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Report on 7th Kuwait International Pharmacy Conference (KIPC)

Under the patronage of the president of Kuwait University, the Faculty of Pharmacy held its 7th Kuwait International Pharmacy Conference (KIPC) during 5-7th March, 2019 with over 250 attendees.

"Medicines -from discovery and delivery to optimal use", it featured keynote and plenary sessions presented by international speakers from Canada, North America, Europe and the Gulf region, and from KU and MoH Kuwait; there was also poster sessions, panel discussions and a workshop.

The conference was composed of two tracks. The pharmaceutical sciences track opened by a keynote lecture from Prof Shaker Mousa (Albany College of Pharmacy, USA) on current and future impact of pharmaceutical and life sciences on global health care, discussed the latest research findings related to drug discovery and development, expanding the chemical space for drug discovery, biomaterials and biotechnology in drug discovery and delivery, target identification and mode of action studies, as well as therapeutic drug monitoring and pharmacokinetic studies to support optimal use of drugs.

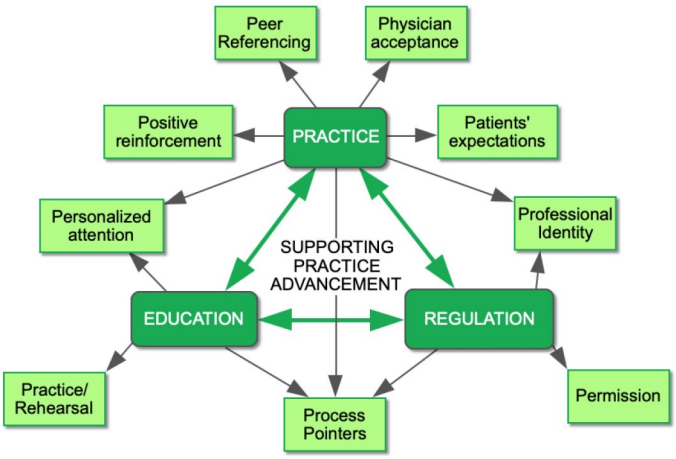
Prof Raymond Andersen from University of British Columbia (Canada), Prof Hendrik Luesch from University of Florida (USA), as well as Prof Rolf Muller from Helmholtz Institute for Pharmaceutical Research, Germany, spoke on drug discovery through mining of marine and terrestrial environments as well as from microbes. They highlighted discovery of several drug candidates targeting different diseases in pre-clinical and clinical development stages. Prof Jassim Al-Hassan, Dr Khaled Orabi and Prof Oludoton Phillips (KU, Kuwait) presented findings with natural products and novel antibiotics.

The theme of nanotechnology on the future of medicines and its applications in drug delivery by Prof Mousa was continued with several lectures on from Dr Nuha Nafee (KU), Prof Fares Alenezi and Prof Gamaleldin Harisa (King Saud University, KSA). This session included presentations on development of new methods for targeted delivery in cancer patients by Dr Fouzi Mouffok and Prof Ludmil Benov (KU).

Prof Nigel Pyne and Dr Susan Pyne from Strathclyde University (UK) began the final day discussing structure-guided drug discovery using sphingosine kinase with therapeutic indications in various diseases. This was followed by presentations from several KU researchers on hypersensitive cough mechanisms (Prof Ahmed Al-Hashim), role of Ang 1-7 in inflammation/colitis (Dr Maitham Khajah), issues regarding why cancer cells metastasise (Prof Yunus Luqmani), molecular pharmacology of incretin receptors (Dr Sulaiman Al-Sabah) and management of chemotherapy-Induced neuropathic pain (Dr Willias Masocha).

The last session was about optimal use of drugs, focusing on therapeutic monitoring and pharmacokinetics with lectures by Dr Alison Thomson (University of Strathclyde, UK), Dr Abdullah Alsultan (King Saud University, KSA) and Dr Kamal Matar (KU). Dr Mohsen Hedaya (KU) discussed pharmacogenetic testing to optimise drug therapy and finally Ph Donia Bastaki talked about data required by regulators on biosimilars and biologics.

The objective of the pharmacy practice track centered on understanding the evolution of clinical pharmacy in the region as well as worldwide to advance the profession in Kuwait, and was divided into three main sessions to discuss the global, regional and local perspectives of the profession and identify current status and challenges. The perspective of pharmacists in Ontario was presented by Prof Zubin Austin from University of Toronto in his keynote lecture. He highlighted 9 “Ps” (summarised as 3 ‘pillars’) intended to facilitate regulatory change, education and practice in the pharmacy profession.



The second day started with the first pillar entitled "Regulatory Framework to Support Pharmacy Practice" with a presentation by Prof Ahmed Al-Jedai (MoH Saudi Arabia) on pharmacy practice in the Gulf followed by more local regulatory perspectives from Dr Saja Al-Matrouk (MoH, Kuwait) and discussion of ethical issues by Dr Salah Waheedi (FoP KU). Dr Reem Al-Essa (MoH, Kuwait) outlined the role of regulatory bodies in inspecting pharmacy practice in the GCC, identifying gaps and suggesting recommendations for improvement. The morning session closed with a talk by Prof Pierre Moreau (FoP, KU) outlining proposals for a clinical pharmacist's cadre.

