



University of Kuwait Faculty of Pharmacy



Annual Report 2015-2016



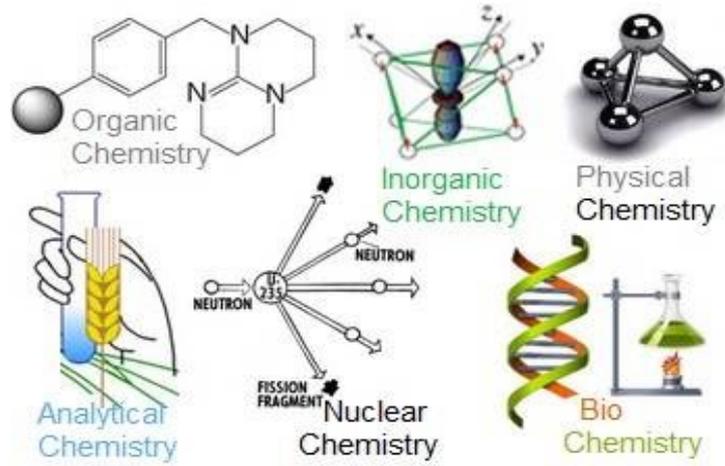
جامعة الكويت كلية الصيدلة



Faculty of Pharmacy

Annual Report 2015/2016

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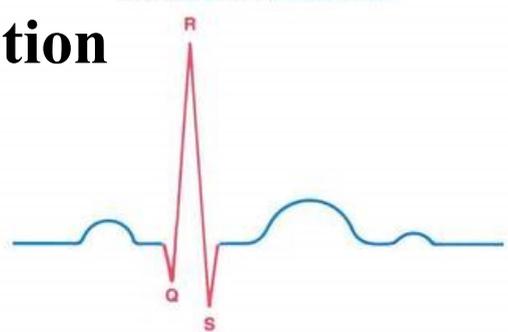
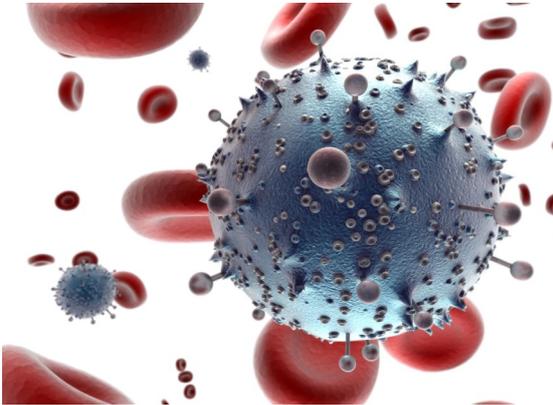
formulation



delivery



action



reaction



inside

Vison & Mission	4	Statement of Vision/Mission/Values
	5	Deans Executive Summary
Organisation	6	Faculty Organisation and Personnel
	7	Faculty Personnel
	8	Department Staff Members
Study	17	Message from Vice Dean Student Affairs
	19	Final Year Projects
	21	Report of VD Postgraduate Studies
	22	Scholarship Students
Research	23	Research
	26	MSc Research Projects
	30	Faculty Research Projects
	36	List of Publications
	43	Awards & Recognitions
Community	44	Community Service
	46	Continuing Education Programme
	47	External Partnerships
	48	Kuwait Pharmacy Bulletin Report
	49	Office of Consultations, Services, Training
	50	KPSS Activities
	51	Graduation Ceremony

Front cover illustrations - from Google images

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Twelfth Annual Report prepared by Yunus Luqmani with contributions from Faculty staff

Faculty of Pharmacy, Kuwait University, PO Box 24923, Safat 13110, Kuwait

Website: <http://www.hsc.edu.kw/fop/>

VISION To be recognized as an outstanding innovative leader in pharmacy education and research, contributing responsibly to the continuous improvement of pharmaceutical services and patient-centered care within our community, and promoting the philosophy of a healthy lifestyle.

MISSION

- *Educate* our students and current pharmacists to the highest standards of pharmaceutical sciences and pharmacy practice to meet evolving needs of society
- *Engage* in relevant, interdisciplinary and high quality research to contribute to the development and better understanding of medicines and therapeutic applications
- *Share* the expertise and experience of its members with the community to promote health and responsible and safe use of medicines
- *Develop* intellectual capital to be an effective component of Kuwait University

VALUES Individual **COMMITMENT**: The journey towards our vision depends upon each and every individual contributing to our global efforts by focusing on their specific tasks and being open to change to improve their effectiveness in delivering the expected outcomes.

Intrinsic INTEGRITY: In order for our Faculty to succeed in its evolution, we must maintain the highest level of professional integrity in all aspects of our mission. This will foster mutual trust between ourselves and with both the higher university administration and our key external partners.

Intentional CREATIVITY: Our vision requires that we continually strive for focused and innovative outcomes that represent significant evolution from best practices. This needs collective time and effort to analyze all situations, to devise consensual solutions and implement strategic actions.

Internal SOLIDARITY: To face current and future challenges during its evolution, our Faculty needs to be a strong and unified organization, with complete cooperation between academic and administrative departments communicating and working together to fulfill our mission. Our collective goals should prevail above our individual interests.

Social ACCOUNTABILITY: As a public organisation, this Faculty is responsible for delivering the highest level of education, and for the creation of new knowledge to contribute to the advancement of our society. We are also responsible to actively contribute, by engaging with all relevant stakeholders, to the quality of healthcare offered to our population.

Dean's executive summary

During this second academic year of the current Dean's executive committee, our focus continued to be on being relevant, innovative and committed. The current organizational structure seems to serve the Faculty well and communication have improved within our academic unit. Processes were documented to improve efficiency within the Institution. In December 2015, a Retreat was organized to reflect on our strengths, weaknesses, opportunities and threats and to rate them in terms of importance. This information, together with that gathered from external stakeholders helped shape the first draft of our Strategic plan "Towards 2020". In June 2015, a Faculty Achievement Day was held to showcase the progress made during the year, in the four dimensions of our mission: education, research, outreach and management. The occasion was marked by recognising particular individuals (selected by their peers) for exemplary contribution in terms of their commitment, integrity, creativity, solidarity and accountability (our 5 core values).

In addition to offering a Bachelor of Pharmacy and a Master of Science program in pharmaceutical sciences, finalising the development of our two-year add-on PharmD was the major academic goal for 2015-2016. Course coordinators were trained to understand and use the tools developed for competency-based education, active learning and student assessment. The experiential training working group was tasked to build the appropriate capacity, within the Ministry of Health, for the rotations (starting in 2017-2018) to include clinical pharmacy services as well as a preceptor training module.

On the research front, the publication output of the Faculty continued to reflect our strong contribution to the overall productivity of the University. This was in large measure due to increased collaborations particularly between departments. However, budget constraints and extensive delays in tendering procedures have hampered efforts to maintain a steady research capacity and this will affect our productivity over the next years. Despite this, specific research units were created, with the aim of further encouraging cooperation and improving the impact of our research. The units deal with major issues concerning pharmaceutical sciences and practice.

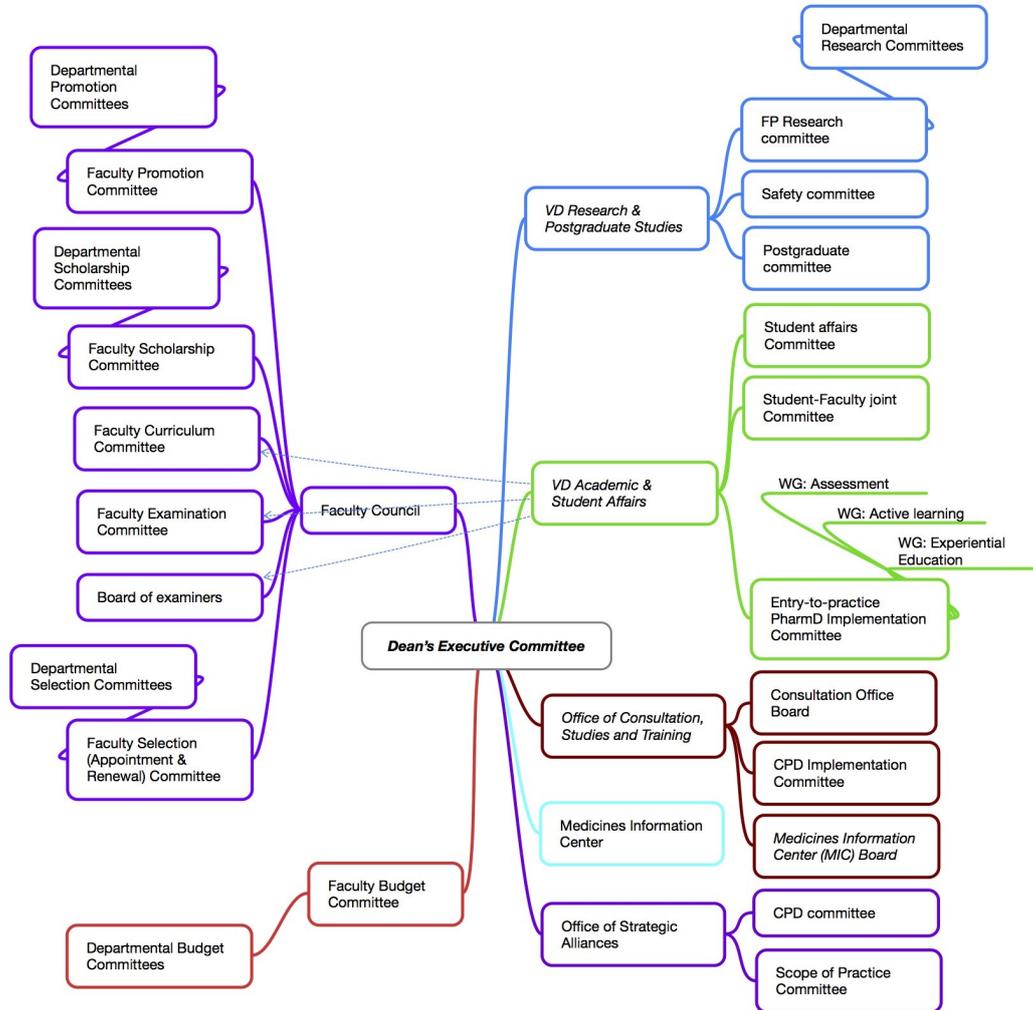
With respect to our social services and involvement, 2015-2016 saw a reduction in our activities, as the future of the "Office of consultation, studies and training" within KU became uncertain. We nonetheless organized successful learning activities for our alumni and practicing pharmacists, including the first preparation courses to pass an American board certification examination. In collaboration with the Health Sciences Center and the Ministry of Health, a new cadre for pharmacists, including a clinical pharmacist job description and payment incentive was submitted to the Civil Service Commission for their consideration.



