PharmaShout

A monthly publication prepared by the college of pharmacy students at Al-Kitab University

November 2018 I Issue: 1

The College of Pharmacy at Al-Kitab University is a member of deans' forum of the pharmacy colleges in the world

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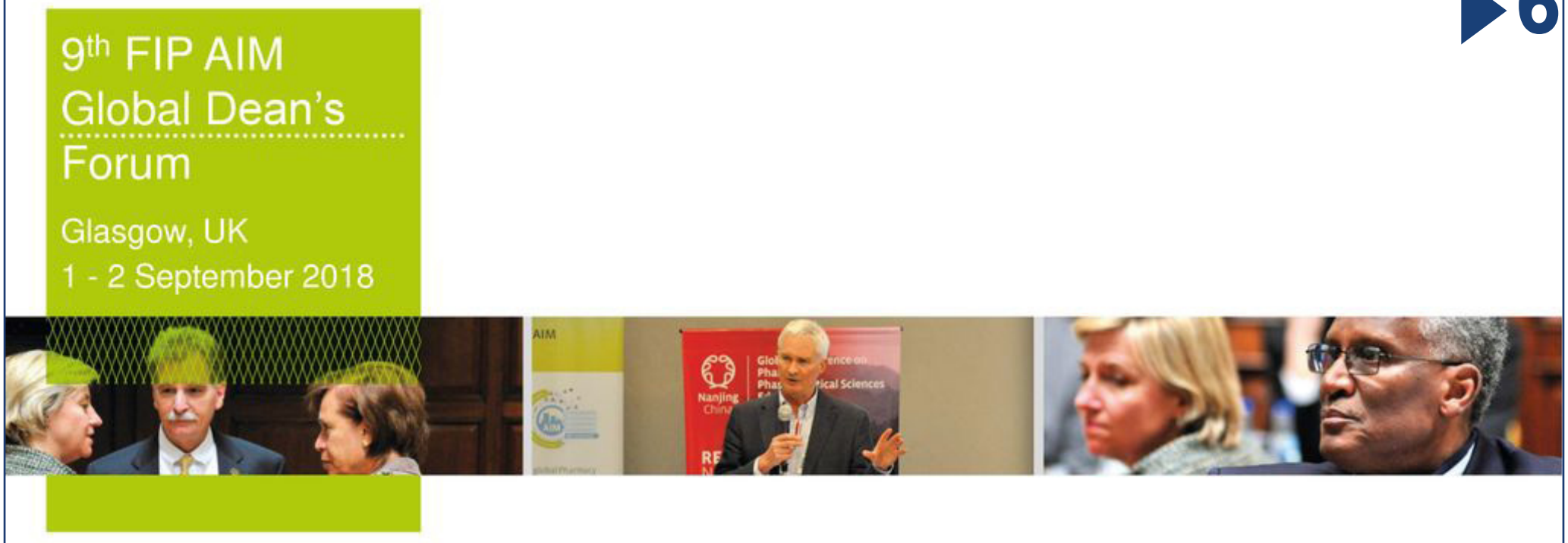

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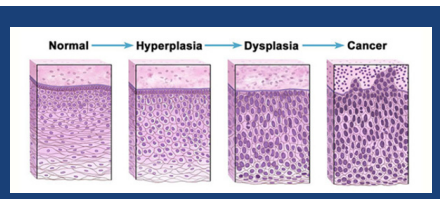

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Book Your Seats in the Active Schedule of College of Pharmacy at Al-Kitab University

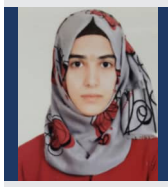
By
Associated Professor:
Nohad Al-Omari

In Al-Kitab University our energy at the college of pharmacy school is well spend to turn on the students' passion engines to their full power where actions are louder than words. Many events have been conducted in the campus but yet the coming events are on the next level of innovation and motivation where students' are contributing to the scientific, community and academic fields according to the well known international standards. As a translated example in this issue of PharmaShout, groups of Al-Kitab pharmacy students have worked smartly and hardly on producing high quality articles through covering the cutting edge topics in pharmaceutical sciences, by being guided to professionally read and summarize scientific articles that are published in high impact factor journals of both Clarivate (known as Thomson Reuters) and SCOUPS classification. This step is critically essential to prepare our students to the phase of publishing their own work at Al-Kitab laboratories in such journals. Hosting academic competitions of various types is our ongoing project that will put our students on the very first steps of competing with other students globally. Such events will take place at the college of pharmacy during the international days which are recognized by the United Nation including:

Feb. 4th : World Cancer Day
Feb. 11th International Day of Women and Girls in Science
Feb. 21st International Mother Language Day
Mar. 20th International Day of Happiness
Mar. 21st International Day of Nowruz & World Down Syndrome Day
Mar. 22nd World Water Day
Mar. 24th World Tuberculosis Day
Apr. 2nd World Autism Awareness Day
Apr 23rd World Book and Copyright Day
Apr. 26th World Intellectual Property Day

On each international day, pharmacy students and under the lecturers' supervision are expected to deliver presentations on the relevant topics, and the outstanding presentations will be rewarded with Al-Kitab prestigious award of junior student research.

A Novel Dosage Form of Colchicine: The Colchicine Gel Using Nano-Carriers



By:
Shahad Adnan and
Noha Ibrahim

Scientists have recently proved that the anti-gout drug colchicine has strong potentials to be delivered on the site of inflammation through the skin instead of oral use (Abdulbaqi, I.M. 2018). Colchicine is originally obtained from the dried corns and seeds of the *genus colchicum* plants. It has been used effectively for the treatment of gout for 2,000 years. Although colchicine tablets have been prescribed in the United States (US) since the 19th century, it was only in 2009, the US Food and Drug Administration (FDA) approved colchicine for the treatment of gout.