In the afternoon session entitled "Importance of Education in Supporting and Evolving Practice" Prof Austin discussed how the 9Ps will support the evolution of pharmacy practice with a focus on education. Dr Sarah Alghanem (FoP, KU) elaborated on the changes in pharmacy curriculum and the advances in education at the FoP, KU; presenting outcomes of the programme. Continued professional development (CPD) occupied 3 talks, starting with Ph Asmaa Al-Haqan (FoP, KU) emphasising regulations, requirements and audits. CPD needs for pharmacists in Kuwait were highlighted by Dr Jacinthe Lemay (FoP, KU). Dr Mohammed Al-Enezi (Life Science Academy, Kuwait) touched upon the delivery of their model of CPD.

On the third day, the third pillar to change practice was covered in the session entitled "Expanding the Scope of Pharmacy Practice". Dr Hayfaa Ali (Quality and Accreditation Directorate, MOH, Kuwait) talked about navigating through regulatory requirements for medication management: an open eyes talk regarding the accreditation programme to healthcare organisation in Kuwait. The "pharmacy services" and medication management module were discussed and highlighted the status quo and challenges to implementation. This was followed by talks about regional clinical pharmacy initiatives in Saudi Arabia (Prof Al-Jedai), Oman (Ph Thamna Al-Shibani) and Kuwait Oil Company hospital (Ph Nour Al-Khalaf). Two important “Ps” concerning physician acceptance and patient expectations from pharmacists were highlighted in the presentations of Dr Monther Al-Sharekh (Mubarak Hospital, Kuwait) and Dr Rania Azmi ("Fadia Survive & Thrive Association").

The PP track ended the conference with a fruitful 3h workshop facilitated by Dr Sarah Alghanem, Prof Pierre Moreau, Dr Jacinthe Lemay and Dr Abdullah Al-Bassam (FoP, KU). Selected individuals representing FoP, various departments and directorates at the MoH, Kuwait Clinical Pharmacy Network, Kuwait Pharmaceutical Association, Kuwait Institution of Medical Specialisation, private hospitals and Patient Association discussed and generated clear recommendations to support an expanded scope of clinical pharmacy in Kuwait.

Highlights on posters:

22- National audit of antidote stocking in hospitals that provide emergency care in Kuwait

32- Curriculum Mapping and Perspectives of Pharmacy Students on the Development and Implementation of Pharmacist Prescribing in Qatar

15- Impact of A Pharmacy Led-Medication Reconciliation Service At An Ambulatory Care Setting: Dialysis Patients

47-Pharmacists’ Attitudes Toward Continuing Education in Kuwait

30- The Readiness of Hospital Pharmacists in Kuwait to Practise Evidence-Based Medicine: A cross-Sectional study

KEYNOTE ABSTRACTS

Current and Future Impact of Pharmaceutical and Life Sciences on Global Health Care

Prof Shaker A Mousa
The Pharmaceutical Research Institute, ACPHS, Albany, NY USA

Pharmaceutical sciences combine a broad range of scientific disciplines critical to the development of new drugs and therapies. Those disciplines, varied over the years with degrees of emphasis depending on the era, including pharmacology, biochemistry, physiology, molecular biology, immunology, toxicology, pharmaceutics, biopharmaceutics, pharmaceutical chemistry (medicinal chemistry), analytical chemistry, pharmacognosy, phytochemistry, microbiology, and other related life sciences. Pharmaceutical sciences can be broadly classified into the following functional categories, with many specialized fields within each category. Those categories include: drug discovery and design, high throughput screening and human genome sequencing, drug delivery, formulations, pharmacodynamics, pharmacokinetics and drug disposition, pharmacogenomics, drug development, cost-effectiveness (pharmaco-economic), pharmacovigilance, regulatory affair, nanomedicine, and biopharmaceuticals. The future of pharmaceutical, biopharmaceutical and life sciences in 2020-2030 and beyond will be by a number of emerging technologies in favor of major mprovement in global healthcare. While discovery using genome-based technologies has accelerated, these have only begun to be adopted into clinical medicine. Orphan drugs for rare diseases, gene therapy, human genome sequencing, and early disease diagnosis for the (3Ps) prediction, prevention, personalization. Example of those technologies include: big data, bioinformatics and data analytic, the applications of the human genome project and Precision medicine are poised to have an impact on health care delivery, global healthcare and patients quality of life.

Highlights of the 9Ps to Expand Practice

Prof Zubin Austin
Faculty of Pharmacy, University of Toronto, Canada

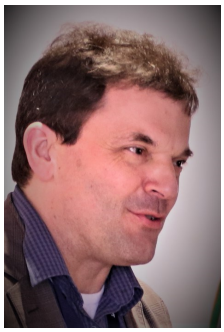
Recently, in many countries, regulation and legislation have changed to allow pharmacists to engage in expanded practice activities. However, there is evidence that front-line community pharmacists are resistant to change and do not willingly take on new roles and responsibilities.Well-intentioned regulatory/educational attempts to change and expand practice appear to fail in the real world. Recent research from Canada has examined practice change in pharmacy and what it takes to motivate and support front-line pharmacists to take on new responsibilities and expand practice. A model was developed to help educators, regulators, employers, and others understand how to best implement practice expansion and change. This 9Ps of Practice Change model suggests the following are all essential to support pharmacists: 1) permission, 2) process pointers, 3) practice/rehearsal, 4) positive reinforcement, 5) personalized attention, 6) peer referencing, 7) physician acceptance, 8) patients' expectations and 9) professional identity supportive of a truly clinical role. One theme that did not emerge was payment, or remuneration, as a specific or isolated motivational factor for change. Legislation alone is not implementation; education by itself is not motivation; telling pharmacists to change will not be sufficient. The 9Ps of Practice Change model can provide useful insights into the psychology and practical issues associated with change management in pharmacy and can help stakeholders across the pharmacy profession better manage the complex environment of practice expansion.