This annual report captures our achievements from September 2015 to August 2016. I am proud of all of our accomplishments and of all the individuals that made them happen. There is a great deal of energy and competence within our Faculty. Our challenge over the next years will be to sustain the momentum to push forward with new ideas in pharmacy education and research for the benefit of the Kuwaiti society. We can proudly say that we are moving steadily towards our vision of: *Being recognized as an outstanding innovative leader in pharmacy education and research, contributing responsibly to the continuous improvement of pharmaceutical services and patient-centered care within our community.*

Prof Pierre Moreau

Organisation of the Faculty



Faculty Personnel



Department of Pharmaceutical Chemistry

Academic Faculty

Prof. Yunus Luqmani	Professor & Chairman
Prof. Ladislav Novotny	Professor
Prof. Oludotun A. Phillips	Professor
Prof. Mohammed Abdel-Hamid	Professor
Dr. Khaled Orabi	Associate Professor
Dr. Nada Al-Hasawi	Assistant Professor
Dr Naser Al Tannak	Assistant Professor

Academic Support Staff

Ph. Leyla Hassan Sharaf	Lecturer
Ph. Hanan Gaber Sary	Lecturer
Mrs Zainab Taqi	Teaching Assistant
Mrs. Sanaa Amine	Scientific Assistant

Technical Staff

Mr. Sulaiman M. Al-Sulaiman	Chief Technician
Mr. Emad El-Sayed	Technician
Mr. Islam M. Essa	Technician
Mr. Akram Fayeq	Technician
Mrs. Athraa Khan	Senior Chemist
Mrs. Mary Verghese	Technician
Mrs AlDana AlBuhairi	Assistant Technician
Mrs Asmaa Badawy	Senior Secretary

Research Staff

Dr. Ananthalakshmi Kethireddy	Research Assistant
Mrs. Princy Mathew	Research Assistant

Graduate Students

Ms. Alayaa Al Ateyah
Mrs Dalal Al Adwani
Mrs Lobna Adi



Future plans

- Implement updated Pharmaceutical Chemistry curriculum in the BPharm programme and contribute to MSc programme
- Encourage student utilisation of electronic sources of information/facilities -promoting use of HSC e-learning website for course materials and communication
- Promote departmental research activity with intra-departmental seminars and participation in Faculty CME program
- Promote the Office of Consultations, Studies and Training
- Improve and expand on-going community services on screening metabolic diseases in neonates and infants and pharmaceutical drug analysis
- Implement mentorship programme to aid junior staff to establish research activity
- Encourage student participation in research and advocate research culture

Prof Yunus Luqmani



Department of Pharmacology & Therapeutics

Academic Faculty

Dr. Kamal Matar	Associate Professor (<i>Chairman</i>)
Prof. Pierre Moreau	Professor (<i>Dean</i>)
Prof. Samuel B. Kombian	Professor
Prof. Jagdish N. Sharma	Professor
Dr. Ahmed El-Hashim	Associate Professor
Dr. Willias Masocha	Associate Professor
Dr. Mohamed G. Qaddoumi	Assistant Professor
Dr. Maitham Abbas Khajah	Assistant Professor
Dr. Altaf Al-Romaiyan	Assistant Professor
Dr. Bedoor Qabazard	Assistant Professor
Dr. Jacinthe Lemay	Assistant Professor

Academic Support Staff

Ph. Al-Shaimaa Al-Kandery	Clinical Instructor
Ph. Maram Jamal Katoue	Teaching Assistant
Dr. Parvathy Narayanan	Scientific Assistant

Technical Staff

Ph. Bindu K. Baby	Technician
Ph. Seena Elizabeth Mathew	Technician
Ms. Salini Sreedevi Soman	Technician
Mrs. Shila Anas	Senior Secretary

Research Staff

Dr. Anu Kethireddy	Research Assistant
Mrs. Princy Mathew	Research Assistant
Ms. Nimi Valsa Madathil	Research Assistant
Mrs. Rhema Susan Baby	Research Technician

Graduate Student

Mrs. Mandy Elewa



Future plans

- Encourage staff members to participate in promoting the Office of Consultation, Studies & Training
- Provide clinical pharmacokinetics & therapeutics consultations to MOH
- Train ward pharmacists on therapeutic drug monitoring and dose optimization of specific drugs
- Collaborate with other departments in the Faculty in establishing PhD programme

Dr Kamal Matar



Department of Pharmaceutics

Academic Faculty

Dr. Aly Nada	Associate Professor & Chairman
Dr. Mohsen Hedaya	Associate Professor
Dr. Abdelazim Zaghoul	Associate Professor
Dr. Monerah Al-Soraj	Assistant Professor
Dr. Yaqoub Al-Basarah	Assistant Professor

Academic Support Staff

Mrs. Farzana Bandarkar	Teaching Assistant
Mrs. Elizabeth Abraham	Scientific Assistant

Technical Staff

Mrs. Doha Nabil	Technician
Mr. Saji Abraham	Technician
Mrs. Farah Jamaa	Assistant Technician
Mr. Yehya Mahmoud	Assistant Technician
Ms. Marwa Gouda	Secretary

Research Staff

Ms. Rinu Thomas	Research assistant
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Graduate Students

Ms. Reham Al Kazemi
Ms. Marian Sobhy



Future plans

- Strive to continuously improve teaching and research quality.
- Plan more laboratory-based Final Year Research Projects to enable students to tackle practical problems
- Promote utilisation of the “E-learning” website for more effective communication with students.
- Intensify intra- and inter-departmental research collaboration, with joint research applications
- Promote postgraduate research activities for the MPharm.
- Promote international collaboration
- Apply for general facilities grant to improve and upgrade laboratory facilities

Dr. Aly Nada



Department of Pharmacy Practice

Academic Faculty

Prof. Abdelmoneim Awad	Professor & Chairman
Dr. Mohammed Waheedi	Assistant Professor
Dr. Abdullah El-Bassam	Assistant Professor
Dr. Fatma Jeragh	Assistant Professor
Dr. Fatma Al-Saleh	Assistant Professor
Dr. Salah Waheedi	Assistant Professor
Dr. Dalal Al-Taweel	Assistant Professor
Dr. Maryam Al-Owayesh	Assistant Professor
Dr. Sarah Al-Ghanem	Assistant Professor
Dr. Mona Murad	Assistant Professor

Academic Support Staff

Mrs. Eman Abahussain	Senior Clinical Lecturer
Mrs. Tania Bayoud	Clinical Lecturer
Mrs. Reny Mathew	Clinical Instructor
Ms. Asmaa Al-Haqan	Clinical Instructor
Mrs. Heba Abul	Clinical Instructor
Mrs. Noor Marafie	Clinical Instructor
Mr. Samuel Koshy	Teaching Assistant
Mr. Youmna Elddine	Teaching Assistant

Technical Staff

Mrs. Randa Abdul-Salam	Chief Technician
Ms. Shaimaa Abdel-Meguid	Technician
Mr. Abdul-Razzak Al-Shaar	Technician
Mrs. Reny Varghese	Technician
Mrs. Amal Mostafa	Technician

Administrative Coordinators

Mrs. Mona Naqi	Administrative Coordinator
Ms. Esraa Saleh	Administrative Coordinator
Mrs. Zahra Al Saleh	Administrative Specialist



Future plans

- Development of Model Pharmacy
- Improvement of the experiential training
- Expand the community services
- Expand FOP drug information center services, through workshops for pharmacists
- Promoting safe disposal practice of medication
- Supervision of MSc Students with University of Dundee and Dasman Diabetes Institute

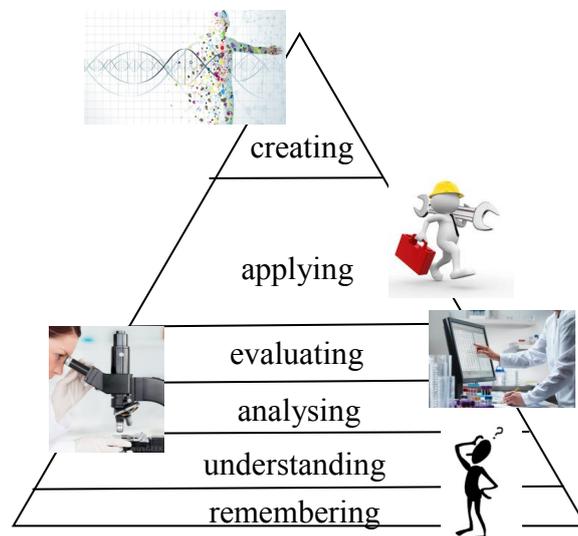
Prof Abdelmoneim Awad



STUDY



*Education is not just learning a collection of facts
but understanding what to do with them*



Message from Vice Dean for Academic and Student affairs



The FoP continued to admit new students directly into the first year of the pharmacy program. We started the year by organizing an orientation session to the newly admitted students to familiarize them with the program and the rules and regulations of the FoP. This was followed by a career day when pharmacists from different fields of the pharmacy profession were invited to give short presentations about the nature of their work. This interaction gave the students a good chance to hear about the different career opportunities within the pharmacy profession. Throughout the year, preparations for the PharmD program continued, with the student affairs committee developing more standard procedures.

PharmD implementation

The PharmD implementation committee, together with other sub-committees, continued to develop the PharmD program in respect to a number of frameworks including curriculum competency, active learning, assessment and experiential education. The coordinators developed the PharmD course contents.

In March 2016, the FoP was granted the final approval to launch the PharmD program starting in the Fall semester 2016/2017. At this point the work of the PharmD implementation committee was completed and a new PharmD program committee was appointed to disseminate information about the program, implement the approved criteria for admission, prepare time-table for student lectures, overview the program in terms of respecting the guiding principles, and periodic

reviews. We organized two orientation sessions to inform the pharmacy students about the program. Together with the Deanship for Admission and Registration we developed the time-line and plan for the application, student selection and admission to the PharmD program.

Student Affairs Committee

The student affair committee continued to enforce the revised examination regulations and policies for absence from lectures, laboratory sessions and examinations. The committee also developed the code of ethics, which includes sections about professionalism and professional behavior, proper academic conduct, academic dishonesty and consequences of failing to observe these. The committee also developed a revised mentoring system in which each student was assigned to a team of advisors which includes male, female, Arabic-speaking, and non-Arabic speaking faculty members from different departments. Each student was asked to meet with at least one of their advisors twice during the academic year. This system was implemented to encourage students to seek help from their advisors whenever needed.

Faculty-Student Joint Committee

This committee was created last year and included four faculty members and four student representatives, one from each year. This committee provided a mechanism for communications between faculty members and students. Any new rules and regulations developed by the student affairs committee were communicated to the students through their representatives on this committee. The students also made several suggestions which were discussed and found to be useful and important, and these suggestions were presented to the Dean's executive committee.

Dr Mohsen Hedaya

Curriculum Development

MSc in Pharmaceutical Sciences

Recently, the Faculty of Pharmacy has implemented a postgraduate MSc program in pharmaceutical sciences to improve and upgrade the pharmacy education at the Faculty. A total of 12 regular students and 2 non-degree students joined the MSc program in the period 2014-2016. The MSc curriculum consists of didactic and experimental courses, in addition to a laboratory-based research thesis. The curriculum provides the necessary knowledge in pharmaceutical/ medicinal chemistry, biopharmaceutics/pharmacokinetics, drug discovery and development and molecular pharmacology. In addition, courses related to biostatistics and computer in medicine, scientific writing and communication skills, ethics and professionalism are also taught. The student is allowed to select one course of the electives e.g. evidence-based phytotherapy, or advanced drug delivery systems or central neuropharmacology. For graduation, the student should complete 24 credit hours of course work in 2 semesters with an average GPA not less than 3.00, in addition to successful completion of research thesis of 9 credits. The course name, course number of the compulsory and elective courses with the specified credit hours are listed below

Curriculum

21 TOTAL COURSE CREDITS

18 COMPULSORY COURSES

	Credits
1100-525 Advanced Biopharmaceutics and Pharmacokinetics	(3)
1100-540 Drug Discovery and Development	(3)
0550-505 Molecular Pharmacology	(2)
0510-501 Biostatistics and Computer in Medicine	(2)
0500-503 Research Communications I	(1)
1100-520 Advanced Pharmaceutical Chemistry	(3)
1100-521 Techniques in Pharmaceutical and Pharmacological Research	(3)
1100-526 Seminar in Pharmaceutical Sciences	(1)

3 ELECTIVE COURSES

1100-522 Evidence-based Phytotherapy	(3)
1100-527 Advanced Drug Delivery Systems	(3)
1100-541 Central Neuropharmacology	(3)

The student should select only ONE course from the list of electives.

COMPULSORY (9)

Master Thesis*

1100-597, 1100-598, 1100-599

*Prof Mohammed AbdelHamid
(VDR and Postgraduate Studies)*

Final Year Student Research Projects

In their final semester students take a 3 credit course in which they are expected to conduct a short piece of research on a specified topic and required to submit a written report of 5500-6500 words and give a 20 minute oral presentation of their work. Students are randomly pre-assigned to a faculty staff member who supervises their work throughout the project during regular weekly discussion meetings over approximately 13-15 weeks.

During this year there were a total of 42 students: 11 were assigned to Pharmaceutical Chemistry, 14 to Pharmacology & Therapeutics, 8 to Pharmaceutics and 9 to Pharmacy Practice. As usual the topics were quite diverse. Pharmaceutics offered projects concerned with different modes of drug delivery and formulations for targeted therapies, evaluation of frusemide tablets and usefulness of animal models. Pharmacology & Therapeutics projects dealt with inflammatory mechanisms in lung and bowel abnormalities, neurological and oncological disorders, hypertension, pain mediators, drug monitoring, diabetes and lupus and medication perspectives. Pharmacy Practice had all questionnaire based surveys, on patient medication knowledge, pharmacists' and physicians' attitudes on pharmacogenomics, pharmacists' impact on pediatric and geriatric care, pharmacovigilance and ADRs; all required students to perform

statistical and qualitative data analyses. Projects in Pharmaceutical Chemistry included topics on pharmaceutical analysis for narcotics, counterfeit medicines, retinoids, anti-cancer agents, melatonin, MMPs, resveratrol, the role of microRNA in detecting residual disease in cancer and use of zebrafish in drug discovery.