Colchicine is known to have extensive liver metabolism, thus only 25 % to 50% reaches the blood, while its oral intake is associated with gastrointestinal side effects, including abdominal cramps, pain, nausea, vomiting, and diarrhea These side effects commonly occur in around 80% of patients. Alternatively, colchicine was administered intravenously, but this route of administration was associated with serious adverse effects including death. The intravenous administration was banned by the FDA in 2008.

The transdermal delivery of colchicine may offer a new route for the administration of it to solve the problems of extensive liver metabolism and side effects. Using what so called the nanocarriers to carry the colchicine and enhance its properties is a highly encouraged technology for such cases; and one of these nanocarriers is called the Ethosomes.

The Ethosomes contain a relatively high concentration of ethanol, in addition to phospholipids and water. They are specially designed for the drugs dermal/transdermal delivery. In this report, the scientists have used the cold method for the ethosomes preparation as illustrated in figure 1.

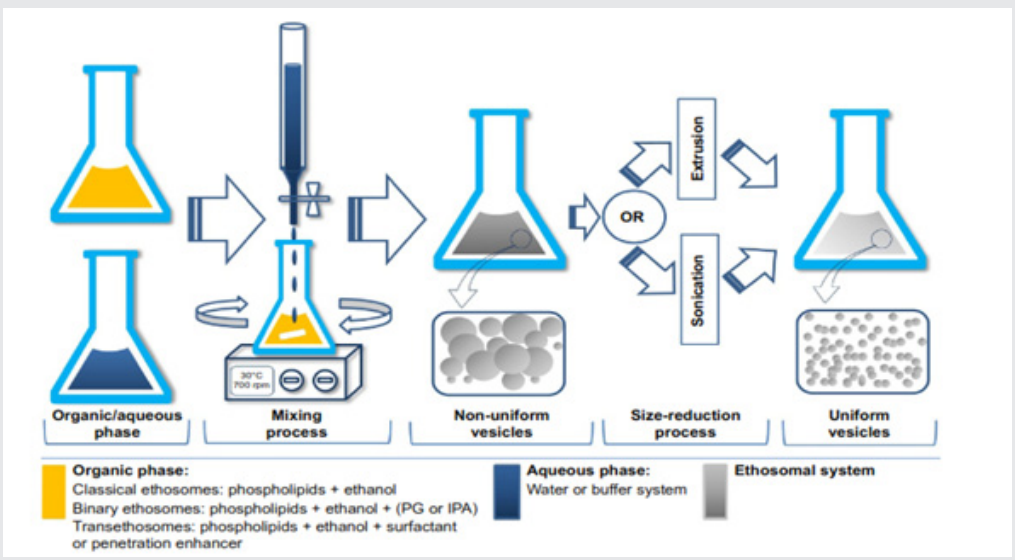


Figure 1: adopted from (Abdulbaqi, I.M. et al., 2016), ethosomes formulation using the cold method.

The skin permeation studies revealed that the ethosomal gels had superior skin permeation properties in comparison to the non-ethosomal gel formulation (only pure colchicine dissolved in gel). The stability studies showed that such formulations are stable at the refrigerated storing condition (4°C±2°C). Therefore, it is concluded that ethosomal gels are strong potential carriers for the transdermal delivery of colchicine and the introduction of its new dosage form.

References:

- Abdulbaqi, I.M. et al., Transethosomal gels as carriers for the transdermal delivery of colchicine: statistical optimization, characterization, and ex vivo evaluation, Drug Design, Development and Therapy, 2018:12 795–813.
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How to Study Diabetes in Animals: Successful Causing of the Disease as a First Step

By: Mohammed Hameed and Hiba Hidgeat

Diabetes mellitus (DM) is the commonest metabolic diseases characterized by hyperglycemia resulting from deficiencies in insulin secretion or action or both that affects carbohydrate, lipid, protein and nucleic acid metabolism.

According to the international diabetes federation (IDF), more than 382 million adults throughout the world suffered from diabetes, and 5.1 million deaths occur yearly due to diabetes. The frequency of diabetes has doubled in the last three decades, and it is predicted to continue rising to 592 million cases by 2035 (Al-Mahmood, S.A.M. et al., 2016). Moreover, the prevalence of diabetes mellitus in Iraq was estimated to be around 9.33% (Boutayeb, A. et al., 2012).

Scientist have successfully observed the potentials of developing the experimental models of diabetes using drugs such as Streptozotocin (STZ) to induce diabetes (Al-Mahmood, S.A.M. et al., 2016). Such drugs inflate and ultimately destruct the β-cells of the pancreatic islets. Originally, STZ is an antimicrobial agent that is initially developed as an antibiotic and antitumor agent. It is now widely used to induce DM in many animal species resembling many features seen in human patients' condition including clinical, physiological and pathological features.