SELECTED PLENARY ABSTRACTS

Natural Products from Marine Cyanobacteria as Starting Points for Drug Discovery and Development

Prof Hendrik Luesch
Department of Medicinal Chemistry and Center for Natural Products, Drug Discovery and Development (CNPD3), University of Florida, USA

Marine cyanobacteria serve as a rich source of novel bioactive secondary metabolites. Our chemical investigations have yielded novel marine natural products that act on a range of therapeutically relevant targets. A requisite for their development into therapeutics is the detailed characterization of their mechanisms of action, along with solving the supply problem. An integrative platform of pharmacological, genomic and proteomic profiling assisted us in understanding their activities on the cellular and molecular level. Total synthesis, structure-activity relationship studies and medicinal chemistry campaigns for prioritized compounds allowed us to fine-tune activities and improve selectivity profiles.



Basic Microbiology, Chemistry and Synthetic Biotechnology to Identify and Characterize Antibiotics from Microbes

Prof. Rolf Müller, Germany
Helmholtz Institute for Pharmaceutical Research Saarland, Germany

Amongst the well-established bacterial producers myxobacteria have a great track record for the discovery of entirely new natural product scaffolds exhibiting promising bioactivities[1]. This is at least in part due to the fact that they have been much less studied in the past in comparison to other traditional sources such as actinomycetes and bacilli. Nevertheless, the issue of rediscovery is a major hurdle for myxobacterial extracts as well. I will discuss recent results from our efforts to culture previously uncultured myxobacteria and to connect phylogentically distant clades to novel metabolites by metabolome and genome mining. Examples of novel and genetically engineered natural products in preclinical development as broad spectrum antibiotics exhibiting novel mode of action(s) will be shown. In addition I will show examples of heterologous expression of myxobacterial compounds yielding producer strains making production of lead compounds for pharmaceutical development feasible.

A chemical genetics approach to the discovery of marine natural product drug leads

Prof Raymond Andersen
Departments of Chemistry and Earth, Ocean & Atmospheric Sciences,
University of British Columbia, Vancouver, Canada

The secondary metabolites found in marine organisms represent an extremely rich source of novel chemical diversity for academic drug discovery and chemical biology programs. Our group at UBC has amassed a sizable library of crude extracts from marine sponges, other marine invertebrates, and cultured marine microorganisms collected in many of the world's oceans. In collaboration with biologists, this crude extract library has been screened for activity in cell-based and pure enzyme assays designed to identify promising marine natural product lead compounds for the development of drugs. Bioassay-guided fractionation of crude extracts and extensive spectroscopic analysis has been used to identify the structures of pure natural products active in the assays. Biology-oriented chemical synthesis has been undertaken to probe the SAR for new natural product pharmacophores that we have discovered and to provide material for *in vivo* testing in animal models. We have used Click chemistry probes and protein xray diffraction analysis to study the interactions of bioactive natural products with their molecular targets. Several new drug candidates for the treatment of cancer, inflammation, type II diabetes, and infectious diseases have emerged from this research program. Four of them have progressed to phase II/III clinical trials in humans and others are in preclinical evaluation/ development. I will present some highlights from our academic 'Drugs from the Sea' and chemical biology research in the area of bacterial and viral infectious diseases.

Structural Guided Drug Discovery using Sphingosine Kinase with Therapeutic Indications in Various Diseases

Prof Nigel J Pyne
Strathclyde Institute of Pharmacy and Biomedical Sciences,
University of Strathclyde, Glasgow, Scotland, UK

Sphingosine kinases (two isoforms termed SK1 and SK2) catalyse the synthesis of the bioactive lipid, sphingosine 1-phosphate (S1P) which can bind to a family of G protein coupled receptors and/or intracellular targets (e.g. histone deacetylases) to regulate cellular responses in immune, neuronal and cardiovascular physiology. S1P is also involved in pathologies, such as cancer, inflammation/autoimmune disease and cardiovascular disease including pulmonary hypertension and heart failure. Evidence will be presented to show that SK1 and SK2 are validated targets for therapeutic intervention in disease. Indeed, S1P is a therapeutic target as evinced by the introduction of the S1P1 modulator, fingolimod as the first oral treatment for relapsing and remitting multiple sclerosis. However, inhibitors of sphingosine kinases are yet to reach the clinic and only one SK2 inhibitor, with low potency and several 'off target' effects, is in clinical trials for oncology indications. The challenge is to produce isoform selective inhibitors of SK1 and SK2 such that therapeutic targeting of either one of the isoforms is achievable, thereby maintaining some S1P to preserve normal physiology and avoid deleterious side effects. By mapping isoform amino acid sequence differences for SK2 onto the available crystal structure of SK1, we have identified subtle structural variations between the two isoforms that has enabled the conversion of inhibitors with 100-fold selectivity for SK1 over SK2 through to equipotent SK1/SK2 inhibition and to reversed 100-fold selectivity for SK2 over SK1, with retention of nM potency. These findings will inform on the development of new isoform selective inhibitors as pharmacological tools to evaluate the role of sphingosine kinase in pathophysiology.