The general standard was again high with many excellent projects. There were some laboratory based projects which had highly successful outcomes. Two of the projects were subsequently published in edited form in the Kuwait Pharmacy Bulletin and another is in preparation for the winter issue. The oral presentations were of generally high quality; however response to questions again exposed some shortcomings. The main issues encountered were in correct usage of grammar and scientific language, selection of appropriate sources and being sufficiently critical in assessing/interpreting information where appropriate.

It is recommended that further effort should be made to ensure that projects require use of and critical assessment of information rather than too much emphasis on descriptive narrative of well described knowledge.

Prof Yunus Luqmani

Department of Pharmaceutical Chemistry

	Student	Supervisor
Assessment of circulating microRNAs as markers of residual disease in cancer	Maryam Dashti	Y A Luqmani
Natural products as anti-cancer drugs	Lateefa Al-Manea	L Novotny
Natural and synthetic retinoids in health and disease	Tahani Al-Hajri	L Novotny
Melatonin: functions and therapeutic applications	Yousef Mohammed	OA Phillips
Therapeutic potential of matrix metalloproteinases	Ahmad Bin Yousef	OA Phillips
Substandard and counterfeit medicines in developing countries	Lulwa Al-Draiweesh	M AbdelHamid
Isolation and identification of disguised methamphetamine in seized	Abdullah Al-Sultan	K Orabi
Resveratrol- a multi-functional therapeutic agent	Hawraa Al-Sarraf	N Al Hasawi
Rational use of the zebrafish in drug discovery	Ghada Boz	N Al Hasawi
Detection of synthetic adulterants in herbal healthcare products	Khawla Al-Nasser	N Al Tannak
Separation of chiral compounds by high performance liquid chromatography	Muneera Abu Rezaq	N Al Tannak

Department of Pharmacology & Therapeutics

	Student	Supervisor
Transient receptor potential A1 a novel target for sensory nerve based diseases?	Sara Al-Harbi	A El Hashim
Impact of gender on the pharmacokinetics of drugs	Fatma Mohammed	KM Matar
Evaluation of prescribing pattern of CTX regimens for pediatric patients with ALL	Raghad Al-Najar	M Qaddoumi
Usefulness of natriuretic peptide system in diabetic retinopathy	Bashayer Al-Marshad	M Qaddoumi
Management of cluster headaches	Hessa Al-Shatti	W Masocha
Potential role of helminth-based therapy in treatment of IBD	Yousef Al-Resheedi	M Khaja
Effectiveness of Metformin in treating women with breast cancer	Maryam Kablili	A Al-Romaiyan
Effectiveness of amylin mimetics in type 1 diabetes mellitus	Fatma Al-Bader	A Al-Romaiyan
Hallucinogen toxicity: new insights into the mechanisms and therapy	Noor Ali	B Qabazard
Challenges and recent advances in management of Systemic Lupus Erythematosus	Rawan Ben Nekhi	B Qabazard
Knowledge, attitudes, practices on pharmacovigilance and ADRs of primary care pharmacists in Kuwait	Moh'd Al-Mutairi	J Lemay
Beliefs about medication: a Kuwait perspective	Sara Al-Sharqawi	J Lemay
Knowledge, attitudes and practices on pharmacovigilance and ADRs of primary care physicians in Kuwait	Lulwa Bu-Resly	J Lemay
Current and future treatment options for isolated systolic hypertension	Fatma Al-Haddad	P Moreau

Department of Pharmacy Practice

	Student	Supervisor
Awareness and attitude of pharmacists towards the application of pharmacogenomics for patient care in Kuwait	Shahad Al-Shemmeri	A Al Bassam
Awareness and attitude of physicians towards the application of pharmacogenomics for patient care in Kuwait	Ghadeer Ouda	A Al Basam
Evaluation of the adherence to clinical practice guidelines in the management of bipolar disorder	Zahraa Al-Tabtabaiy	D Al Taweel
The impact of pharmacists' interventions on pediatric care: a systematic review	Zainab Dashti	M Al Owaish
The impact of pharmacists' interventions on geriatric care: a systematic review	Alyaa Pourdara	M Al Owaish
Evaluation of Medication Use in Elderly Patients	Olivia Hanna	A Awad
Knowledge, attitude and practice toward pharmacovigilance and adverse drug reactions reporting among private hospital pharmacists in Kuwait.	Abrar Koujan	F Al Saleh
Knowledge, attitude and practice toward pharmacovigilance and adverse drug reactions reporting among private hospital physicians in Kuwait.	Sanaa Al-Ajmi	F Al Saleh
Evaluation of Tacrolimus dosage guideline and monitoring in kidney transplant Recipients	Ali Ibrahim	S Al Ghanem

Department of Pharmaceutics

	Student	Supervisor
<i>In vitro</i> evaluation of frusemide tablets in the local Kuwaiti market	Afnan Al-Adwani	A Nada
Intravesical drug delivery: challenges and opportunities	Yousef Saleh	M Hedaya
Animal models in preclinical drug-drug interaction assessment: What do we learn from them?	Khalid Hussain	M Hedaya
<i>In situ</i> gel forming systems for smart drug delivery	Hassan Al-Hosani	A Zaghoul
Oral absorption promoters: opportunities and challenges	Alya Al-Harbi	A Zaghoul
Pulsatile drug delivery system as a tool for targeted drug delivery	Hassan Al-Amer	M Al Soraj
Administration of dry powder vaccines via inhalation	Bashayer Al-Mahrous	Y Al Basarah
Dermal delivery of non-steroidal anti-inflammatory agents	Khadeejah Alwalan	Y Al Basarah

Report of the Vice Dean for Postgraduate Studies & Research

In September 2014, the Faculty of Pharmacy implemented a multi-disciplinary MSc program in pharmaceutical sciences. The postgraduate program was established to be parallel to the Add-on-Pharm D program in clinical pharmacy. The MSc program is structured to prepare the students for pharmaceutical research areas in drug discovery and development, biopharmaceutics and pharmacokinetics, pharmacology and related fields. Our aim is to develop highly motivated self-dependent researchers and to prepare those who wish to continue to PhD degrees. In academic year 2015/2016, five BPharm students were admitted to the program. The students have successfully completed the course-work (24 Credits) in the first year of study and are now registered for their Master thesis projects. At the present a total of 8 MSc research projects are in progress. The projects are

funded either by CGS alone or by CGS and RS. A total budget of KD 24,950 for funding graduate research projects, were allocated. Whilst these projects will be conducted under the supervision of professors or associate professors, the Faculty policy will be to encourage the participation of junior staff as co-supervisors.

We are looking for collaborative work with pharmaceutical and medical sectors in Kuwait to develop research themes for research projects that may have benefit to the local community. Also, we hope that our program capacity will be expanded by encouraging more applicants with chemistry and biomedical background to register in the program. It is hoped that in the coming years we will be able to establish a PhD program in pharmaceutical sciences.

*Prof Mohammed
AbdelHamid*



Scholarships



Name of Student	University of study	Tentative completion
<i>Department of Pharmaceutical Chemistry</i>		
Sama'a Al-Rushaid	University of Manitoba, Canada	2018
Fatma Al-Awadi	University of Florida, USA	2017
Bashayer Al Thufairi	Virginia Comm University USA	2018
Fatma Taha	University of Manchester, UK	2021
<i>Department of Pharmaceutics</i>		
Wabeel Al-Busairi	University of the Pacific, USA	2018
Maitham Bahman	University of Strathclyde, UK	2018
<i>Department of Pharmacology and Therapeutics</i>		
Omama Al Farsi	Johns Hopkins University, USA	2017
<i>Department of Pharmacy Practice</i>		
Dana Al-Sanea	Virginia Comm University USA	2020
Sarah Al-Manie	Virginia Comm University USA	2018
Maie Al-Hazami	Virginia Comm University USA	2018
Emad Al-Saraf	MCPHS, Boston, USA	2020
Ethar Makhseed	MCPHS, Boston, USA	2020
Fatma Rashed	MCPHS, Boston, USA	2020
Ali Saleh Al-Harbi	MCPHS, Boston, USA	2018
Huda Al-Enazy*	MCPHS, Boston, USA	2020

Research



Research is 10% inspiration and 90% perspiration

- but it is a labour of love

Faculty Research



Since October 2014, the Faculty of Pharmacy has established its own Research Committee (FPRC) for all research issues at the FOP. This is chaired by the VDR and consists of the four department research coordinators and two invited active researchers. This has streamlined the grant application process, permitting faster follow-up and facilitated communications with the Research Sector.

During 2015-2016, 16 funded research projects were in progress; 4 Faculty research projects and 2 research priority projects on cancer research, are in processing. A total budget of KD 583,379 was allocat-

ed. A total of 38 articles were published in peer-reviewed pharmaceutical and medical journals with good impact factors; 6 of them in journals rated at the top quartile of their category. The authors of these papers received KU research quality awards. There was also active participation of faculty members in local and international conferences with 20 oral presentations as communications and invited lectures, and 34 poster presentations. The implementation of Master program in Pharmaceutical Sciences has contributed to improvement of research at the Faculty. Eight MSc students were registered in the program during 2015-2016 and started their theses in the research areas of molecular pharmacology, pharmaceuticals, chemistry of natural products, pharmacology, clinical pharmacokinetics and biopharmaceutical analysis. The projects were supervised by senior staff and some were also co-supervised by junior staff. The projects were funded by the College of Graduate Studies (CGS) and Research Sector (RS) of Kuwait University.

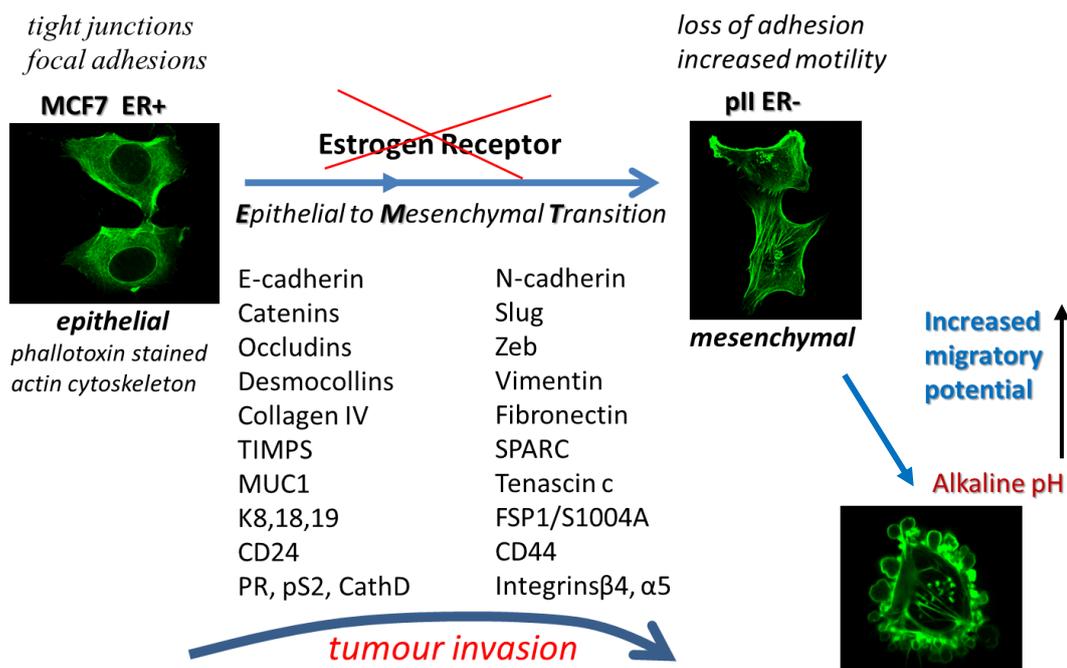
The collaborative atmosphere within the Faculty creates an ideal environment for interdisciplinary research activity. Research Units were recently established to foster more collaborative research and to create an environment for staff, particularly junior staff, to join scientific research. Research units that cover 5 major areas were proposed by staff members, namely immunity and inflammation, drug discovery and development, professional practice and education, pharmaceutical technology and drug delivery, and molecular oncology.