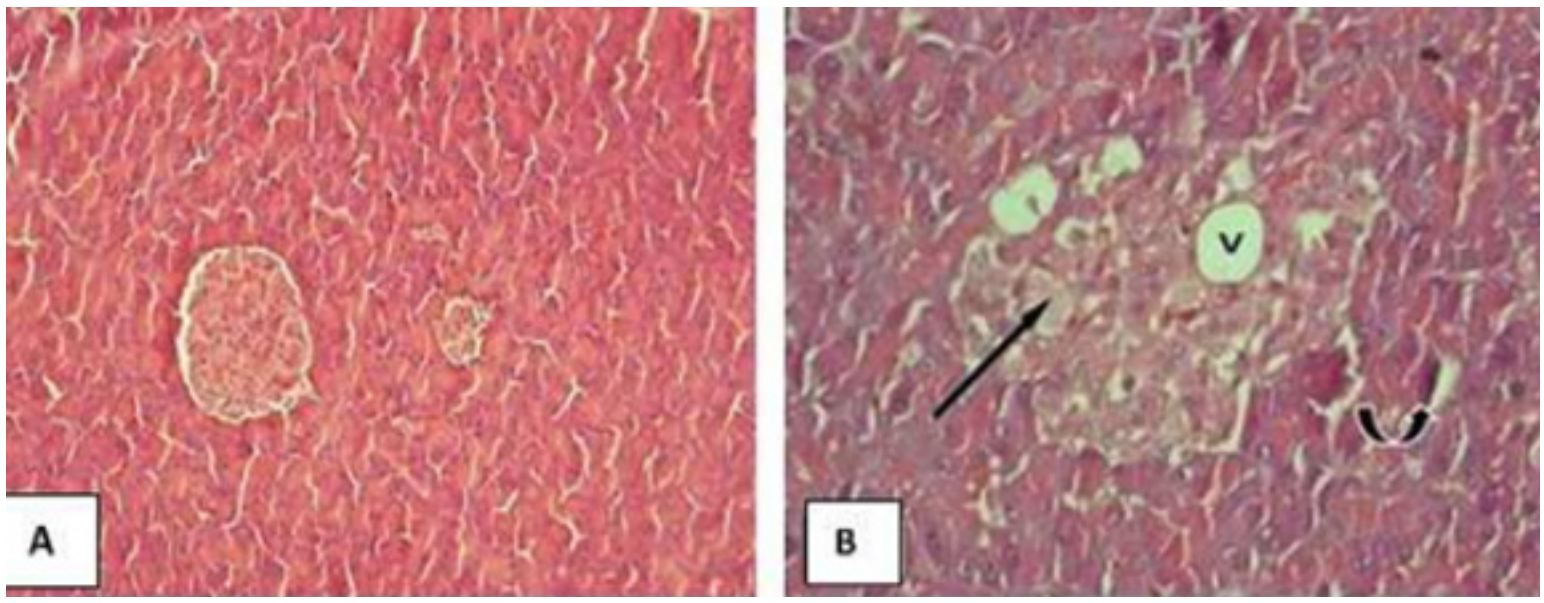


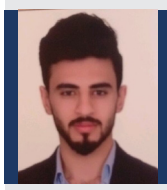
Figure 1: Adopted from (Al-Mahmood, S.A.M. et al., 2016), A: Normal pancreatic cell structure, B: Massive loss of pancreatic cell after treating rats with STZ.

In the research laboratories, STZ is the first choice for diabetes induction in animals. In this report, researchers found that DM induced by STZ was associated with many complications. These complications include, electrolyte imbalance, hepatic enzymes disturbance and haematological abnormalities. After six months of treating rats with STZ, the STZ-diabetic rats showed severe pathological changes in several organs including pancreas as shown in figure 1 along with the liver, kidney, spleen, cardiac muscle and adrenal gland.

This research outcomes can be used as a reference for many biochemical abnormalities of DM complications in an animal studies for other researchers. In addition, they can be used in studies that are searching for novel drugs and therapies of DM for comparison purposes.

Refrences:
- Al-Mahmood, S.A.M. et al., A Comprehensive Study of Chronic Diabetes Complications in Streptozotocin-Induced Diabetic Rat, Makara Journal of Health Research, 2016, 20(2): 48 -56.
- Boutayeb, A. et al., The rise of diabetes prevalence in the Arab region. Open Journal of Epidemiology. 2012;2:55–60.

Phyllanthus Niruri plant treating liver related diseases & obesity in Sprague–Dawley Rats



By: Omar Mohammad

Scientists are in continuous search for treatments from nature including plants and their extractions. Diseases such as the non-alcoholic fatty liver disease (NAFLD) is highly associated with several metabolic disorders such as type 2 diabetes mellitus, insulin resistance, and hyperlipidemia (Al Zarzour, R. H. et al., 2017).

Main cause of NAFLD is obesity which is due to the modern lifestyle and overconsumption of high-calorie foods. It was noted that West Asian countries such as the Middle East countries have a very high prevalence of obesity that is almost equal with the Western developed countries. Precisely in Iraq, 59.5 % of Iraqi males and 65.1 % of Iraqi females are experiencing obesity while 20.6 % of the males and 33.4 % of the females are already obese (Ashtari, S. et al., 2015).

Furthermore, in Iraq, chronic liver diseases are very prevalent and account for 2/3rd of the clinical admissions, while the prevalence of non-alcoholic fatty liver disease is rapidly increasing and could become a leading indication for liver transplantation (Makki H. F., 2016).