Nanotechnology Based Solid Dosage Form for Enhancing Dissolution and Oral Bioavailability

Prof Fars Alanazi
College of Pharmacy King Saud University, Saudi Arabia

Oral route is the most convenient and commonly used based on WHO industrial recommendation. This due to tremendous advantageous like ease of administration, high patient compliance, cost effectiveness, least sterility and high stability. However, this route is facing a major challenge which is poor oral bioavailability. This depends on several factors and mostly due to low solubility and dissolution rate. The aqueous solubility of drug is often intrinsically related to drug particle size; as a particle becomes smaller, surface area to volume ratio increases. The larger surface area allows greater interaction with the solvent which causes an increase in solubility. Thus, Nanosization is considered the most novel and promising approach to enhance aqueous solubility. Parameters that can influence the dissolution rate are illustrated as well as how the nanotechnology can enhance it. The major two ways of fabrication of nanoparticle are highlighted. More emphasis is on top-down technology. Particles in the nanometer size range have a strong tendency to agglomerate; thus stabilization of nanoparticles is important. Cases studied will be presented and discussed.

TDM, Population Pharmakokinetics and Optimal Use of Medicines

Dr. Alison Thomson
University of Strathclyde Institute for Pharmacy and Biomedical Sciences UK

Optimising therapy for drugs with a narrow therapeutic range faces several challenges . Variability in pharmacokinetics means that guidelines for initial doses should be based on easily measured clinical characteristics, such as age, weight and renal function. Ideally, pharmacokinetic parameters should reflect the population of patients who will receive the drug in clinical practice. Computer tools that utilise population pharmacokinetic (PopPK) methodology have been used to identify such parameters and help design dosage regimens that achieve target concentration-time profiles and exposures. In Glasgow, an early MAP Bayesian program was created to support TDM services. PopPK methodology was used to create new vancomycin dosage guidelines for adult patients in response to a change in target concentrations. Before new guidelines are adopted into routine practice, agreement is required from decision-makers and an implementation plan should be in place. In 2009 the Scottish Antimicrobial Prescribing Group (SAPG) agreed national guidelines for administration and monitoring of gentamicin and vancomycin. A quality improvement project comprising a national survey, a point prevalence study and a qualitative study then examined the implementation process. These studies identified gaps in guideline adoption and enablers and barriers to effective implementation leading to modified guidelines, online training resources, specialised prescribing forms and online calculators. Additional research studies addressed issues highlighted by clinical pharmacists including support for changing the guidelines to avoid administering vancomycin during the night; new guidelines were developed for vancomycin use in paediatric patients. Other current challenges involve amikacin dosage regimens for patients with mycobacterial infections and tobramycin dosage regimens for patients with cystic fibrosis. In some cases, these problems have been addressed through pharmacokinetic studies, in others, a quality improvement approach with a continuous cycle of small changes has been applied.

Angiotensin 1-7, a potential target for the management of inflammatory bowel disease

Dr Maitham A Khajah
Faculty of Pharmacy, Kuwait University, Kuwait

In the current study, we investigated the role of Angiotensin 1-7 (Ang 1-7) in the pathogenesis of inflammatory bowel disease (IBD) using the murine dextran sulfate sodium (DSS) colitis model. Ang 1-7 was daily administered by i.p injection at various doses, or its endogenous levels were depleted with MAS1-R antagonist A779) and colitis severity determined. Colonic expression/activity of ACE2, Ang 1-7, MAS1-receptor (MAS1-R), and various signaling molecules (p38, MAPK, ERK1/2 and Akt) was determined by western blot and immunofluorescence. Plasma levels of several cytokines/chemokines were also determined. *In vitro* effect of Ang 1-7 on neutrophil effector functions (apoptosis, chemotaxis and superoxide release) was also examined. A779 treatment aggravated while Ang 1-7 reduced colitis severity through modulating expression of the signaling molecules of MAPK family and PI3K, and reducing the circulating levels of several cytokines and chemokines, and neutrophil recruitment to the colonic tissue. Enhanced expression of ACE2, Ang1-7 and MAS1-R was also observed post-colitis induction. Ang 1-7 significantly enhanced neutrophil apoptosis, while reducing neutrophil chemotaxis and superoxide release *in vitro*. Our results indicate significant anti-inflammatory actions of Ang 1-7 in the pathogenesis of IBD through modulating the expression/activity of pro-inflammatory signaling molecules, circulating levels of cytokines/chemokines and neutrophil activity.

Unraveling the Mechanisms of Cough

Prof Ahmed El-Hashim
Faculty of Pharmacy, Kuwait University, Kuwait

Cough is one of the most common complaints for which sufferers seek medical assistance. Sensitization of the cough reflex has been identified as an important mechanism in chronic cough, where it can result from low level stimulation by chemical or mechanical stimuli. “Cough hypersensitivity syndrome” has been coined to reflect the increased cough response to sub-threshold airway stimulation. Evidence suggests that sensitization occurs at both peripheral sensory nerves and within the CNS. *Ex vivo* and *in vivo* studies, using animal models of cough, show that exposure to allergens, ozone and inflammatory mediators results in both enhanced sensory nerve activation as well as cough. This has led to identification of sensory nerves as being critical in development of cough hypersensitivity. The role of the CNS is less understood due to limited access and complexity of the CNS, and general presumption of the airways as the primary site for cough sensitization. However, there is good evidence showing that the cough center nucleus solitarius (nTs) can undergo neuroplasticity. Exposure of guinea-pigs to cigarette smoke increases their cough response to citric acid. Additionally, central injection of several inflammatory mediators such as nerve growth factor and bradykinin sensitize the cough reflex. This enhanced cough response can be inhibited by central administration of neurokinin 1, TRKA, B2 receptor antagonists, in addition to TRPV1 and TRPA1 channel blockers suggesting that neuroplastic changes in the CNS are, at least partly, responsible for cough hypersensitivity and that this can be pharmacologically modulated. Better understanding of the central molecular mechanisms underlying cough hypersensitivity, will aid the development of more effective anti-tussive drugs.