The major research focus areas and the areas of contribution were defined by each research unit. The collaborative research may be extending outside Kuwait with other Universities or research institutions and laboratories in Europe and USA. As a result of this collaboration, research articles were published and pharmaceutical/medical/educational research materials were presented in international and local conferences.

Research Units – Molecular Oncology

Estrogen has long been known to be the major stimulus driving progression of breast cancer through activation of a nuclear receptor (ER). Endocrine intervention, either with pharmacological antagonists or inhibitors of estrogen biosynthesis in postmenopausal women forms the basis of treatment of ER+ patients. As with general cytotoxic agents, persistent onset of drug resistance poses significant therapeutic setbacks. Attempts to identify the molecular mechanisms whereby cancer cells acquire resistance have, through use of *in vitro* cellular models, identified proliferative growth factor induced signaling that bypass the ER pathway rendering estrogen blockade redundant. Our laboratory has established a number of siRNA mediated ER silenced sub-lines, derived from the commonly used ER+ MCF7 cell line, that are characterised not only by their endocrine independence, but also by a remarkable transition from their original epithelial phenotype to one resembling mesenchymal cells. This is reminiscent of the EMT which is now commonly accepted as a pathway for tumour metastasis. We are studying the metabolic and morphological behaviour of these cells which unlike the parental cells have the propensity for increased motility and invasion. A striking feature is their unique response to extracellular alkaline pH with extensive re-arrangement of cortical actin producing a spherical shaped cell with dynamic blebbing of the plasma membrane which we believe to be associated with migratory capacity. Projects are ongoing to study these phenomena, as well as the reversibility of EMT, and the role of microRNA in this process both intracellular and inside microvesicles that are shed by these cells. We have active collaborations with groups in York and in Munich to perform electrophysiology and *in vivo* studies with the ER silenced cell lines.

Loss of endocrine control in breast cancer cells leads to invasive phenotype



Current Research Grants

MSc Graduate Research Projects

YA Luqmani (PI), R Al Shammeri (student). YP01/12 Regulation of lactate dehydrogenase genes and epigenetic factors in endocrine resistant human breast cancer cells. Budget KD 6000. 2012-2016 Status: Completed

This study examines expression of LDH-A and LDH-B genes that encode four isoenzymes catalyzing conversion of pyruvate to lactate, in several breast cancer cell lines, to determine whether there is a relationship with ER status and endocrine resistance, and whether epigenetic factors such as CpG island methylation can regulate expression. Loss of LDH-B can result in increased LDH activity, due to contribution from LDH-A, and extracellular lactate/H⁺ accumulation, which is commonly held to be a major factor in tumour metastasis. We would also like to determine whether re-expression of LDH-B in non-expressing cells can increase cell motility and invasive capacity.

Y A Luqmani (PI), A Al Ateyah (student). YP01/15 MiRnome profiling of breast cancer cell lines with respect to endocrine resistance. Budget KD 6000. 2014-2016 Status: Completed

MicroRNAs are emerging gene regulators that may profoundly influence cancer progression and provide new potential therapeutic tools. This project aims to profile the miRnome of several breast cancer cell lines including ones developed in this laboratory representing models of endocrine resistance, a feature posing significant problems in management of breast cancer patients. This information will be correlated with our existing mRNA profiles of MCF7 and pII cells, a model reflecting the metastatic and EMT phenotype. Missing miRs or inhibitors of over-expressed miRs will be transfected into MCF7 or pII cells to determine whether EMT and metastatic potential may be manipulated through their action.

W Masocha (PI), M Khajah (Co-I), R Al Taab (student). YP01/14 Enhancement of paclitaxel induced inhibition of breast cancer cells by COL-3. Budget KD4000. 2014-2016 Status: Completed

Paclitaxel, a chemotherapeutic drug used against breast cancer and other solid tumors, causes dose-dependent painful neuropathy in some patients. Our previous studies indicated that COL-3 or chemically-modified tetracycline-3 (CMT-3) protects against paclitaxel-induced painful neuropathy in mice. The objective of this study is to determine the impact of COL-3 on the anticancer activity of paclitaxel. It is intended to evaluate the anti-proliferative, apoptotic and anti-metastatic effects of paclitaxel alone and in combination with COL-3 on breast cancer cells. If found to be beneficial, COL-3 could be added to a paclitaxel-based anti-cancer regimen to improve therapeutic outcome, as well as to reduce the adverse effects of paclitaxel.

YA Luqmani (PI), S Al Sabah (Co-I), L Adi (MSc student). YP02/15 Investigating amino acid residues that contribute to the constitutive activity of the glucose-dependent insulinotropic polypeptide receptor. Budget KD 6000. 2015-2016. Status: Completed

The incretin hormones; GIP and GLP-1 are important regulators of metabolism. Both potentiate insulin secretion in a glucose-dependent manner by binding their respective receptors (GIPR & GLP-1R) on pancreatic β -cells. Expressed at comparable levels, GIPR displays significantly higher ligand-independent, or constitutive, activity than GLP-1R. The aim of this project was to identify the amino acid residues that contribute to this constitutive activity. Site-directed mutagenesis was used to make amino acid substitutions in the 6th trans-membrane helical domain of GIPR and the mutated receptors characterized. Reciprocal substitutions were made in GLP-1R. The aim of this work is to provide further insight into the structure and function relationship of this pharmacologically important family of receptors.

A Nada (PI), Y Al-Basarah (Co-I), R Alkazemi (MSc student). YP01/16 Dissolution enhancement of atorvastatin as a model poorly soluble drug. Budget KD 2000. 2015- 2016. Status: in progress.

The anti-hyperlipidemic statins, exemplified by atorvastatin (AT), are belonging to class II of the Biopharmaceutics Classification System (BCS) characterized by good permeability and poor solubility. The aim of the present proposal is to study appropriate techniques to enhance AT dissolution, using the co-crystal formation or/and ultra-homogenization. Water soluble substances, such as sacharin and glucosamine will be investigated as cocrystal formers. The resulting modifications will be assessed by measuring the solubility, dissolution rate, particle size and, thermal profiles in comparison with the untreated AT. Furthermore, a comparative *in vitro* dissolution study of selected formulation(s) against marketed AT tablet brand(s) will be studied.

KY Orabi (PI), W Renno (Co-I), D Al-Adwani (MSc student). YP03/15 Neurotherapeutic effects of ginkgo biloba extract and ginkgolides. Budget KD 4000, 2015-2017 Status: in progress.

This study investigates the potential of *Ginkgo biloba* extract (GBE) and some pure ginkgolides to recover sciatic nerve crush injury in rat models. Five groups of male Wistar rats will be prepared. Functional recovery tests and morphohistology investigations will be performed on these models both pre- and post-surgical to get statistically significant results. The obtained results will be documented to report the neuroprotection potential of GBE, and/or its purified ginkgolides, along with their effects on sciatic nerve regeneration after injury induction.

K Matar (PI), S Alghanem ((Co-I), M Elewa (MSc student). Population pharmacokinetics of topiramate in Kuwaiti epileptic patients. Budget KD 950, 2015-2017 Status: in progress.

Topiramate (TPM) is a relatively novel antiepileptic drug that is used as monotherapy or an add-on therapy. It is also used as a prophylactic agent for migraine. To optimize the right dose of TPM that gives the best efficacy with minimal side effects, the population pharmacokinetics of TPM will be determined to develop the best fit model to identify factors that influence the pharmacokinetics of TPM and the variability around them. The study is a retrospective for routine therapeutic drug monitoring (TDM) data stored at the TDM unit, Faculty of Medicine (FoM). TPM samples will be collected from 50 -200 pediatric and adult patients with epilepsy from various public hospitals in Kuwait. In addition, patients' demographic data including gender, weight, height and age, concomitant antiepileptic medications, and serum creatinine will be obtained. The data will be collected

from patients who have at least one TPM sample measured. Other pharmacokinetic data will be collected including time of sampling, dose, dosage interval or dosing frequency, assay used to analyze samples.

Co-supervision of students registered outside the Faculty

MA Oriowo (PI), W Masocha (Co-I), Neha Munawar (MSc student). YM02/15. The role of the endocannabinoid system in nucleoside reverse transcriptase inhibitors-induced neuropathic pain in rodents. Budget 4000 KD. 2015-2016. Status: Completed.

Paclitaxel, a chemotherapeutic drug used against breast cancer and other solid tumors, causes dose-dependent painful neuropathy in some patients. Recently, we found that during paclitaxel-induced neuropathic pain there is significant increase in gamma-aminobutyric acid transporter-1 (GAT-1) expression in the brain (Masocha, 2015). In this project we will evaluate the ability of GAT-1 inhibitors to prevent the development of and/or treat established paclitaxel-induced thermal hyperalgesia and cold allodynia in mice. Preliminary studies suggest that a selective GAT-1 inhibitor, NO-711, has anti-hyperalgesic effects in mice with paclitaxel-induced thermal hyperalgesia.

AS Mustafa (PI), H Amoudy, A El-Hashim (Co-Is), Hussain A Safar (PhD student) Immune response to major antigenic proteins of mycobacterium tuberculosis-specific regions and their role in immunomodulation of asthma in mice. Budget: KD 18,000. 2014-2017. Status: in progress

The therapy of asthma remain suboptimal and novel therapy is needed. The objective of this project were to clone the genes of *M. tuberculosis*-specific antigens (PE35, EsxA, EsxB, Rv2346c, Rv2347c, Rv3619 and Rv3620) in plasmid vectors and express the proteins in *Escherichia coli* and purify the recombinant proteins. We also plan to clone the genes of *M. tuberculosis*-specific antigens in plasmid vectors pDE22 and pUMCV6 capable of expressing the cloned genes in mycobacteria and eukaryotic cells, respectively. This project also aims to characterize immune responses (in terms of Th1, Th2, Th17 and Treg cytokines) to *M. tuberculosis*-specific antigens and finally to study the effect of *M. tuberculosis*-specific antigens and delivery systems in the modulation of asthma in mice.

Aly Nada (PI), M El-Nabarawy (CoI), A Mekky (CoI), M Sobhy (PhD Student, Faculty of Pharmacy, Cairo University): A pharmaceutical study on fast release dosage forms of a certain drug for optimization of its bioavailability. Status: in progress

The aim of this thesis is to improve the solubility and bioavailability of poorly water soluble drugs (non-steroidal anti-inflammatory, antidiabetic, antihypertensive drugs, etc.) by physical modifications, and thus enhancing drug dissolution and bioavailability. The experimental work in this thesis includes: a) Enhance drug solubility using different methods as solid dispersion, and nanotechnology, etc.; b) Evaluate the physical, chemical, and pharmaceutical properties of the drug; c) Stability study of the optimum formulations; and d) Bioavailability study for the best chosen formula compared with the commercially available product(s) in human volunteers.

D Al Taweel (PI), A Al-Haqan (MSc student): Role and attitude of pharmacists in the management of diabetes. Collaborative work with University of Dundee and Dasman Diabetes institute. (September 2011- October 2015).

The aim of this study was to measure pharmacists' attitudes toward diabetes management and to identify pharmacy services provided to patients with diabetes in primary and secondary care facilities in Hawalli Health Region in Kuwait. A cross-sectional, comparative study was conducted using a self-administered paper questionnaire. Diabetes related attitudes were measured using the third version of the Diabetes Attitudes Scale (DAS-3). A list of diabetes related services was adapted from previous studies. The questionnaire was distributed to all pharmacists working in primary and secondary care facilities in Hawalli Health Region, Kuwait (n=198). A total number of 168 pharmacists completed the questionnaire. Respondents had an overall positive attitude towards diabetes management however the study found a negative correlation between the positive overall diabetes related attitudes and pharmacists' involvement in providing some diabetes related services. The study also identified barriers to providing diabetes related services which included the image that some physicians or patients have of pharmacists as dispensers only, a lack of collaboration with other health-care providers, and lack of organisation.

M Waheedi -(PI), M A Eldeep (MSc student). Barriers to pharmacists counseling patients with diabetes in primary health care sector in Kuwait. Collaborative work with University of Dundee and Dasman Diabetes institute (September 2015-date).