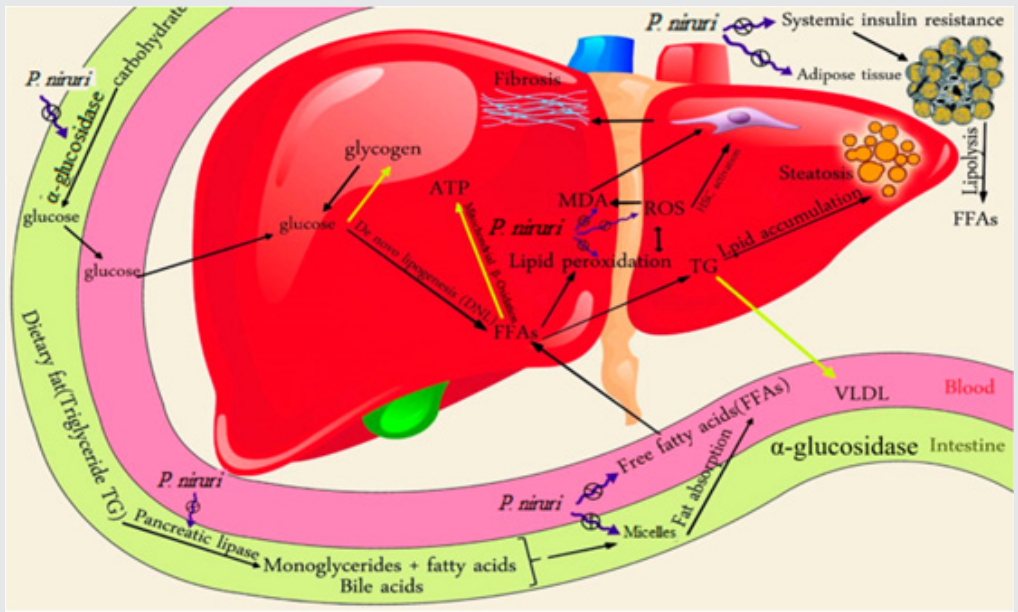


Figure 1: Adapted from (Al Zarzour,R. H. et al., 2017), A schematic diagram simplifying the sites of action of Phyllanthus Niruri.

Phyllanthus Niruri, a herb found in South East Asia, has been traditionally used to treat various liver disorders. Phyllanthus Niruri is rich in flavonoids and phenolic compounds that are responsible for its potent antioxidant properties that are playing important roles in hepatoprotective activity. Scientists proved that the 50% methanol extract of this plant was the one responsible for the plant liver related therapeutic effects (Al Zarzour, R. H. et al., 2017). The plant has also decreased the risk of atherosclerosis related to NAFLD, induced by a high-fat diet in rats. In figure 1, the blue symbol indicates the inhibitory effect of *Phyllanthus Niruri*.

It is worth mentioning that the oral consumption of *Phyllanthus Niruri* is considered safe, and investigations into its toxicity in female rats have not shown any abnormality in different body organs. Furthermore, *Phyllanthus Niruri* was clinically approved to be safely consumed by children (Al Zarzour,R. H. et al., 2017).

References:
- Al Zarzour,R. H. et al., *Phyllanthus Niruri* Standardized Extract Alleviates the Progression of Non-Alcoholic Fatty Liver Disease and Decreases Atherosclerotic Risk in Sprague–Dawley Rats, Nutrients 2017, 9, 766.
- Ashtari, S. et al., Non-alcohol fatty liver disease in Asia: Prevention and planning, World Journal of Hepatology. 2015 Jul 8; 7(13): 1788–1796.
- Makki H. F., 40 years observation in liver diseases in the Middle East, 3rd World Congress on Hepatitis and Liver Diseases, October 102016 ,12- Dubai, UAE.

Communication skills for pharmacists in Iraq and globally

By: Hamdi Kamal Hamdi

Communication for pharmacist is identified as the process of transmission of information, in which includes the emission, reception, and comprehension of messages, both verbal (written and spoken language) and non-verbal (Mesquita, A. R. et al., 2010).

The appearance of the first pharmacy in history was in Baghdad in 754 AD. It was managed by the scientist Jaber Ibn Hayyan, the founder of chemistry science (721–815 AD). Today, there are thousands of community pharmacies distributed widely throughout the country (Mesquita, A. R. et al., 2010).

According to data from the Syndicate of Iraqi Pharmacists (SIP) there are 11,857 pharmacists in Iraq; slightly more than half of them (53.06%) are females. However, it is expected that the female ratio will increase to 66% in 2015. Pharmacists' ages vary between the 50s and younger generations; the majority of pharmacists (75%) are 22–48 years of age. Thus, the ability to offer pharmacy services extends to more than 2 decades for the older pharmacists and to more than 4 decades for the lower age group (Inas RifaatIbrahim and Abdul RasoulWayyes, 2016).

The daily practice of Iraqi community pharmacists includes dispensing

medicines on a prescription– non-prescription basis, preparation of some admixtures (such as syrups, ointments, and capsules) in response to medical prescription, substitution of unavailable medicine with an alternative one, counseling on minor illness, monitoring adverse drug effects, providing products for children, and providing medical supplies. Additionally, some pharmacies nowadays have free services for body weight, blood pressure, and blood glucose measurements using advanced electronic devices.

Research and information in particular to the practice of pharmacy is lacking in Iraq. Finding out the challenges that are faced in this field and requirements for its development are in high need to be addressed in future studies (Inas RifaatIbrahim and Abdul RasoulWayyes, 2016).

On the other hand, and globally, it is now widely accepted that effective interpersonal communication is essential in the practice of pharmacy, allowing for the development of the kind of pharmacist–patient relationship needed for quality health care delivery. Pharmacists in the field have emphasized that dialogue and agreement are the central elements for the establishment of therapeutic relationship (Mesquita, A. R. et al., 2010).

Undoubtedly, effective methods of training pharmacists on communication skills are able to enhance pharmacists' skills in counseling patients making an important public-health contribution through potential improvements in health outcomes.