Targeting the endocannabinoid system for management of chemotherapy-induced neuropathic pain: preclinical studies

Dr Willias Masocha
Faculty of Pharmacy, Kuwait University, Kuwait

Chemotherapeutic drugs such as cisplatin, paclitaxel and vincristine used for cancer patients, can induce neuropathic pain (CINP). Phytocannabinoids and endocannabinoids, such as anandamide and 2-arachidonoylglycerol (2-AG), acting through cannabinoid (CB) receptors have been reported to provide relief in patients with neuropathic pain. Endocannabinoids are synthesized in an "on demand" fashion and are degraded by enzymes such as fatty acid amide hydrolase (FAAH) and monoacylglycerol lipase (MGL).

Various studies in animal models of CINP, including those from our group, have shown modulation of endocannabinoid molecules. Analysis of their expression in the brain, spinal cord and paw skin of mice using LC-MS/MS show that there is a specific deficiency of 2-AG and/or anandamide in the periphery during CINP. Various drugs including endocannabinoids, inhibitors of FAAH and MGL, CB receptor agonists, desipramine and co-administered indomethacin plus minocycline have been found to either prevent the development and/or attenuate established CINP in a CB receptor-dependent manner. Available results suggest that targeting the endocannabinoid system for prevention and treatment of CINP is a plausible therapeutic option. Further research is needed to determine if this approach has advantages over or can supplement already existing treatment options for CINP and if this can be translated into clinical applications

Molecular Pharmacology of Incretin Receptors

Dr Suleiman Al-Sabah
Faculty of Medicine, Kuwait University, Kuwait

Incretin hormones, glucose-dependent insulinotropic polypeptide (GIP) and glucagon like peptide-1 (GLP-1) regulate postprandial glucose tolerance, insulin and glucagon secretion as well as lipid metabolism and appetite, making their receptors attractive targets for treatment of type 2 diabetes mellitus (T2DM) and obesity. However, the incretin effect is severely impaired in T2DM most probably due to loss of response to GIP. While GLP-1R agonists are used clinically, the use of GIPR agonists and antagonists remains controversial. Recent studies suggest that simultaneous activation of GIPR and GLP-1R with a single peptide may provide superior glycemic and weight control than activation of GLP-1R alone. In order to determine why GLP-1R, but nor GIPR, remains responsive in T2DM we compared their signaling properties *in vitro*. Originally identified for their role in desensitization, internalization and recycling of GPCRs, arrestins also act as scaffolding proteins allowing GPCRs to signal in a G protein-independent manner. This has led to the concept of 'biased agonism' or 'functional selectivity', where ligands can favor either a G protein- or an arrestin-dependent pathway. We have previously demonstrated that GLP-1R can recruit arrestin but GIPR cannot. Using reporter gene and bioluminescence resonance energy transfer (BRET) assays we have found that P18, a recently reported 'dual incretin' receptor agonist, may act as a G protein-biased agonist. BRET saturation assays suggest that GIPR and GLP-1R may also form functionally relevant heterodimers.

Why do Cancers Metastasise?

Prof Yunus Luqmani
Faculty of Pharmacy, University of Kuwait, Kuwait

What compels a tumour cell to leave an apparently secure and comfortable environment of a growing mass and expose itself to hazardous conditions open to attack from immune cells and antibodies both in the matrix and once they gain entry into the blood circulation? Hypoxic conditions leading to extracellular acidification are considered to facilitate metastasis, yet such cells are deep within the tumour far from the vascular network. More likely, cells which metastasize would be located in an area of neovascularisation. Our hypothesis is that tumour metastasis is actually an active escape from a harsh environment of alkaline (not acidic) pH. Using breast cancer cell lines that have acquired endocrine resistance (through transition to a more motile mesenchymal-like phenotype), we have shown that these have the means to effect an escape from an imposed alkaline environment that will otherwise prove fatal to their survival. Unlike endocrine sensitive cells they display a protective reaction to increased pH that reduces extracellular contact by cellular contraction and development of extensive locomotive membranous blebs that can enable cellular migration. Short exposure to pH 8 results in a re-arrangement of cortical actin and a flow of associated proteins into blebs. Cytochalasin-D or blockers of Rho or MLCK or of Na+/K+ flux all inhibit both shape change and bleb formation at high pH. (not observed in normal breast cells), and could be an effective means of retarding metastasis, and therefore cancer mortality.