This qualitative study explored barriers to counseling diabetes patients, using three focus groups with 15 pharmacists in primary care within the Capital health area. The results were triangulated with semi-structured interviews with 3 pharmacists' supervisors. Barriers identified included: 1) lack of pharmacist knowledge/motivation, 2) negative physician or patient attitudes, 3) absence of counseling areas, 5) lack of counseling schedule, 6) excessive workload or time limitations, 7) lack of policies, 8) staff related barriers, 9) lack of patient history, and 10) Ministry of Health negligence.

M Waheedi (PI), S Abdel-Meguid (MSc student). Health related quality of life in type-2 diabetic patients at the Dasman Diabetes Institute . Collaborative work with University of Dundee and Dasman Diabetes institute (September 2011- 2015).

The study documented the health-related quality of life (Hr-QOL) within the diabetes population of Kuwait. An Arabic validated Hr-QOL questionnaire (SF-36) was used with type 2 diabetes recruited from the Dasman Diabetes Institute. The results in 72 patients showed a moderate effect of diabetes on Hr-QOL. Physical functioning and general health were the most affected domains, while social functioning and role limitation due to emotional problems were the least affected. Correlates with the eight domains of Hr-QOL were identified and do deserve further investigation.

Faculty Research Projects

KY Orabi (PI), M Abaza (Col), YA Luqmani (Contributor). PC01/12 from RS, Kuwait University. Investigation into selected terpenes as anticancer leads. Budget KD 53,256. 2012-2015

Natural products play a significant role in the drug discovery and development. With more than 23,000 known compounds, terpenes are the largest class of natural products. Many of these terpenes are used for medicinal purposes. Finding new anticancer therapeutics along with understanding their molecular mechanisms represent new opportunities for treating cancer. Previously, several terpenes; saudinolide, plectranthone and psiadin, were isolated from plants in quantities enough to evaluate their anti-mitogenic activities. The preliminary results were encouraging to explore, in-depth, their anti-mitogenic activities on human cancers and examine the cellular and molecular mechanisms. This project aims at isolating these terpenes and evaluate their effects on cancer cell growth, cell cycle, apoptosis and endoplasmic reticulum and NFRB activities.

M Hedaya (PI), M E Abdel-Hamid, OA Phillips (Cols). PP01/13 from RS, Kuwait University. Comparative pharmacokinetic and tissue distribution study of selected antibacterial oxazolidinone derivatives. Budget KD 26,870. 2014-2016

Linezolid is an antibiotic that belongs to the class of oxazolidinones which was approved by the FDA in 2000 for the treatment of infections caused by resistant bacteria. Many oxazolidinone derivatives were not approved for clinical use because of issues like inadequate pharmacokinetic properties, poor safety profile, or low aqueous solubility. The main objectives of this research project is to compare the pharmacokinetic properties of linezolid and two novel oxazolidinone derivatives following IV and oral administration in rabbits. The tissue distribution and major metabolites of the investigated compounds excreted in the rabbit's urine will be identified. The results of this research project can indicate; if these new derivatives are appropriate for IV and oral administration for the treatment of infections caused by resistant bacteria.

A El Hashim (PI), S Akhtar, W Renno, M Khajah, I Benter (Cols). PT 01/12 from RS, Kuwait University. Studies on the role of the EGFR receptor and its signaling mechanisms in asthma. Budget KD 48,963. 2013-2016

Epidermal growth factor receptor (EGFR) is involved in asthma its downstream signaling molecules still remain uncharacterized. We have recently shown, in a murine model of asthma, that treatment with Ang-(1-7) attenuated ovalbumin-induced airway inflammation but whether this is via inhibition of EGFR and/or its downstream signaling molecules is unknown. The overall goal of this grant is to 1) characterize the specific EGFR signaling pathways (ERK1/2, NF-kB and PI3K) involved in asthma 2), determine whether EGFR activation is src dependent 3), determine if Ang-(1-7) mediates its beneficial effects in asthma via inhibition of EGFR activation, its downstream signaling molecules (ERK1/2, NF-kB and PI3K) and src and 4), determine if EGFR activation induces pro-inflammatory cells chemotaxis and/or affects their apoptosis.

W Masocha (PI) PT01/09 from RS, Kuwait University. Determination of supraspinal changes and evaluation of the activity of enaminones in rodent models of chemotherapy-induced neuropathic pain. Budget KD 84,070. 2011-2015

The aim of this project was to study supraspinal changes in paclitaxel (chemotherapy)-induced neuropathic pain (PINP) and to evaluate the activity of enaminones in mice and rat models of PINP. Our findings indicate that: 1) During PINP there are changes in the gene expression of GABAergic, glutamatergic and other molecules in the anterior cingulate cortex (ACC). 2) During PINP there are electrophysiological changes in the ACC, possibly caused by a GABA deficit. 3) The enaminone compound E139 has antinociceptive activity that is dependent on GABA receptors. E139 also attenuate PINP. Thus, this project identified possible therapeutic targets e.g. GAT-1, and therapeutic agents for PINP e.g. the enaminone compound E139.

M Khajah (PI), YA Luqmani (Col). Research Project PT02/11 from RS, Kuwait University. Studies on the association between estrogen receptor loss and modulation of cell scattering and invasion in human breast cancer. Budget KD 62,000. 2012-2016

We established several breast cancer cell lines that acquire a permanent ER-depleted endocrine independent phenotype (using siRNA targeting). These cells exhibit a series of changes in morphology and display enhanced invasiveness accompanied by a modified gene expression profile indicative of epithelial-to-mesenchymal transition (EMT). The aim of this project is to 1) examine the invasive and the scattering capability of these cells in response to growth factors, 2) identify the signaling molecules responsible for these effects, 3) determine the effectiveness of tyrosine kinase inhibitors, and 4) investigate whether permissive re-expression of ER can reverse the EMT process.

M Khajah (PI), YA Luqmani (Col), M Fateel (Contributor). Research Project PT02/12 from RS, Kuwait University. Assessment of the role of Ang 1-7 in inflammatory bowel disease using the mouse DSS-colitis model. Budget KD 46,800. 2013-2016

Little is known about the role of ACE2/Ang 1-7/*mas* receptor axis in inflammatory conditions. Enhanced ACE2 expression has been observed in patients with IBD suggesting a role in its pathogenesis. The aim of this project is to 1) establish the DSS model in mice, 2) to determine whether Ang 1-7 modulates colitis severity 3) to measure tissue levels of several cytokines and chemokines, Ang II and *mas*-R, 4) to determine the effect of Ang 1-7 treatment on the degree of phosphorylation of p38 MAPK, ERK ½, and Akt, and 5) to test the effect of Ang 1-7 in modulating the degree of neutrophil chemotaxis, release of reactive oxygen species and apoptosis.

S Kombian (PI), M Qaddoumi, OA Philips (Cols). Research Project PT02/14 from RS, Kuwait University. Characterization of anticonvulsant effects of PH192, a novel oxazolidinone. Budget KD 4000. 2014-2016

We demonstrated recently that a series of novel oxazolidinone compounds has anticonvulsant activity using the 6Hz seizure model. Our research proposal seeks to determine the spectrum of activity and mechanism of actions of oxazolidinone PH192. We will perform extracellular recording of synaptic and compound action potentials in rat hippocampal slices and evaluate the anticonvulsant effect of PH192 in an *in vitro* seizure model. Finally, we will evaluate its anticonvulsant activity on maximal electroshock (MES) *in vivo* model. This work with PH192 may determine its potential towards clinical use for the treatment of epilepsy.

W Masocha (PI), SS Parvathy (Co-I). PT01/15 from RS, Kuwait University. Studies on the effect of gamma-aminobutyric acid transporter-1 (GAT-1) inhibitors on paclitaxel-induced neuropathic pain. Budget: KD 4000. 2015-2016

Paclitaxel, a chemotherapeutic drug used against breast cancer and other solid tumors, causes dose-dependent painful neuropathy in some patients. Recently, we found that during paclitaxel-induced neuropathic pain there is significant increase in gamma-aminobutyric acid transporter-1 (GAT-1) expression in the brain (Masocha, 2015). In this project we will evaluate the ability of GAT-1 inhibitors to prevent the development of and/or treat established paclitaxel-induced thermal hyperalgesia and cold allodynia in mice. Our preliminary studies suggest that a selective GAT-1 inhibitor, NO-711, has antihyperalgesic effects in mice with paclitaxel-induced thermal hyperalgesia.

W Masocha (PI), N Al-Tannak (Co-I). PT02/15 from RS, Kuwait University. Determination of the role of the endocannabinoid system in the enhanced antinociceptive activity of the combination of indomethacin with minocycline in rodent models of pain. Budget: 89,900 KD. 2016-2019

Previously, we observed that co-administering indomethacin plus minocycline (IPM) to mice results in enhanced antinociceptive effects. The objective of this proposal is to examine how the endocannabinoid system play a role in the antinociceptive effects of the IPM combination. This will be evaluated by measuring the expression of endocannabinoid molecules in rodents with paclitaxel-induced neuropathic pain (PINP) treated with IPM; and also by administering antagonists of the cannabinoid receptors together with IPM to rodents with PINP using the hot plate test and dynamic plantar aesthesiometer. This study will provide us with knowledge of the mechanism of the IPM's synergistic effects and could also provide us a platform for further use of evidence based drug combination in the management of neuropathic pain.

M Khajah (PI), YA Luqmani (Co-I). PT01/14 from RS, Kuwait University. Studies on the role of the Na⁺/K⁺-ATPase channel in endocrine resistant breast cells. Budget KD 66,100. 2015-2018

The Na⁺/K⁺-ATPase (NKP) is an important ion transporter pump as well as an integral signal transduction molecule, whose expression profile is altered in various tumours including breast. In this proposal, we aim to study the effect of inhibiting the NKP (using two chemical inhibitors, and siRNA-mediated knockdown), on various cellular functions (such as proliferation, motility, *in vitro* and *in vivo* invasion) and its contribution in modulating various signaling molecules (such as ERK1/2, PI3K/Akt, and p38 MAPK) critical in breast cancer pathogenesis. This pump may offer a novel future therapeutic target to be used in breast cancer patients who have developed metastasis, aiming to improve therapeutic outcomes and enhance survival rate.

M Khajah (PI). PT03/15 from RS, Kuwait University. Effect of enaminone E121 on the murine DSS-colitis model. Budget KD 4,000. 2016-2017.

Enaminones are synthetic compounds with a well-characterized action in a number of preclinical models of seizure. Recent data also showed that they have effective anti-tussive, bronchodilatory and anti-inflammatory properties. In this project we propose to test whether E121 treatment can reduce colitis severity *in vivo* by using the murine dextran sulfate sodium (DSS)-model. Colitis severity will be determined by gross and histological assessments, daily weight changes and differential white blood cell counts. If E121 proves to have anti-inflammatory properties, we will determine its mechanism(s) of action in future projects.

M Al-Soraj (PI), M Khajah (Co-I) YA Luqmani, A Roidl (Contributors). PP 01/14 from RS, Kuwait University. Restoration of alpha receptor functionality into mesenchymal-like invasive breast cancer cells. Budget KD 91,820. 2015-2018

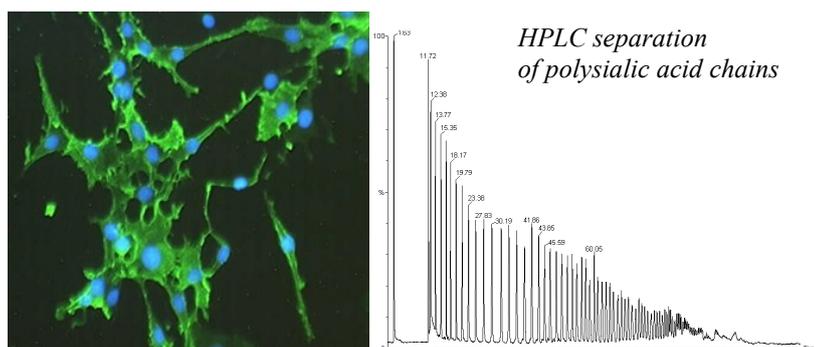
The objective of the proposal is to determine whether breast cells displaying mesenchymal properties can regain their epithelial character by re-expression of the lost estrogen receptor (ER) and E-cadherin by transfection of appropriate constructs into the ER-ve tumour or transiently by exposure to de-methylating agents and histone deacetylase inhibitors. Another strategy will be to introduce ER protein directly into the ER silenced cells. We will then assess their properties with respect to morphological behavior, gene expression profile, and functional assays (such as motility and invasion).