References:

- Inas RifaatIbrahim and Abdul RasoulWayyes, Pharmacy practice in developing countries, chapter 10: Pharmacy practice in Iraq, Elsevier Inc., 2016; 199- 210.
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Drug discovery and development: the story of drug creation

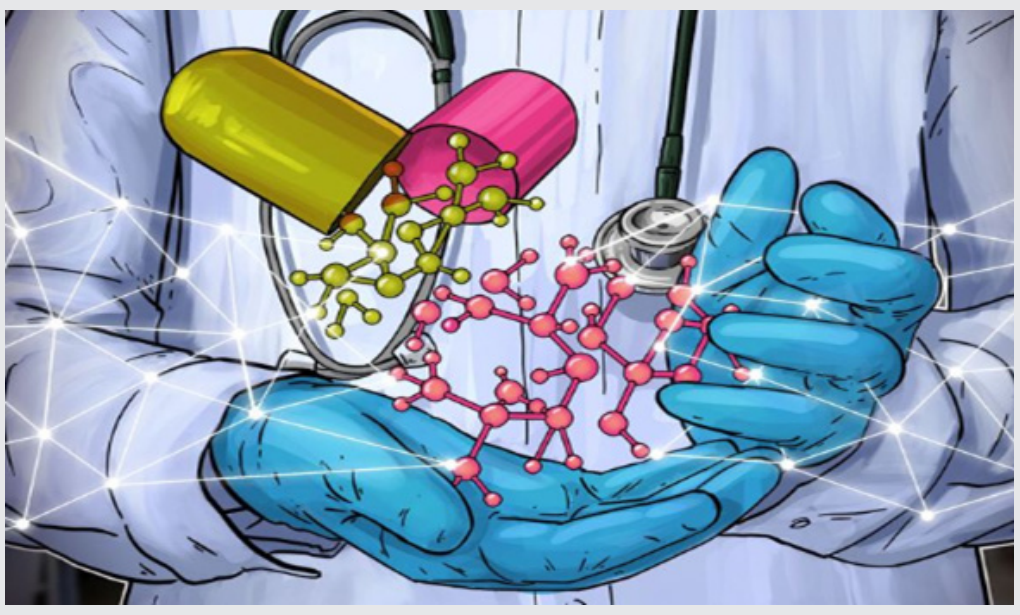
By Assel Al-obeady

The discovery of novel drug undergo several steps and different timelines that starts with the finding of a promising substance or molecule. Armed with the understanding of the disease, scientists are ready to begin looking for a drug. They search for a molecule or "leading compound" that may act on their target to alter the disease course. If successful over long odds and years of testing the lead compound can ultimately become a new medicine (Dimasi, J. A, 2001).

There are few ways to find a lead compounds:

1) Nature: until recently, scientist usually turned to nature to find interesting compounds for fighting disease. Bacteria found in soil and moldy plants both led to important new treatments. Nature still offers many useful substances, but now there are other ways to approach drug discovery.

2) De novo: thanks to advanced chemistry, scientists can also create



molecules from scratch. They can use sophisticated computer modelling to predict what type of molecule may work.

3) High-throughput screening: this process is the most common applicable way. Advances in robotics and computational power allow researchers to test hundreds of thousands of compounds against the target to identify any ones that might be promising. Based on the results, several lead compounds are usually selected for further study.

4) Biotechnology: scientists can also genetically engineer living systems to produce disease-fighting biological molecules.

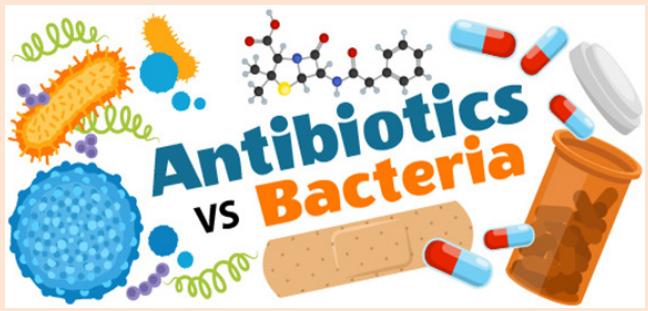
Early safety testes are required to be preformed initially on the promising compounds where lead compounds go through a series of tests to provide an early assessment of the safety of the lead compounds. Scientists test absorption, distribution, metabolism excretion and toxicological properties (*in vitro, in vivo* and clinical trials) of each lead. Only successful drugs will be optimized and proceeded to U.S. Food and Drug Administration (FDA) approval application and later manufacturing (Dimasi, J. A. et al., 2003).

Reference:

- Dimasi, J.A. et al., The price of innovation: New Estimates of Drug development costs, Journal of Health Economics, 22, 2003; 151 – 185.
- Dimasi J.A., new drug development in the united states from 1963 – 1999, clinical pharmacology and therapeutics 69, 5, 2001: 286 – 296.

What are antibiotics and how they act in our bodies: simple introductory

By Amal khalid



Antibiotic is a substance or compound that kills or inhabits the growth of germs. Antibiotics are used to treat infections caused by microorganisms. Penicillin was the first antibiotic, discovered by Alexander Fleming in 1929, but it was not until the early 1940s that its true potential was acknowledged and large scale fermentation processes were developed for the production of antibiotics. *Selman Waksman* first used the word antibiotic as a noun in 1941 to describe any small molecule made by a microbe that antagonizes the growth of other microbes.

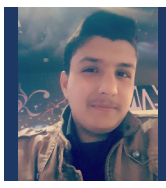
An appealing possibility is that antibiotics are made by microbes to kill competing microbes, but as early as 1961, *Selman Waksman* pointed out that the ability of a microbe to produce a small molecule with antibiotic properties when cultured under unnatural conditions in the laboratory, does not imply such a function for the molecule in nature. Recently, it has been shown that at concentrations well below those needed to inhibit the growth of other bacteria, antibiotics can modulate the transcriptional profiles of target bacteria. These revelations have caused several scientists to argue that what we call 'antibiotics' are actually signalling molecules that happen to kill bacteria when applied at unnaturally high concentrations (Clardy, J. et al., 2009).