Regulatory and Legal Framework of Pharmacy

Dr Saja Almatrook
Ministry of Health, Kuwait

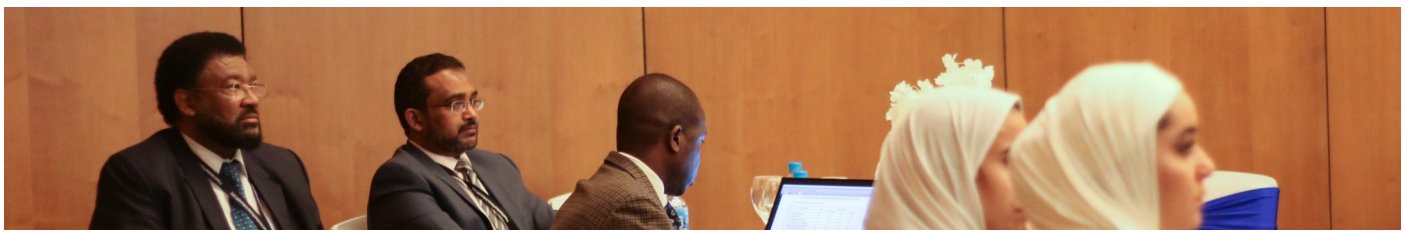
Over the years, in addition to medication dispensing, the role of pharmacists has expanded to include counseling, medication management services and clinical pharmacy, adding more responsibilities. Furthermore, pharmacy practice plays an important role in public health. Such diversified roles has increased the demand for recruiting more pharmacists in both private and government sectors creating an urgent need to develop legislation to regulate the practice of pharmacy to provide optimum health services with minimum errors. Pharmacy practice in Kuwait was regulated in 1960 with law No. 25. In 1996 an emended law No. 28 was enforced to regulate the profession by covering all aspects related to the standard of practice and professional career. This was further amended by law No. 30 in 2016. Such laws help pharmacists to address daily issues encountered during their practice and is considered an important reference guide for clinical/ pharmacy issues. Other laws manage three main aspects partly related to pharmacy practice regulating sales and consumption of narcotics (Law No. 74 in 1983), consumption of psychotropic substances (law no. 48 on 1987), and advertisement of medicines and health products (Law No. 38 in 2002). To further protect the public from the dangers of pharmacy malpractices and to improve patient centered care, laws and regulations should involve various daily aspects relevant to the standards of professional conduct which needs to be well recognized and implemented by governmental institutions operating under the Ministry of Health.

Development of a Cadre for Clinical Pharmacists

Prof Pierre Moreau
Faculty of Pharmacy, Kuwait University, Kuwait

In line with pharmacy education worldwide our Faculty started a 2y add-on PharmD program from 2016. The purpose of this exercise was to propose a modified cadre for clinical pharmacists suitable/feasible to implement in Kuwait. An executive committee was created comprising Vice President and Assistant Vice President for Health Sciences, Assistant Undersecretary for Drug and Medical Affairs at MoH, Deans of FoP and FoD and Chairman of the PharmD planning committee to review the current cadres for graduates of medicine, dentistry, and pharmacy programs. The committee would then consult with the legal affairs office and the Civil Service Commission (CSC) prior to making recommendations.

After consultation with CSC and the other members of the executive committee, it was decided to utilize the existing cadre for pharmacists in Kuwait (CSC decree No 30, 2012) modified such that graduates of accredited PharmD programs (and any other equivalent clinical pharmacy programs) would be hired on level 5 of the Pharmacy cadre directly (titled clinical pharmacist) while granting them clinical allowance ranging from KD 500-1200 depending on experience and credentials. Advancement and promotion within the cadre would require attainment of board certification in pharmacotherapy specialty (or any other equivalent of that board) as well as years of clinical pharmacy experience and supervision/training of clinical pharmacy staff. This suggested cadre was endorsed by the executive committee and sent to the CSC for approval in late 2016. Approval of a special cadre for graduates of PharmD program is necessary to encourage these graduates and to promote the development of clinical pharmacy services in Kuwait, lacking in most hospitals. Further support is needed from the Ministry of Health to recognize the importance of clinical pharmacists and their special services and to adopt this suggested cadre in Kuwait.



CPD Regulations, Requirements and Audits

Ph Asmaa Al-Haqan
School of Pharmacy, University College London UK
and Faculty of Pharmacy, Kuwait University, Kuwait

In line with the strategies advocated by the International Pharmaceutical Federation (FIP), the "Continuing professional development model (Co-ProDeM) was developed to guide a national pharmacy workforce transformation in Kuwait. This was based on a global evidence review of systemic factors influencing pharmacy continuing professional development and a comprehensive examination of pharmacists and CPD providers perspectives on professional development in Kuwait. A qualitative approach using focus group interviews with 33 pharmacists practising in direct and non-direct patient care settings in Kuwait, and semi-structured interviews with the three main pharmacy CPD providers in the country were conducted. Three main areas were identified as the main building blocks for the development of a comprehensive CPD model. The first component of the CoProDeM is foundation and advance competency frameworks to assist in adopting needs based approach for education. Pharmacists and CPD providers agreed that lack of clear scope of practice and competency frameworks hindered pharmacists from identifying learning needs and making decisions on goals for career development. For the second component of support incorporated in needs-based education strategic plans, pharmacists indicated a need for leadership of higher authorities and professional and regulatory bodies. The third component is to implement effective CPD policies as national and international workforce development visions both recognise the vital role of clear regulation in implementing needs-based development approaches to professional development across all settings and career stages of pharmacists. The Co-ProDeM used an evidence-based approach as well as the principles of sustainable health care improvement. The model aims towards achievement of national (New Kuwait 2035) as well as international strategic and sustainable development goals to provide leaders and educators with a roadmap to guide pharmacy workforce development.

Accreditation Standards for Pharmacists Medication Management: Navigating through Regulatory Requirements

Dr Haifa Hamid Glom Ali
Quality and Accreditation Directorate, MOH, Kuwait

Some of the Safety Required Areas (ROPs), which are high-priority and central to quality and safety include medication reconciliation, control of concentrated electrolytes and look-alike sound-alike medications. Currently, not all Kuwait healthcare organisations implement the necessary standards due to several barriers and obstacles including absence of electronic health records. Poor integration between patient prescription and laboratory profile and unavailability of "clinical decision support software" hinder clinicians in decisions related to patient medications. Standards for control of concentrated electrolytes in Kuwait is below safety requirements due to pharmacies limited working hours in some hospitals. The accreditation standard regarding look-alike sound-alike medications (LASA) requires organisations to identify and manage risks associated with such medications. However, current practice at pharmaceutical companies or healthcare organisations is not optimal for many reasons; continued production and marketing of LASA medications, development of multi strength medications, products with different suffix descriptors, prescriber preferences and unwillingness to conform to a limited formulary, use of brand names instead of generic names in prescriptions and lack of standard methodology, and variation among care facilities when using text enhancing methods. To overcome these issues we need to empower the central pharmaceutical sectors and directorates to be more aware and involved in the safety requirements pertaining to medication management. In addition, we need to enhance collaboration between the pharmaceutical services & other clinical entities at a central level to set medication management guidelines according to best practices & international safety standards. Furthermore, we need to initiate pharmacy and therapeutic committees at the central and/or organisational level, and to develop and improve the Electronic Health Information System and medication prescriptions.