N Al-Tannak (PI), OA Phillips (Co-I). PC01/16 from RS, Kuwait University. Development and validation of analytical method for analyzing a new antibacterial N-nitrofurancarboxyl glycinyl substituted oxazolidinone. KD 2,500, 2015-2016.

Oxazolidinones possess potent antibacterial activity against Gram-positive bacteria pathogens such as methicillin-resistant *Staphylococcus aureus* (MRSA), penicillin-resistant *Streptococcus pneumoniae* (PRSP), vancomycin-resistant enterococci (VRE) and *Mycobacterium tuberculosis*. We recently identified that a novel glycinyl-oxazolidinone derivative, PH 189, synthesized in our lab showed potent *in vitro* antibacterial activity against Gram-positive pathogenic bacterial strains, and plans are on-going to investigate *in vivo* efficacy in a *M. tuberculosis* mouse infection model. This proposal will develop a validated analytical method to indicate accurately and precisely the concentration of PH189 in plasma and in the presence of other biological compounds, and will indicate its instability/stability by using a fast and reliable LC-MS instrumental techniques.

A Nada (PI), Y Al-Basarah (Co-I), F Bandarkar (Contributor). PP02/13, from RS, Kuwait University, Preparation and evaluation of ibuprofen nano-suspensions to improve dissolution. KD 4000, 2014-2015.

Poorly water soluble entities are difficult to develop as efficacious drug products using conventional formulation techniques resulting in decreased dissolution velocity, erratic absorption and poor bioavailability. The non-steroidal anti-inflammatory drug ibuprofen (IB) will be selected as a model drug in the present study, due to its known hydrophobic nature and gastro intestinal side effects. The objective is the preparation of IB nanosuspensions by the ultra-homogenization technique and *in vitro* evaluation of the optimized nanosuspensions. Furthermore, the project involves screening of various hydrophilic polymers to study their influence on inhibiting re-aggregation of the nanoparticles and on solubility of IB based on phase solubility studies.



Polysialic acid immunostaining of C6 glioma cells transfected with STX (N Al Hassawi)

Co-investigator in projects outside the Faculty

S Akhtar (PI), A El-Hashim, M Yousef, I Benter (Co-Is). MR01/13 from RS, Kuwait University. Characterization of polyamidoamine dendrimer-mediated modulation of EGFR/ErbB1 signaling in vitro and in vivo: The effect of dendrimer generation, surface chemistry and branching architecture. Budget: KD 86,800. 2013-2016

Polyamidoamine (PAMAM) dendrimers were the first complete nano-sized dendrimer family to be synthesized, characterized and commercialized. In this grant we investigated two commercially available PAMAM dendrimers, with the same cationic surface chemistry, but with different branching architectures (fragmented (SF) vs intact (PF)), on their ability to modulate *in vivo* phosphorylation of MAPKs, as well as the upstream EGFR, in the normal and/or diabetic rat kidney.

MS Abaza (PI), KY Orabi (CoI), SL02/10 from RS, Kuwait University, Computer modeling-assisted design and semisynthesis of natural flavonols analogues as potent proteasome Inhibitors in Vitro, in male and female cancer cells: apoptosis inducing and chemosensitization potencies. Budget KD 77,050. 2014-2017

This study aims at studying the potential of some natural flavonols and their semisynthetic analogues, pre-designed and examined by *in-silico* docking, to inhibit proteasomal activity *in vitro* in a cell-free system and to target the ubiquitin-proteasome pathway (UPP) in human male and female tumors, including prostate, breast, and ovary, cancer cell lines, and to study the underlying molecular mechanisms of action of natural flavonols and/or their semisynthetic analogues through analysis of genes controlling cell cycle, apoptosis and tumor signal transduction.

C Ezeamuzie (PI), OA Phillips (Co-I). MR01/14 from RS, Kuwait University. A study of oxazolidinone hydroxamic acid derivatives as novel inhibitors of leukotriene biosynthesis, Budget KD 94,873. 2015-2018

We recently demonstrated that series of oxazolidinone hydroxamate derivatives have potent inhibitory effect on the release of LTC₄ following antigen/IgE-mediated activation of mast cells. In this research proposal, we plan to synthesize a series of hydroxamate oxazolidinone analogues and characterize their biological activity, structure-activity relationships and mechanism of action, focusing on their effects on LT release during IgE/antigen-dependent and -independent activation of mast cells *in vitro* and *in vivo*. Cultured and IgE-sensitized rodent mast cells, as well as human blood leukocytes will be stimulated *in vitro* and the effect of the compounds on the release of LTs and degranulation determined. The mechanism of action of the lead compound will be investigated by studying its effect on the activity of the 5-LO enzyme relative to cyclo-oxygenase (COX) enzymes and other enzymes or signaling molecules in the AA metabolic pathway.

Facets of Pharmaceutical Research & Practice

Pharmaceutical analysis



Organic chemistry



Preparation for laboratory class



Cell counting



Patient simulator

Western blotting



List of Publications



- Abdelazim Z, Fathy A, Ahmad L. and Aly N (2016) Preparation and *in-vitro/in-vivo* evaluation of Metformin hydrochloride rectal dosage form. *Pharm Anal Acta*. 7:1 (Suppl), p.101.
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Mohammed FH, Khajah MA, Yang M, Brackenbury WJ, Luqmani YA (2016). Blockade of voltage-gated sodium channels inhibits invasion of endocrine-resistant breast cancer cells. *Int J Oncol* 48: 73-83.

Nashawi H, Masocha W, Edafiogho IO, Kombian SB (2016). Paclitaxel Causes Electrophysiological Changes in the Anterior Cingulate Cortex via Modulation of the γ -Aminobutyric Acid-ergic System. *Med Princip Pract*. 25:423-8.

Novotny L, Al-Mutairi S.(2016). Antiretroviral therapeutics with different mechanisms of action on HIV infection. *Res J Pharm Biol Chem Sci* 7, 90-103.

Novotny L, Al-Tannak N.F, Hunakova L (2016): Protein synthesis inhibitors of natural origin for CML therapy: Semisynthetic Homoharringtonine (Omacetaxine Mepesuccinate), *Neoplasma* 63, 495-503.

*Phillips OA, D'Silva R, Bahta TO, Sharaf L, Udo EE, Benov L, DE Walters (2015). Synthesis and biological evaluation of novel 5-(hydroxamic acid)methyl oxazolidinone derivatives. *Europ. J. Med. Chem.* 106:120-131.

*Phillips OA, Sharaf LH (2016). Oxazolidinone antimicrobials: a patent review (2012-2015). *Expert Opin Ther Patents* 25(5):591-605.

Qabazard B, Stürzenbaum SR (2015). H₂S: A new approach to lifespan enhancement and healthy ageing? *Handb Exp Pharmacol.* 230: 269-287.

Rami A, Alsoud A, Al-Tannak N, Bojabarah H, Orabi KY (2015). AB-Fubinaca, a Synthetic Cannabinoid in "Funky Green Stuff™", *Int J Pharm Pharmaceut Sci.* 7(10), 111-115.

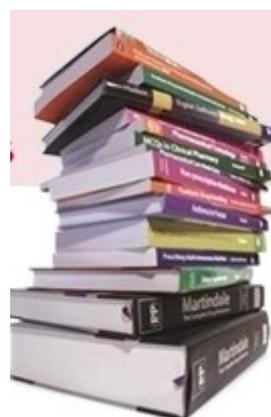
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Sharma JN (2016). Bradykinin system and type 2 diabetes. *International Journal of Clin Pharmacol Pharmacotherap (USA).* 1; 109. doi..org/10.15344/2016/ijccp/109

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Waheedi M, Awad A, Enlund H, Hatoum HT (August 2016) The relationship between patients' knowledge of diabetes therapeutic goals and self-management behavior. *Int J Clin Pharm* Accepted for publication.

(* in Q1 journals)



List of Conference Presentations

Oral Presentations

Al-Ghanem S (2015). Strategies to overcome obstacles in using active learning. The First Forum on Advancing Pharmacy Education in the GCC and Middle-East, Qatar.

Al-Taweel D (2015). Objective Structured Clinical Examinations in Pharmacy: Pros and Cons. Advancing Pharmacy Education in the GCC and Middle East, Qatar.

Alowayesh MS, Bayoud T, Al-Hashim A, Moreau P (2016) Development of an assessment framework for a competency-based curriculum in pharmacy education. Kuwait International Medical Education Conference. Kuwait.

Al-Soraj M, Al-Taweel D, Orabi K, Qaddoumi M, Hedaya M, Moreau P (2016) Mapping pharmaceutical services to competency profiles as a means to develop a competency-based curriculum in pharmacy. Kuwait International Medical Education Conference, Kuwait.

Awad A, Alsaleh FM. (2016) 10-Year Risk Estimation for Type 2 Diabetes Mellitus and Coronary Heart Disease in Kuwait: A Cross-sectional Population-Based Study. 6th Asia-Pacific Pharma Congress. Kuala Lumpur, Malaysia.

Katoue M, Rassafiani M, Baghdady M, Al-Enezi G, Aljafar E, Bouzubar F, Yaseen H, Moreau P (2015). Competency framework for the development of an inter-professional education curriculum at the health sciences center of Kuwait University (accepted as workshop). First Middle eastern conference on Inter-professional Education, Doha (Qatar).

Khajah MA, Mathew PM, Alam-Eldin NS, Luqmani YA (2015). 20th World Congress on Advances in Oncology and 18th International Symposium on Molecular Medicine. Effect of alkaline pH on endocrine resistant breast cancer cells.

Khajah MA, McCafferty DM (2016). The role of Granulocyte-macrophage colony stimulating factor (GM-CSF) in colitis. 9th Euro-Global Gastroenterology Conference, Valencia, Spain.

Khajah MA, Fateel M, Kethireddy A, Luqmani YA (2016). Anti-inflammatory effect of angiotensin 1-7 (Ang 1-7) in the mouse DSS colitis model. 9th Euro-Global Gastroenterology Conference, Valencia, Spain.

Luqmani YA (2015). Endocrine resistance in breast cancer. 7th Global Summit on Cancer therapy, Dubai.

Luqmani YA (2016). Extracellular pH- A Neglected Player In Cancer Cell Motility And Invasion. 4th Kuwait Conference of Chemistry, KCC 2016, Chemistry & Life Sciences, Regency Hotel, Kuwait.

Luqmani YA, Al Ateyah A (2016). Influence of estrogen receptor silencing on miRnome of breast cancer cell lines. 21st World Congress on Advances in Oncology and 19th International Symposium on Molecular Medicine, Greece.

Masocha W (2016). Gene expression profile of sodium channel subunits in the anterior cingulate cortex during experimental paclitaxel-induced neuropathic pain. 7th European Congress of Pharmacology, Istanbul, Turkey.

Matar KM (September 2016). Topiramate quantitation in human plasma by liquid chromatog-

raphy-tandem mass spectrometry: Application to therapeutic drug monitoring. Chromatography 2016 Conference; Amsterdam, Netherlands.

Moreau P (2016) How to translate a competency framework into a competency-based curriculum: experience from Kuwait. Congress of the Association of the Colleges of Pharmacy of the Arab World, Beqaa, Lebanon.

Moreau P. Development of a Competency-based PharmD Curriculum (2015): Hands-on experience in Kuwait. Dean's Forum, FIP, Dusseldorf, Germany.

Moreau P, Waheedi, M. (August 2016). Dean's leadership : what is expected and how well they feel prepared. FIP-AIM forum, Buenos Aires, Argentina.

Orabi KY (2016). "Legal Highs, Are They Legal?", Drugs Addiction and Treatment: at a Glance, One Day Conference, Kuwait University, Kuwait

Phillips OA (2016). Chemistry and Medicinal Properties of Oxazolidinone Derivatives. 4th Kuwait Conference of Chemistry, KCC 2016, Chemistry & Life Sciences, Regency Hotel, Kuwait

Waheedi M (Feb 2016) Training needs assessment". A two-day workshop conducted for the staff of life science academy, Kuwait.

Waheedi M (2015). Readiness for Change within Healthcare Services in Kuwait. Kuwait Change Management Conference, Kuwait.

Poster Presentations

Abdel-Meguid E, Waheedi M, Newey P (2016) Health related quality of life in type 2 diabetic patients at Dasman Diabetes Institute. 21st Health Sciences Centre Poster Conference, Kuwait.