Generally, antibiotics are safe, however sometimes they could be also dangerous due to their side effects that might include major sensitivity nausea and diarrhea. Moreover, different antibiotics are dangerous based on their interaction with other drugs. This includes the inhibition of warfarin metabolism by fluoroquinolones, macrolides, and sulfonamides, as they increase its plasma concentrations and subsequently increasing anticoagulation and bleeding (Baillargeon J, et al.,2012).

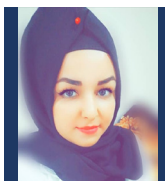
Antibiotics can interact with many other over the counter drugs (OTC), and natural products. A good standard of practice is to obtain a full, current medication list before prescribing new antibiotic regimens. If questions arise, a variety of online medication interaction checkers are available, and local pharmacists are happy to serve as a resource.

References:
- Baillargeon J, et al., Concurrent use of warfarin and antibiotics and the risk of bleeding in older adults. The American Journal of Medicine. 2012;125(2):183- 189.
- Clardy, J. et al., The natural history of antibiotics, Current Biology, 2009: 9; 19(11): R437–R441.

Cancer 101: A briefing on the cellular level



By: Yousif abd al sameea abd al Raheem



By: Noor alhuda abdal muneem

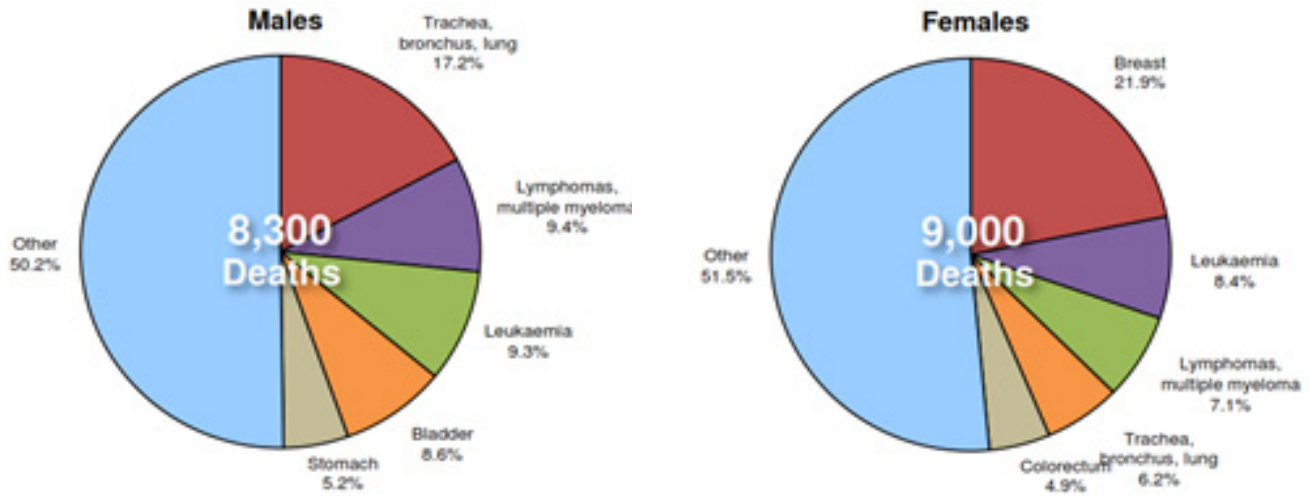


Figure 1: Adapted from (WHO, 2014), Cancer mortality profile in Iraq

Cancer is an uncontrolled cell growth and proliferation that affect almost all members of the body. It is defined as an abnormal growth of tissue of the body and its symptoms usually vary with the different organ or tissue injured.

In most cases, the transformation of healthy cells into cancer cells is due to changes in the genetic material inherited. These changes may be caused by carcinogenic factors such as smoking, radiation, chemicals or infectious diseases (such as viruses). There are also encouraging factors for cancer, such as a random error or a mutation in the DNA copy at cell division, or because of the inheritance of this mutation or mutation from the mother cell.

According to the World Health Organization (WHO, 2014), it is shown in figure 1 cancer death cases in Iraq, based on the gender and cancer type.

In general, cancer studies examine three areas; the first is to study the causes of the occurrence of those changes in the genetic material. The second is to investigate the nature of mutations and the location of mutagenic genes. The third is the effect of these changes on the cell and how it is transformed into a cancerous cell with the definition of the characteristics of that cancer cell as illustrated in figure 2.

According to the U.S. National Cancer Institute, cancer symptoms are divided into three sections:

1) General symptoms: weight loss, fatigue, general fatigue, loss of appetite, sweating especially during the night.

2) Localized symptoms: the appearance of a solid mass or changes in the shape of the surface of the outer skin.

3) Symptoms of proliferation: such as enlargement of different lymph nodes in the body or in the liver or bone pain.

The chemotherapy dose is difficult to determine yet the dose is effective if it is very low, as in the case of excessive doses, the patient will not be able to tolerate the side effects of treatment such as lack of neutrophils. This has led to the formation of detailed «dose» plans in most hospitals, which direct the doctor to the correct dose. Smaller doses of immunotherapy are used than those used to treat malignant tumors.

Treatment can be taken in or out of hospital; this depends on the type of patient, type of cancer, stage of cancer, type of chemotherapy, and medicine.