Clinical Pharmacy Initiatives in Saudi Arabia

Prof Ahmed Al-Jedai
Deputy Minister for Therapeutic Affairs MoH, Riyadh, Saudi Arabia

Clinical Pharmacists play a critical role in direct patient care that has evolved over time, with increased emphasis on collaborative care and patient interaction. Clinical pharmacists are uniquely trained on pharmacotherapeutics to provide comprehensive drug management to patients and practitioners. Numerous reports conclude that addition of clinical pharmacists to the clinical team providing clinical pharmacy services results in improved patient care. Clinical pharmacy started in Saudi Arabia in the mid-1970s where pharmacists initially provided basic pharmacy services to the team such as therapeutic drug monitoring and drug information. The role has expanded to include designing, implementing and counseling patients on individualised drug regimens, designing therapeutic plans for complex medical regimens, monitoring for therapeutic success or failure and educating patients and health care professionals; in addition to conducting clinical research and providing direct patient care in the clinic. This presentation will discuss the current status of clinical pharmacy in Saudi Arabia and initiatives to upgrade the profession to the next level.

Pharmacist-Led Clinical Services: The Oman Experience

Ph Thamna Alshaibani
Pharmacy Department, IRH, Oman

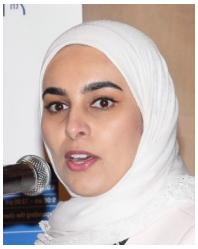
The practice of clinical pharmacy embraces the philosophy of pharmaceutical care; it blends a caring orientation with specialised therapeutic knowledge, experience, and judgment for the purpose of ensuring optimal patient outcomes. Clinical pharmacy is moving the pharmaceutical practice from medication oriented to patient care oriented. The role of clinical pharmacist underwent important changes in the last few years in Oman as their participation in direct patient care increased. Understanding the development of clinical pharmacy practice helped to establish new models of teambased care in Oman. They are now more specialised for specific services or complex care.

Patient Expectations of Pharmacists as a Driver for Expansion of the Profession

Dr Rania Azmi
"Fadia Survive & Thrive Association- Supporting Cancer Patients" & Wharton Board

The current public perception of a pharmacist typically entails a neat person wearing a white coat standing behind a counter dispensing medication, especially in less developed countries. To reverse this impression advocacy in its most basic form needs to be addressed to patients as the most difficult and important group to educate at the level of simple dispensing, medication assessments, injections, pharmacist prescribing, OTC recommendations etc. With advancements in communications technology and especially social media patients rely on pharmacists not only to inform them about side effects and drug interactions of prescribed medicines and how to take them but also to correct any public mis-information based on data that lacks scientific evidence. The oncology pharmacist is often one of the few clinical team members who fully understands the safety, efficacy, pharmacologic, and financial components of patient care. Therefore, the patients' expectations are higher for this type of pharmacist compared to traditional or general pharmacists. In recent years greater importance has been given to quality of life (QoL) rather than just its longevity. QoL is a multidimensional, multifaceted measure of a patient's perception of general wellbeing, including psychological, cognitive, physical and social functioning. This adds to the complexity of patients expectations, at least in oncology pharmacy. Now, many pharmacists spend more time than ever in direct patient contact, explaining treatment goals, possible adverse effects, and safe and successful use of medications. However, such roles are still very random and driven by patients' inquiries rather than being an integral part of a standard pharmacist's practice.

Kuwait Change in Curriculum



Dr.Sarah Al-Ghanem
Faculty of Pharmacy, Kuwait University

Currently, the practice of pharmacy in Kuwait is providing basic services of medicine dispensing to the population, with minimal clinical services in some hospitals. A needs assessment conducted in 2015 by FoP identified several services expected by patients and healthcare professionals (including pharmacists) that are not adequately rendered by Kuwait pharmacists today. Pharmacy education needs to be the key leader of change to move the profession forward to prepare graduates to meet the demands of profession transformation for increasingly complex patient and medication therapy management. Accordingly, FoP at Kuwait University has undertaken several initiatives to adapt for these changes. As a transition stage, a two year "add-on-PharmD" programme has been offered since September 2016 as a follow on from the current BPharm. The intention is to merge these two separate programmes in the upcoming years to create a 7-year entry-to-practice PharmD. The Faculty vision is to prepare graduates to engage in a stimulating career devoted to the optimisation of medicine-based therapy to improve the health condition of patients in Kuwait. To foster the development of proactive professionals, an environment where the responsibility of learning is shared between the students and the instructors has to be created, where autonomy and initiatives are expected from students. The modified programme will adopt competency based education delivered through active learning approaches. In addition, an assessment framework has been developed to allow monitoring of the progression of students in their knowledge acquisition and professional development, with additional emphasis on the concept of life-long learning.

