conditions were optimized using stainless steel reversed-phase Agilent® C18 with the dimensions of 150 mm x 4.6 mm ID x 5µm. The mobile phase consisted of acetonitrile and ammonium acetate buffer (20 mmol/l, pH=6.5) in the ratio of (50:50 v/v). The flow rate was set at 1 ml/min, and the detection wavelength was 230 nm. The column was maintained at 45 °C, and the injection volume was 20 µl. **Results**: There was no peak interference from formulation excipients, diluents, impurities, or dissolution media, with the main peak of docetaxel at the retention time of 5.9 min, indicating the selectivity of the method. The limit of detection (LOD) and the limit of quantification (LOQ) were 0.0287 µg/ml and 0.0871 µg/ml, respectively. The developed method was confirmed to be selective, precise, and accurate. **Conclusion**: A sensitive, simple, specific HPLC–UV method for determining docetaxel in bulk and liquid crystals formulation was successfully developed. The Statistical analysis confirmed that the method was accurate, precise, and reproducible. The method could be used for the routine assay, content uniformity, and the *in-vitro* release studies of docetaxel from the liquid crystals' formulations.

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Abstract 056

Awareness About Relationship Between Climate Change and Health Hazards in Iraqi Medical Students

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Background: Climate change arguably represents one of the greatest global health threats of our time. In 2019, the United Nation Environment Programme ranked Iraq as the fifth most vulnerable country to climate change and desertification. Climate change is already affecting health in many ways, including causing death and disease as a result of frequent extreme weather events, such as heat waves, and dust storms. Understanding the level of the Iraqi medical students' awareness level about the relation of climate change and health issues can assist in addressing the gap of this critical issue **Objectives**: To measure the awareness among Iraqi pharmacy students regarding climate change and its relation to health concerns. **Methods**: An online questionnaire contains 17 items was designed containing dichotomous questions and five-point Likert-scale questions. **Results**: The total number of participants were 106, majority (63.2%) females. While (93.4%) have heard of climate changes, most participant knew about it from internet (77.4%), and television (61.3%). Although 76.4% of the participants are aware that the climate change will impact their life, yet 58.5% only stated that they are ready to do something about it, 38.7% declared that they are already taking action in this regard. Interestingly 47% of the participant are agreeing to the fact that climate change can negatively impact humans' health, yet 79.2% of the participant agree that climate changes health wise impact is not limited to vulnerable categories (elderly, infant). Suggested disease to escalate due to climate change is mainly respiratory diseases (Asthma, flu, cancer), as well as skin and infectious diseases. **Conclusion**: Students had theoretical awareness regarding the health hazards of the climate change, but this awareness in not translated into action. This could be initiated via national wide awareness campaigns and some changes in the educational/academic curriculum.

Abstract 057

Nanocrystalline Cellulose (NCC) Isolation from Kapok Pulp Via Sulphuric Acid Hydrolysis

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Background: Nanocrystalline cellulose (NCC) is commonly isolated by sulphuric acid hydrolysis of cellulosic materials; however, the effects of hydrolysis conditions on NCC yield and properties of kapok pulp (Ceiba pentandra) are not fully understood. **Objective**: To understand the influence of acid hydrolytic reaction conditions (independent variables) on the NCC characteristics (dependent variables) from kapok pulp. **Methods**: A two-level factorial design approach was used to isolate NCC from kapok pulp and to study the NCC yield, particle size, zeta potential and colour. The reaction factors were acid concentration (50 and 60%w/w), reaction temperature (50 and 80°C), reaction time (40 and 80 min), acid-to-pulp ratio (30 and 80 mL.g-1) and sonication time (5 and 20 min). **Results**: All obtained NCC were between 173.9 and 488 nm and exhibited a high zeta potential of-38.4 – -42.9 mV, which may be improved as reaction time and temperature increase. The obtained data indicates that acid concentration and reaction temperature mostly influence the NCC yield. Hydrolysis conducted at a high acid concentration of 60%w/w combined with a reaction temperature of 50°C resulted in a higher NCC yield (10.6 – 16.5%) than that carried out at the same condition but at 80°C (6.0 – 9.0%). The NCC colour depends on the acid concentration and reaction temperature. Most reactions carrying out at an acid concentration of 60%w/w at 80 °C resulted in a dark brown NCC colour, indicating that the NCC was burned. **Conclusions**: The current study reveals that as acid concentration increases, the NCC yield increases and the NCC colour develops into a darker tint. On the other hand, a high reaction temperature (80°C) can enhance the zeta potential and increase the NCC colour but reduce the NCC yield. Furthermore, increasing reaction time can enhance zeta potential of NCC.