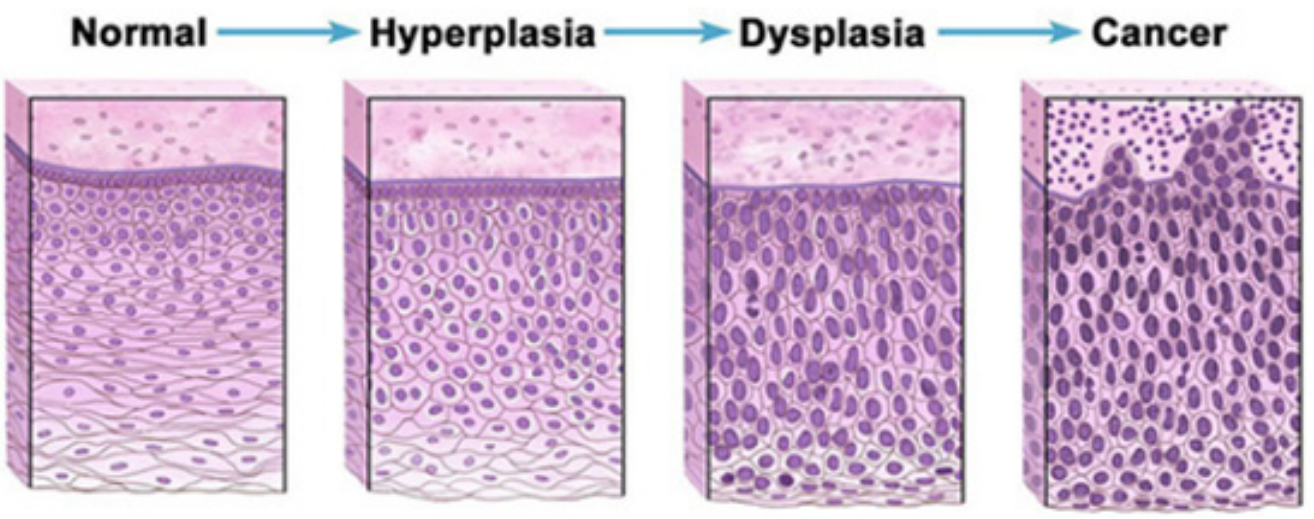


Figure 2: Adapted from Terese Winslow, Normal cells becoming cancer cells.

References:
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- World Health Organization (WHO) - Cancer Country Profiles/ Iraq, 2014.

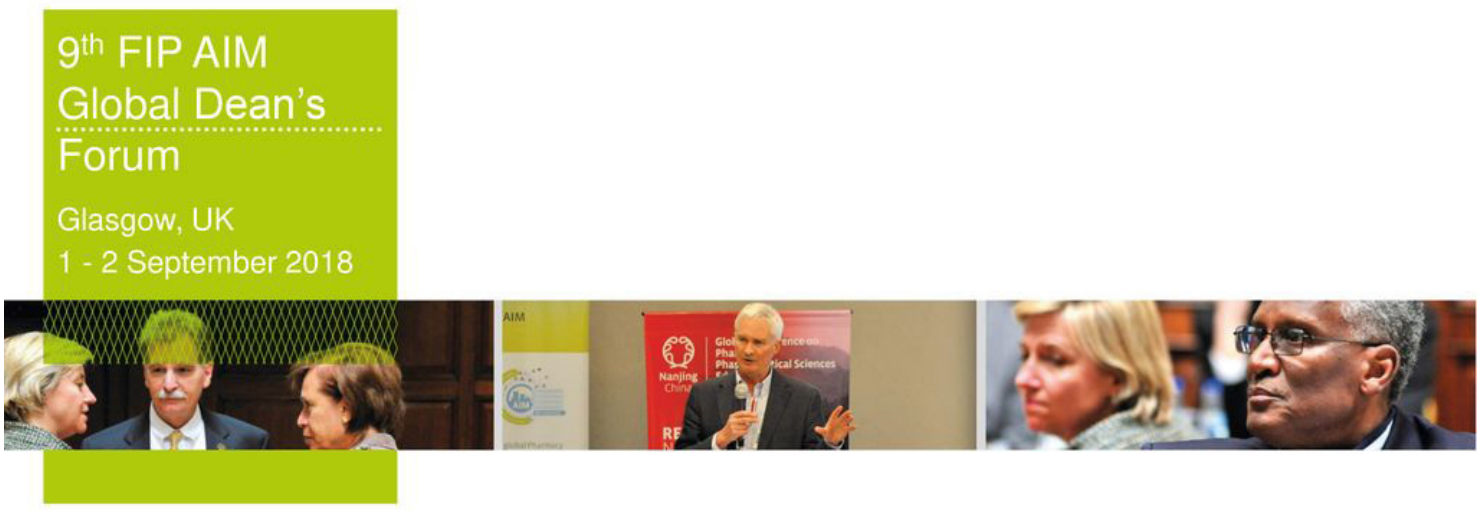
The College of Pharmacy at Al-Kitab University is a member of deans' forum of the pharmacy colleges in the world

The college of Pharmacy at Al-Kitab University will become the first college of its kind at the level of private universities in Iraq to join the forum of deans of the colleges of pharmacy in the world through the meeting which is held from 1- 2 September, 2018, and attended by the Dean of the college of Pharmacy at Al-Al-Kitab University Dr. Nihad Abdulwahab Mohammed.

The meeting will be held, on the sidelines of the FIP World Congress, in Glasgow, United Kingdom, from September 1 to 6, 2018.

Thus, the College of Pharmacy at Al-Kitab University is the first Iraqi private college to register its official admission to the FIPP World Pharmacists Union, which represents the largest scientific and academic demonstration at the level of pharmacists all over theworld.