Adi L, Al Sabah S, Luqmani YA (2016). Investigating amino acid residues that contribute to the constitutive activity of the GIP receptor. 21st HSC Poster Conference, Kuwait.

Akhtar S, El-Hashim AZ, Chandrasekhar B, Attur S, Benter IF (2016). On the toxicology of drug delivery systems: polyamamidoamine dendrimers inhibit angiotensin II-mediated EGFR and ErbB2 trans-activation. 7th European Congress in Pharmacology, Istanbul, Turkey.

Akhtar S, Al-Zaid B, El-Hashim AZ, Chandrasekhar B, Attur S, Yousif MH, Benter IF (2015). The effect of Polyamidoamine Dendrimers on epidermal growth factor receptor Signaling *In Vitro* and *In Vivo*. Physiology Meeting, Cardiff UK.

Al-Asfour A, Waheedi MA, Koshy, S (2016) A survey of patients' experience of orthognathic surgery: Health related quality of life and satisfaction. 21st Health Sciences Centre Poster Conference, Kuwait.

Al-Ghanem S, Al-Taweel D, Al-Haqan A, Koshy S (2016).Advances in Pharmacy Education: Development and validation of an OSCE in an undergraduate pharmacy program'. Kuwait International Medical Education Congress, Kuwait.

Al-Ghanem S, Al-Doukhi S, Abu Hussain E (2016) National Survey of Aminoglycosides dosing and monitoring in Kuwait General Hospital. 21st Health Sciences Centre Poster Conference, Kuwait.

Al-Haqan A, Al-Taweel D, Koshy S, Al-Ghanem S (2016). Pharmacy Students' Perception and Evalua-

tion of an Undergraduate Objective Structured Clinical Examination, Kuwait International Medical Education Congress, Kuwait.

Alowayesh MS, Waheedi S, Moreau P (2015) Simulation Based Learning to Teach Dispensing and Counselling in Patients' Native language to Pharmacy Students. Poster presentation at the First Middle Eastern Conference on Inter-professional Education. Doha, Qatar.

Alowayesh MS, Mathew R, Alrabei S (2016) Impact of Age on Presentation, Management, and Outcomes of Acute Coronary Syndromes in Kuwait. 6th Pharmaceutical care Conference, Muscat, Oman.

Alowayesh MS, Koshy S (Feb 2016) Assessing students' attitudes on the required final year pharmacy service project. Kuwait International Medical Education Conference, Kuwait.

Al-Qenaie F, Al-Kazemi A, Al-Khatrash S, Al-Taweel D (2016). Attitudes of Healthcare Providers With Regard To Clinical Pharmacy Service in Amiri Hospital. 21st HSC Poster Conference, Kuwait.

Al-Sultan A, Bojbarah H, Hassan HM Orabi KY (2016) Isolation and Identification of Disguised Methamphetamine in Seized Preparations, 9th Annual Student Research Poster Day, Health Sciences Center, Faculty of Allied Health Sciences, Kuwait University, Kuwait.

Al-Tannak N (2016) A Validated UPLC-UV Method for Bisphenol A (BP-A) Levels Detection in Imported Plastic Toys and Drinking Bottled Water in Kuwait". 2nd Kuwait International Conference on Life Sciences (KICLS 2016), Kuwait University.

Al-Taweel D, Al-Ghanem S, Al Haqan A, Koshy S, Al Baghdady M. (2015). Standard Setting Methods in Pharmacy Objective Structured Clinical Examinations: A Kuwaiti experience. The First Forum on Advancing Pharmacy Education in the GCC and Middle-East, Qatar.

Bandarkar F, Albasarah Y, Nada AH (2015) Evaluation of Ibuprofen Nano-Particles Prepared by Ultra-Homogenization, AAPS Annual Meeting and Exposition, Orlando, Florida, USA.

El-Hashim AZ, Mathews S, Spina D (2016). The A₁ adenosine receptor is a novel inhibitory receptor that regulates the cough reflex via a central mechanism of action San Francisco, California American Thoracic society, USA.

Hedaya MA, Abdel-Hamid ME, Kehinde EO, Phillips OA.(2015) Comparative pharmacokinetic study of two antibacterial oxazolidinone derivatives. AAPS Annual Meeting, Orlando FL.

Katoue M, Rassafiani M, Baghdady M, Aljafar E, Bouzubar F, Yaseen H, Moreau P (2016). Development of Competency-based Interprofessional Education Curriculum at the Health Sciences Centre of Kuwait University (Feb 2016) Kuwait International Medical Education Conference, Kuwait

Katoue MG, Awad AI, Schwinghammer TL, Kombian SB (2016).. Pharmaceutical care education in Kuwait: pharmacy students' perspectives. 21st Annual Health Sciences Poster Conference, Kuwait.

Hedaya MA, Thomas V, Abdel-Hamid ME, Kehinde EO, Phillips OA (2016). Comparative pharmacokinetic study of three antibacterial oxazolidinone derivatives. 21st Annual Health Sciences Centre Poster Conference, Faculty of Medicine, Kuwait University, Kuwait.

Novotna B, Abdel-Hamid MA, Vladimir K, Jiri J, Karl H, Vit R, Josef B, Frantisek S (2015) A liquid chromatography MS/MS metabolomics study of COPD patients. Europ Resp J (Abstract), ERS International Congress, Amsterdam, Netherlands.

Novotny L, Abdel-Hamid ME, Mahmoud F (2015) GC-MS analysis of active constituents of the herbal mixture used by diabetics in Phillipines and Middle East. OMICS International Conference, Dubai.

Orabi KY, Abaza MS,. ElSayed KA, Elnagar AY, Faggal SI, Kurien SS (2016) Computer Modeling-Assisted Design and Synthesis of Flavonol Derivatives as Proteasome Inhibitors. 16th Annual International Conference on the Science of Botanicals and 5th Annual Interim American Society of Pharmacognosy Meeting, Oxford, MS, USA.

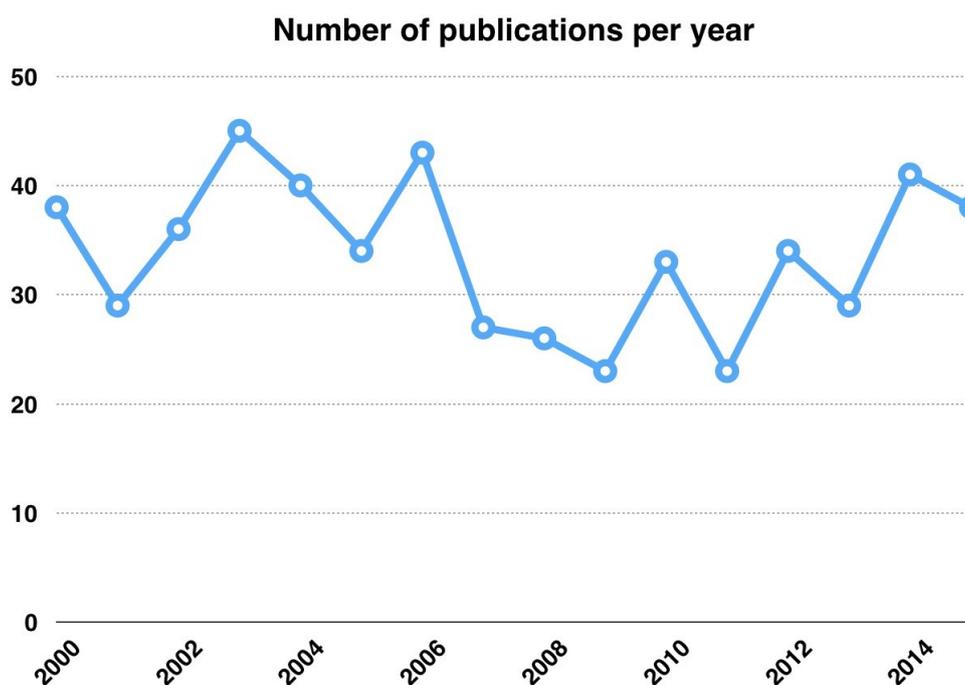
Pramod S, Gabriel J, Luqmani YA, Mustafa AS (2016). Effect of long-term subculturing/passaging on fluorescence emitted by GFP-transfected E2 Cell line using flow cytometry and confocal microscopy. 21st HSC Poster Conference, Kuwait.

Safar HA, Shaban F, El-Hashim AZ, Amoudy H, Mustafa AS (2016) Molecular cloning, expression, purification and immunological characterization of low Molecular weight *Mycobacterium tuberculosis* proteins in mice, 21st Health Sciences Center Poster Conference, Kuwait University, Kuwait.

Zaghloul A, Khan M (2016). Development, Assessment and Stability Studies of Naloxone Hydrochloride Sublingual Drug Delivery System, 6th Asia-Pacific Pharma Congress, Kuala Lumpur, Malaysia.

Zaghloul A, Abd-Allah F, Lila A, Nada A (2016). Bioavailability assessment of metformin hydrochloride rectal dosage forms in human volunteers, 21st HSC Poster Conference, Kuwait University by Faculty of Medicine.

Zaghloul A, Abd-Allah F, Lila A, Nada A (2016) Preparation and *In-Vitro/In-Vivo* Evaluation of Metformin Hydrochloride Rectal Dosage Form. 8th International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems, Madrid, Spain.



Awards & Recognitions

Best Poster Awards

Alghanem S. Standard Setting Methods in Pharmacy Objective Structured Clinical Examinations: A Kuwaiti experience. First Forum on Advancing Pharmacy Education in the GCC and Middle-East, Qatar (December 2015) . Second place poster award.

Best Podium Presentation

Alwayesh M. Development of an assessment framework for a competency-based curriculum in pharmacy education. Kuwait International Medical Education Conference, Kuwait, (February 2016).

Patents

Ahmed El-Hashim, Samuel Kombian, Ivan Edafiohgo from the Faculty of Pharmacy and Mariam Yousif from the Faculty of Medicine received a distinction of research excellence and achieving for the Patent” *Antitussive and Bronchodilator Uses for Enaminone Ester*” (Patent No: US 9,238,019 B2). This was the first patent application to go through Kuwait University Patent Office. Granted February 2016.



Invention is the mother of necessity

Individual contributions

Sarah Alghanem

- Part-time Renal Transplant Clinical Pharmacist, Hamed Alessa Organ Transplant Centre, Ministry of Health, Kuwait.
- Oral presentation for the medical team, Hamed Alessa Organ Transplant Centre, MOH on :“Revisiting old antimicrobial drug in the era emerging of MDR: Colistin” (10th January, 2016).
- Oral presentation for the pharmacists team, Iben Sena Hospital, MOH on: “Revisiting Old Antimicrobial drug in the era emerging of MDR: Colistin” (4th April, 2016).
- Oral presentation for primary care pharmacists at Al Sager Polyclinic, MOH on: “Management of respiratory tract infections in the primary care” (27th December, 2016).

Dalal Al-Taweel

- Responsible for the “Medicine Information Centre” at FOP to provide health professionals at MOH with necessary information regarding the therapeutic effects, doses and adverse reactions of medicines.

Aly Nada

- Training consultant, KSPICO, Kuwait.

Khaled Orabi

- Consultant at the General Administration of Criminal Evidences, Ministry of Interior, Kuwait. Provide consultations in the field of drugs of abuse, put a plan to establish the Departments of Narcotics and toxicology.

Mohamed Abdel-Hamid

- Provide analytical services of screening of inherited metabolic diseases in sick infants (Pediatric Hospitals, MOH), forensic analysis of illicit drugs in drug abusers and postmortem cases (Criminal Laboratory, MOI) using GC-MS and LC-MS/MS facilities.

Kamal Matar

Provide consultation service of therapeutic drug monitoring (TDM) for antiepileptic and anti-cancer drugs in patients with epilepsy or cancer, Specialized Clinics, MOH, Kuwait.

Pierre Moreau

Development of a Competency-based PharmD Curriculum: to fuel the future of pharmacy education in Kuwait. Seminar series of the Faculty of Medicine Kuwait University. (November 2015).