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Abstract 058

Isolation and Chemical Structural Characterisation of a Compound with Wound Healing Activity from The *Euphorbia hirta L.* Extract

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Background: Euphorbia hirta, a member of the Euphorbiaceae family, is wildly used in traditional medicine to treat a number of disease conditions in tropical and subtropical countries. It has been identified to possess anti-inflammatory and wound healing effects. **Objectives**: The aim of present study focuses on the isolation of the main active compounds associated with wound healing activity of plant. **Methods**: The ariel part of E. hirta ground to a fine powder and sequentially extracted with n-hexane, chloroform, methanol, and water using serial exhaustive extraction (SEE) method. All extracts were assessed for potential wound healing activity by measuring the migration, proliferation, and viability of human fibroblast cells, Hs27. The extract that shows the best wound healing activities were further fractionated using a bioactivity-guided approach, in order to identify the active compounds responsible for wound healing. The structure elucidation of isolated compounds were confirmed by IR, LC-MS/MS, NMR and HPLC. **Results**: The methanolic extract showed the highest proliferation and cells migration percent after 24-hour treatment. The isolated compound was subsequently identified as kaempeferol-3-O-glucoside (Astragalin). **Conclusion**: This study provides a novel information to support the ethnomedicinal usage of E. hirta L as a wound healer.

Abstract 059

Minocycline Improved Anxiety-Like Behaviour in Lipopolysaccharide (LPS)-Induced Neuroinflammation Rat's Model

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Background: Minocycline has shown beneficial anxiolytic effects in various neuroinflammatory diseases. However, its anti-anxiety property in lipopolysaccharide (LPS)-induced neuroinflammation rat model has not been clearly understood. **Objective**: This study investigates the anxiolytic effects of minocycline and N-Methyl-D-Aspartate (NMDA) receptor antagonist (memantine) in LPS-induced neuroinflammation rat model. **Methods**: Male Sprague Dawley rats were divided into 5 groups: (i) control, (ii) untreated LPS (iii) LPS treated with 25 mg/kg minocycline, (iv) LPS treated with 50 mg/kg minocycline and (v) LPS treated with 10 mg/kg memantine. Minocycline (25 & 50 mg/kg) and memantine (10 mg/kg) treatments were given intraperitoneally once daily for 14 days, while LPS was injected once at day 5. Open field test (OFT) was performed to assess anxiety-like behaviour on days 23 till days 28. The parameters used to assess anxiety are rearing frequency, time spent in the centre of the open field and frequency of entries into the centre and grooming frequency. **Results**: There was a significant decrease in rearing frequency, time spent in the centre of the open field and frequency of entries into the centre ($p<0.05$, $p<0.05$, $p<0.05$) and increase in grooming frequency ($p<0.05$) in the LPS compared to control groups. Minocycline at both doses and memantine significantly increased rearing frequency, time spent in the centre of the open field and frequency of entries into the centre ($p<0.05$, $p<0.05$, $p<0.05$) and decreased grooming frequency ($p<0.05$) compared to LPS treated group. **Conclusion**: Minocycline can attenuate anxiety-like behaviour in LPS injected rat comparable to memantine. Thus, minocycline has beneficial preventive-therapeutic effects for neuroinflammatory diseases such as Alzheimer's disease (AD) and Parkinson disease (PD).

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Abstract 060

To Produce and Characterise Inhalable Nano- and Micro- Polyhydroxyalkanoate (PHA) Particles Containing Verapamil Hydrochloride Using a Modified Water-in-Oil-in-Water (W/O/W) Double Emulsion Technique