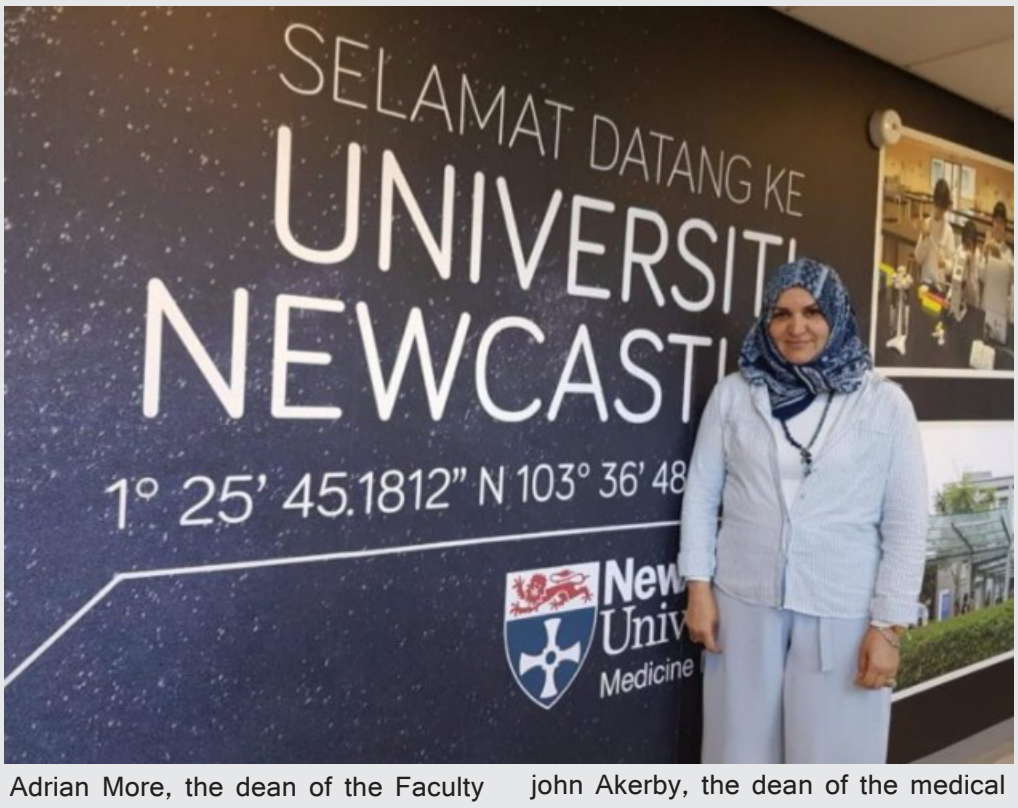
This is an important qualitative achievement for Al-Kitab University in particular, and for academic education in Iraq.



The dean of college of Pharmacy in Al-Kitab University carried out a round trip to number of major British universities such as Newcastle and Sunderland

Dr. Nihad Abdulwahab Muhammad, Dean of college of Pharmacy in Al-Kitab University, recently carried out shuttle tours to the United Kingdom, during which she reached to advanced understandings signing a number of bilateral agreements and memorandums of understanding between Al-Kitab University and a number of prestigious British universities like the University of Newcastle, which is one of the top ten universities in the UK and has advanced ranking in all international classifications, as well as universities of Sunderland and Teesside for engineering and engineering technologies.

During these shuttle tours, Dr. Nihad Abdulwab Muhammad met a number of important academic personalities. She met Dr. Alison Tyson Caber, the Dean's assistant for postgraduate studies at the Faculty of Medical Sciences at the University of Newcastle, and also met, Dr.



Adrian More, the dean of the Faculty of Pharmacy and Pharmaceutical and Health Sciences at Sunderland University, and held meetings with Dr. john Akerby, the dean of the medical Group at Newcastle University, and Mr. Stefsen North, the regional manager in charge of employment in Middle East and North Africa.

These meetings culminated in advanced understandings, which paved the way for bilateral agreements and joint working protocols between these major British universities and Al-Kitab university, that will include hosting a number of these universities' professors to Al-kitab University as visiting professors, and sending students of Al-Kitab University for study courses or training programs in these British Universities, in addition to benefiting from the scientific research works, books and publications issued by these universities and other items of such agreements.

Such relationships and communications between Al-kitab University and these major British universities are considered an advanced step forward at the level of private universities throughout Iraq, which will open wide horizons for further scientific and academic competence of Al-Kitab University.

College of pharmacy at Al-Kitab University celebrates the International AIDS day on the 1st of December

The undergraduate students of Pharmacy College at Al-Kitab University are celebrating the International day of AIDS by organizing "The AIDS Poster competition". The rich content posters will cover the various aspects of this disease.

The selected posters for the competition are under the following titles:

1) You Can't get HIV from the Following
by Students: Zaid Isam Mohammed

2) AIDS in Numbers and Statistics
by Student: Mohammad Yilmaz

3) The Optimum Food for AIDS patients' Health Support
by Students: Abu Bakir Emad Hamdy and Mohammad Salih Emad

4) HIV 30 years of Themes
by Students: Eman Mumtaz and Malak Muayad

5) 101 What is HIV and AIDS
by Students: Karwan Mohammad Qadir and Abdolla Azad Khursheed

6) Can HIV/AIDS transmit by food
by Students: Muhand Khalid Mijuil and Shahad Sarmed

Awards for the first and second places will be selected by the authorized evaluation committee of the college of pharmacy at Al-Kitab University, while participation certificates will be delivered to all the participants. Later, all posters will be uploaded to Al-Kitab University website for public.

PharmaShout

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