Continuing Education Programme

- Medicines Information Skills for Pharmacists. Dasman Diabetes Institute, *Eman Abahussain, Dalal Al-Taweel, Asmaa AL-Haqan, & Shaimaa Abdel-Maguid*, Department of Pharmacy Practice, Faculty of Pharmacy, Kuwait University. (Workshop) October, 11-13, 2015.
- Neurotherapeutic effect of Ginkgo Biloba and its isolated ginkgolides in a crush injury animal model. *Dalal Al Adwani*, Pharmaceutical Sciences MSc Program, Faculty of Pharmacy, November 9, 2015.
- Interprofessional Collaboration: the US Military Experience. Rohin Kasudia, Emily Grieser, Preston Wilson, and April Gans, Faculty of Pharmacy, Jan 24, 2016.
- Translating research into practice: Improving patient outcomes by optimizing medication use. *Syed Tabish Zaidi*, Lecturer/Clinical Pharmacy Tutor School of Pharmacy/Royal Hobart Hospital, University of Tasmania, Australia, Jan 27, 2016 Faculty of Pharmacy
- Dissolution enhancement of Atorvastatin as a model of poorly soluble drug. Pharmaceutical Sciences MSc Program, *Reham Al-Kazmi*, Pharmaceutical Sciences MSc Program, Faculty of Pharmacy, Feb 22, 2016.
- Science at Strathclyde University – Where, Why and How? The way for Better future, Better Research and Effective Collaboration. *Ibrahim Khadra*, Assistant Professor and International Collaboration Coordinator, The Strathclyde Institution of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK, Feb 29, 2016.
- Enhancement of paclitaxel induced inhibition of breast cancer cells by COL-3. *Ruba Al-Tabba*, MSc student, Molecular Biology MSc Program, March 14, 2016.
- miRnome profiling of breast cancer cell lines with respect to estrogen receptor status in breast cancer cell lines. *Alyaa Al-Ateyah*, MSc student, defense of MSc thesis, Molecular Biology MSc Program, March 17, 2016.
- Specific Targeting of Cancer Relevant Pathways with Marine Natural Products. *Hendrik Luesch*, Debbie and Sylvia DeSantis Chair in Natural Products Drug Discovery and Development; Professor and Chair of the Department of Medicinal Chemistry, College of pharmacy, University of Florida, USA, March 23, 2016
- Diagnosis of Poisoning? *Robert James Flanagan*, King's College Hospital, UK, March 24, 2016.
- Impact of Drug Information Resources on Healthcare practice (Lexicomp Online). *Hany Rakha*, Saudi Arabia & GCC, Clinical Drug Information: Facts & Comparisons| Lexicomp| Medi-Span, April 20, 2016.
- A brief review of the undergraduate and graduate programs in drug development offered at the Faculty of Pharmacy of the University of Montreal, *Brian White-Guay*, Faculté de Pharmacie, Université de Montréal, Canada, April 19th, 2016.
- Exploring Alternative Educational Programs in Drug Development: the Summer School of Medicines (SSM) Initiative. *Brian White-Guay*, Faculté de Pharmacie, Université de Montréal, Canada, April 20th, 2016.
- Nanotherapeutics for improved efficiency, targetability and safety of medicines. *Noha Nafee*, Faculty of Pharmacy, Alexandria University, Egypt, May 16, 2016.



Office of Strategic Alliances

A strategic alliance is an agreement between two or more parties to pursue a set of agreed upon objectives needed while remaining independent organizations. Over the past year, the Faculty of Pharmacy has been seeking to further develop and grow its service offering to healthcare professionals and the community as well as being a key leader in evolving the nature of pharmacy practice and education in Kuwait, in line with international practices. The most common way to grow is through the development of a strategic partnership network; this can help to make programs and projects relevant, more successful and more efficient. Strategic alliances can take different forms, have different objectives depending on the nature of the association and be highly influenced by the local environment and needs. Potential partners include counterpart associations, government agencies, publishers, congress organizers, management companies, industry or other for-profit entities.

The Office of Strategic Alliances is responsible for the development of such alliances to achieve the following goals:

- Promote the Faculty's educational products (eg CPD) and services (eg specialized laboratory testing) to a broader user base.
- Jointly develop and enhance pharmacy education in Kuwait by partnering with organizations that have services or skills complementary to those of the Faculty, eg: assessment strategies, quality improvement, teaching of clinical pharmacy, etc.
- Join forces with local counterparts to drive a common agenda, eg advocacy or legislative agenda for mandatory CME credits for practising pharmacists, acceptance and implementation of an expanded scope of pharmacy practice, establishment of standards of pharmacy practice, etc.

Such strategic alliances would enable the Faculty to capitalize on the individual strengths of each partner organization, provide contacts and links to local communities and stakeholders who may be critical to the success of the launch or implementation of projects and services. In addition, it involves shared responsibility and accountability for the development and execution of programs or services and provides more efficient opportunities and expertise for each participating organization. This dedicated office should allow us to follow up more closely on our different initiatives and be more responsive when new partners solicit us or new projects are proposed to us.

Specifically, the office is responsible for:

- Mapping areas of interest for strategic alliances and prioritizing them
- Identifying external partners with whom to create alliances
- Responding to external request for partnership with the Faculty
- Developing and implementing contractual agreements with external partners
- Obtaining approval from the Dean's Executive Committee for the proposed alliances
- Developing objectives and action plans for each identified partner
- Acting as the main point of contact for external partners
- Following up on action plan and reporting on progress



Director, Dr Jacinthe Lemay

Kuwait Pharmacy Bulletin

The Kuwait Pharmacy Bulletin (KPB) is registered internationally with ISSN number 1028-0480 and published by Kuwait University Press. The editorial team consists of Yunus Luqmani, Leyla Hassan Sharaf and Samuel Koshy. It continues to be produced quarterly by the Faculty of Pharmacy. By December 2016 we will have completed 20 annual volumes amounting to a total of 80 issues since its inception in the spring of 1997.

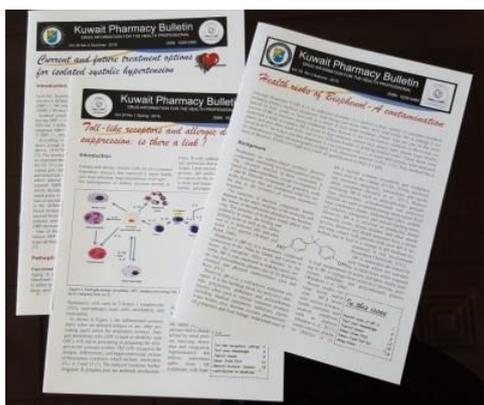
The Bulletin is a non-profit publication distributed free of charge to academics within the Kuwait University Health Sciences Centre and other Faculties of the University, to hospital pharmacies and other Ministry of Health centres and practising pharmacists around the country. In addition it is also sent to a number of Universities and Medical/Pharmacy schools throughout the Gulf and Middle eastern regions. Distribution has been continued under the supervision of Mr Faleh Al Ajmi and Ms Anood Al Faraaj.

Our principal aim is to provide instructive articles on a range of drug-related and medical topics that we hope will be of interest to a wide academic and professional readership in both pharmacy and medicine. We are particularly reaching out to practitioners to encourage them to maintain an active interest in the scientific progress and achievements in the medical field. We feel this should be one of the objectives of the University, to disseminate knowledge beyond our confines. To our knowledge this bulletin remains the only such production from the Health Sciences Centre.

We have continued with the standardised format of the bulletin which has been refined over the past several years. We have tried to introduce a diverse range of topics to promote the integration of pharmacy and medicine and to maintain its appeal to both the scientific and the general healthcare community. While we maintain the essentially scientific nature of the publication we also include a mix of less technical and general material to make for easier and lighter reading.

We have adhered to the 16 page production and its organisation into regular sections; a *lead article* dealing in detail with some aspect of pharmaceutical medicine, sections entitled *Test your knowledge* (which includes a prescription question), offering readers some MCQ brain teasers, *Topical issues and controversies* presenting new interesting developments around the world, *In the news*, presenting short articles of important events/medical milestones, *News from the FDA* giving information on newly approved medicines of general interest, as well as highlighting warnings about commonly used drugs and a list of *Newly registered products* approved by the MOH for use in medical practice in Kuwait. This information is provided by the Pharmaceutical and Herbal Medicines Registration and Control Administration Quality Assurance. In addition, we have introduced a section for news and events within the Faculty of Pharmacy, and some articles on the contribution of Islamic scholars to pharmacy and medicine.

Except for the lead article, the material included in the KPB is adapted, edited or compiled from a range of mostly web-based sources, taking copyright permission where appropriate. We have followed our past practice of asking our recently graduated students to provide the lead article from their final year research projects. We plan to continue this trend and encourage more participation from our student body.



Prof Yunus Luqmani
(Managing Editor)



Office of Consultations, Services and Training



The OCST was established on January 7, 2009. Its Organisational structure follows the one mentioned in the KU Presidential Decree number 1072 of May 11, 2008. The OCST is composed of three units; Consultations, Training and Accounting.

These three units are controlled by a board of representatives from all Departments of the Faculty, the Continuous Professional Development (CPD) officer and the Director.

Dr. Khaled Orabi (Director)
 Dr. Eman AbaHussain (Department of Pharmacy Practice)
 Dr. Mohsen Hedaya (Department of Pharmaceutics)
 Dr. Naser Al-Tannak (Department of Pharmaceutical Chemistry)
 Dr. Jacinthe Lemay (Department of Pharmacology and Therapeutics)
 Dr. Monerah Al-Soraj (CPD Officer)

Services offered during the last academic year:

- Analysis of sixteen narcotic herbal preparations from the General Administration of Criminal Evidences, Ministry of Interior.
- Analysis of six biological samples in criminal cases from the General Administration of Criminal Evidences, Ministry of Interior.
- Analysis of pharmaceutical preparations for the possible presence of controlled drugs. These preparations were referred to the OCST from Kuwait Drug and Food Control Administration.
- Consultations for detecting new synthetic cannabinoids, General Administration of Criminal Evidences, Ministry of Interior.
- Numerous over-the-phone consultations from the General Administration of Criminal Evidences, Ministry of Interior.
- Organizing and conducting "Pharmacotherapy Review Course" in collaboration with the Professional Training House. This course was run for a full month for a total of thirty five participants.

Dr Khaled Orabi (Director)



In November 2016, pharmacy students participated in several events during the annual *World Diabetes Day* organised by Dasman Diabetes Institute:

- Submitting visitors' information and status
- Informing visitors about healthy diet with the help of Dasman nutrition staff
- Evaluating patients' drug adherence
- Informing people about the importance of proper and safe disposal of expired drugs
- Blood glucose and blood pressure tests for visitors
- 3 minutes step testing offered by the medical fitness center of Dasman to visitors



“Go blue for diabetes”

There was also another awareness campaign that was organised at the Faculty of Pharmacy with assistance of staff from the Dasman Diabetes Institute. They helped in calculating the body mass index (BMI) of student volunteers and educating them about healthy diet.



Activities

Let's Draw a Smile Campaign

Several events were organised by KPSS for nearly a week to draw a smile on student faces:

- Blood donation
- Keep your smile with Boubyan
- Gifts were given to students and HSC workers
- Other events and visits



Special students deserve special treatment

KPSS organised an acceptance and excellence ceremony at Abdulhusain Abdulredha theatre for pharmacy students

Graduation ceremony



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قسم طلبة كلية الصيدلة وخريجها

أُقْسِمُ بِاللَّهِ الْعَظِيمِ أَنْ أُرَاقِبَ اللَّهَ فِي مُزَاوَلَتِي لِمِهْنَتِي، بَازِلًا فِي أَدَائِهَا جُهْدِي بِكُلِّ صِدْقٍ وَأَمَانَةٍ وَمُحَافِظًا عَلَى شَرَفِهَا وَسِرِّيَّتِهَا، وَمُتَعَاوِنًا مَعَ زُمَلَائِي بِمَا يُحَقِّقُ الرِّقْيَ وَالتَّقَدَّمَ فِي الرِّعَايَةِ الصِّيدَلَانِيَّةِ لِجَمِيعِ الْمَرْضَى.

وَاللَّهُ عَلَى مَا أَقُولُ شَهِيدٌ.

In the name of God, the most merciful, the most gracious

I swear in the name of God, the Greatest that I shall practice my profession within his guidance, that I shall put my ceaseless effort with loyalty and truthfulness, that I shall maintain its integrity and secrecy, that I shall be cooperative with all my colleagues for the sake of advancement and development in pharmaceutical care for all patients

May God be witness to all I said

*Who we are
is determined by what we do*



A pharmacist prepares medicines to treat a patient suffering from smallpox (17th-century Ottoman manuscript of Ibn Sina's Canon of Medicine).