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Background: Polyhydroxyalkanoates (PHA) have garnered significant attention as a depot in drug delivery due to their favourable biocompatibility, biodegradability, and sustained drug release properties. **Objective**: To produce optimised inhalable nano (size <500 nm) and micron (size 1-3µm) size P(3HB-co- 4HB-co-5HV-co-3HHx) particles using a water-in-oil-in-water (W1/O/W2) double emulsion technique for a high encapsulation of verapamil as a model drug. **Methods**: The parameters tested were surfactant (polyvinyl alcohol-PVA) concentration (i.e., 1%, 3%, 5%), internal water phase (W1) and oil phase (O) , PHA mass (i.e., 20mg, 40mg, and 60mg) and drug concentration (i.e., 20mg, 40mg, and 60mg). Based on statistics, surface methodology (RSM) using a central composite design was employed to optimise these variables for a high drug loading and entrapment efficiencies of verapamil. **Results**: We found that the optimal conditions for high drug loading (23.37±12.22%) and entrapment efficiency (38.95±20.37%) of P (3HB-co- 4HB-co-5HV-co-3HHx) nanoparticles are 60mg of verapamil in 0.5ml W1-phase, 40mg of PHA in 1ml O-phase and 1% PVA in 15ml W2-phase. On the other hand, for microparticles are 40mg of verapamil in 0.5ml W1-phase, 60mg of PHA in 1ml O-phase and 3% PVA in 15ml W2-phase which showed drug loading and entrapment efficiency of 18.09±1.14% and 45.24±2.86%, respectively. **Conclusion**: In this study, we have reported optimal conditions to produce nano- and micro- P(3HB-co-4HB-co-5HV-co-3HHx) particles with high drug loading and encapsulation efficiency of verapamil. Further studies are being carried out to investigate the powder's dispersibility for the application of pulmonary drug delivery.

Abstract 061

Analysis of Increased AST and ALT in COVID-19 Patients with Favipiravir

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Background: COVID-19 can be categorized as a pandemic and is the first pandemic caused by the SARS-CoV-2 virus. Favipiravir is one of the Emergency Use Authorization antiviral drugs for COVID-19. One of the most common side effects of Favipiravir is an increase in serum transaminase. Furthermore, there are other risk factors that can cause hepatotoxicities such as COVID-19 disease itself, sex, age, comorbidities, and the potential hepatotoxicity drugs in COVID-19 therapy. **Objective**: This study aims to evaluate the effect of Favipiravir on increasing AST and ALT in COVID-19 patients and the risk factors that can cause these effects. **Methods**: This study retrospectively on COVID-19 patients who received Favipiravir therapy in June-August 2021 at Dr. Soetomo General Hospital, Surabaya. The total sample was 230 medical records. The results obtained where patients with gender male patients were 52.6% higher than female patients by 47.4%. Statistical analysis was performed with SPSS version 26. **Results**: The prevalence of increases above upper limit of normal between day-7 and day-14 in AST (16.5%) and ALT (24.3%). An increase ⩾3-5 times upper limit of normal in AST (3.9%) and ALT (8.3%). ALT >5 times upper limit of normal (5.2%). The risk factors for sex, age, coronavirus symptoms, co-morbidities, and the potential hepatotoxic drugs tested in this study were not statistically significant in increasing AST and ALT. Further research to determine the hepatotoxicity of use Favipiravir prospectively. **Conclusions**: Favipiravir could affect AST and ALT function and reversible.

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Abstract 062

Formulation of Co-Enzyme Q10 Ternary Inclusion Complexes Using Betacyclodextrin (Bcd) and Hydrophilic Polymers Silica Syloid Xdp/ Sodium Alginate)

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Background: Co-enzyme Q10 (CoQ10) is an insoluble, poorly permeable antioxidant with great biological value which act as anti-aging and anti-wrinkle agent. CoQ10 can quench the free radicals and helps in slowing the process of aging. **Objective**: The present study was designed to evaluate the effect of hydrophilic polymers silica Syloid (XDP) and sodium alginate on the complexation efficiency and dissolution of CoQ10 and beta cyclodextrin (βCD) complex. **Methods**: The binary inclusion complexes were prepared using solvent evaporation, kneading and freeze-drying methods at various W/W% drug and polymer ratios (1:1, 1:2 and 1:4). The addition of hydrophilic polymers (silica Syloid XDO and sodium alginate) at 0.5, 2.5, 5.0 and 10 % W/W markedly improved the complexation and solubilizing efficiency of βCD. The samples were further evaluated for physicochemical evaluation and morphology **Results**: The binary and ternary samples showed high stability constant (Ks) value and complexation efficiency (CE). The dissolution study results revealed significant enhancement in the release of the binary inclusion complex and ternary inclusion complex compared to pure CoQ10. Fourier transform infrared (FTIR) results confirm the complex formation. X-ray powder diffractometry (XRD) and scanning electron microscopy (SEM) data revealed modification in the structure of CoQ10. **Conclusion**: In conclusion, a remarkable enhancement in dissolution was attained due to marked improvement in solubility through complexation of CoQ10 with βCD and silica Syloid (XDP)/βCD.

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