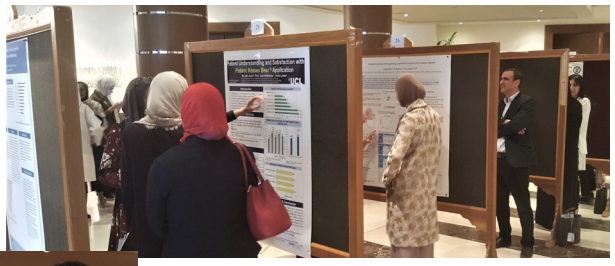
CPD Needs for MOH Pharmacists in Kuwait

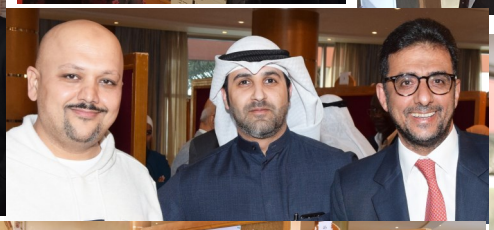
Dr Jacinthe Lemay
Faculty of Pharmacy, Kuwait University, Kuwait

In the context of developing a locally relevant doctorate pharmacy degree, FoP KU recently conducted several focus group meetings with various stakeholders and identified five population needs, supported by eighteen pharmacy services. The objective was to determine attitudes, practices and training needs regarding identified services among pharmacists working in the Kuwait MoH. A cross sectional study using self-administered questionnaires among 319 hospital pharmacists across secondary and tertiary care centres was conducted to determine how strongly they felt that pharmacists should deliver the services, how often they offered them and what was their current training need to offer or improve the service. Gaps were defined as the difference between those who believed pharmacists should offer the services and those who actually did. The largest gap resides in the services supporting provision of pharmaceutical care (62%), followed by health promotion and education (59%), first-line healthcare access (52%), continuity of care (52%) and safe delivery of medicines (33%). There was a significant correlation between the gap indicating need for training to be able to offer the services, suggesting that continuing professional development (CPD) is essential to enable pharmacists to offer services needed by the population. This requires concerted collaboration between FoP and MoH to develop a CPD program focused on services currently inconsistently offered, in order to meet training needs of practicing pharmacists and ensure optimal use of medications and patient outcomes.

POSTER SESSION



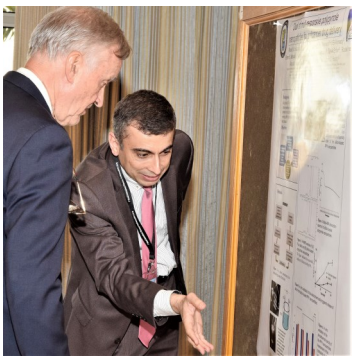



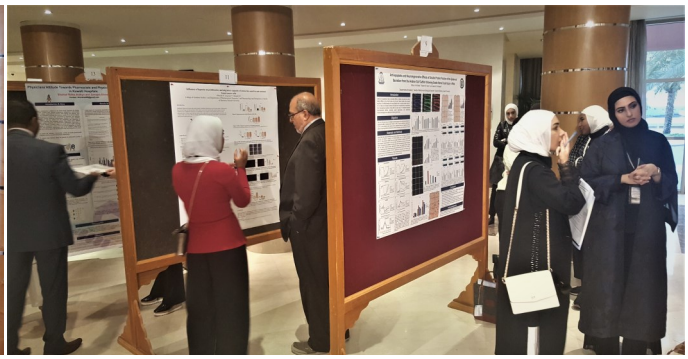


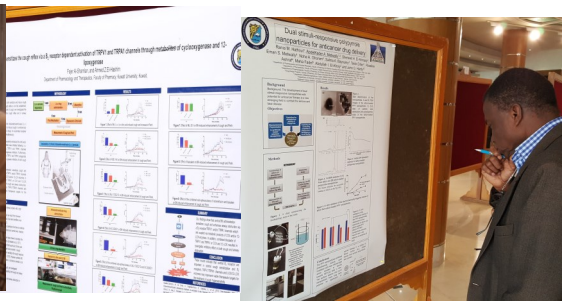


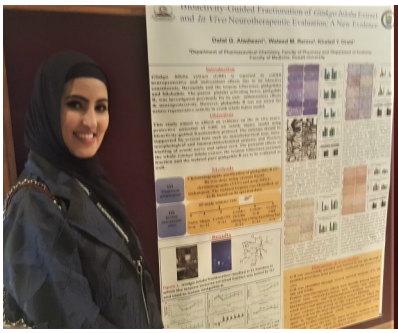
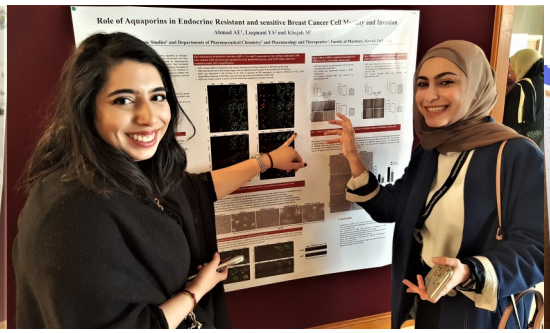










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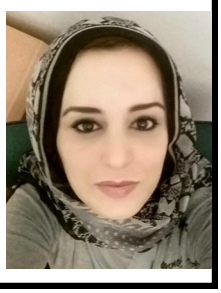
This issue is devoted to coverage of the recent 7th Kuwait International Pharmacy conference. For space reasons abstracts have been edited from the original submissions.

***Executive Editor*: Yunus Luqmani**
***Assistant Editors*: Leyla Hasan Sharaf, Samuel Koshy**



Editorial Office: Faculty of Pharmacy, Health Sciences Centre, Kuwait University, PO Box 24923 Safat, 13110 Kuwait, Fax:25342087; email: yunus@hsc.edu.kw

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