مركز حمدي منكو
للبحوث العلمية
HAMDI MANGO CENTER
FOR SCIENTIFIC RESEARCH

Seventh Scientific Day for HMCSR

13 April 2017

"Local Trends in Pharmaceutical Technology"

التوجهات المحلية في التكنولوجيا الصيدلانية

Hamdi Mango Center for Scientific Research—The University of Jordan

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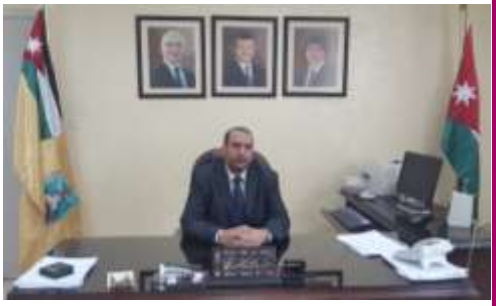
Message of Director:



It is my pleasure to welcome you to the 7th Scientific Day of Hamdi Mango Center for Scientific Research (HMCSR). This day is hosting speakers from different sectors of academia and industry in the field of pharmacy to speak about the "Local Trends in Pharmaceutical Technology"

HMCSR is a unique multidisciplinary research center committed to conducting, supporting, and encouraging different fields of scientific research and transforming it to applied science and engineering projects. We strive to narrow the gap between academia and industry by facilitating and promoting cooperation between the two sectors and providing a platform for joint projects.

To achieve these goals, HMCSR host various companies and institutions to present their recent research advances through workshops and lectures to the local researchers and community. In addition, we support faculty members and researchers to conduct their scientific research in the fields of material science and nanotechnology, plant biotechnology, cell culture, pharmaceutical solution and drug discovery. In addition, we have established central laboratories equipped with the latest technology and made them available to all researchers. Because reward is part of success, HMCSR offers Ali Mango and Samia Mango Awards for distinguished researchers. The plan in our center is to accelerate the pace of scientific progress by generating research over the few coming years that will have the greatest public impact and continue to fuel fund for scientific research.

Yasser Bustanji, Ph.D.

Director of Hamdi Mango Center for Scientific Research

Scientific Day Lectures:

1. **Dr Hiba Zarour :**

   Pharmaceutical Patent and Research

2. **Prof. Abeer Al-Ghananeem :**

   Risk Assessment: How far are we from registering drugs in USA

3. **Dr Alsayyed Alarabi Sallam :**

   Scientific Interactions Between Academia and Industry

4. **Dr Hatem AlKhatib :**

   Application of nanotechnology in drug formulation

5. **Dr Khaled Khraisat :**

   Novel Bio-Product for the treatment of *Acne vulgaris* in human

Lecturers:

Dr Hiba Zarour : Al-Hikma Pharmaceuticals

Dr. Hiba Zarour is the Global Head of Intellectual Property at Hikma Pharmaceuticals. She holds a BSc. degree in Pharmacy from the University of Jordan, an LLM degree in Intellectual Property and a Juris Doctor degree with high honors (Magna Cum Laude) from Pierce Law, one of the top ten law universities in intellectual property in the US. Zarour is a member of the New York and Massachusetts state bar associations. She is also certified in “Executing Strategy in Strategy Focused Organizations using the Balanced Scorecard”. She is a member of the trade committee of the International Generic Pharmaceutical Association (IGPA) and the IP committee at the Jordanian Association of Pharmaceutical Manufacturers. Since October 2016, she was also asked to head Hikma R&D on an interim basis. Her main task is to restructure the department to prepare Hikma for the challenges of innovation and the changing world of pharmaceuticals.

Prof. Abeer Al-Ghananeem: Faculty of Pharmacy-Jordan University for Science and Technology

Professor Al-Ghananeem is an Academic Leadership Fellow of the American Association of Colleges of Pharmacy (AACP). Prof. Al-Ghananeem received her Ph.D. in Pharmaceutical Sciences (Pharmaceutics and Biopharmaceutics) from University of Kentucky College of Pharmacy, USA and her B.Sc. Pharmacy with distinction from University of Jordan. During her academic journey, Dr. Al-Ghananeem secured over $2.5 million funding for her research projects and is an author of over 70 peer-reviewed research articles, symposium abstracts, and patent applications. She was among the executive team that head the College of Pharmacy ACPE PharmD accreditation and University SAC Scoc accreditation at Sullivan University USA. Her research focuses on Drug Delivery, industrial collaboration, FDA CMC guidelines/submissions, and nanotechnology for transmucosal drug delivery. Also, she serves on the Editorial Advisory Board for many reputable pharmaceutical and clinical journals.

Dr Alsayyed Alarabi Sallam : TQ Pharma

Dr Sallam got his B. Pharm from Cairo University in 1970, and his MSc., Pharmaceutical Sciences, Pharm.Analysis from University of Wales Institute of Science and Technology, Cardiff, UKi in 1975, and his PhD, Pharmaceutical Technology, from University of Sunderland,UK in 1980. He worked in academia at University of Sunderland, 1978 – 1980, and at University of Jordan, 1983 – 1987. His industry experience was at JPM, 1982 -1983 and APM, 1987 – 2004. He was R&D Director, STD, 2005 – 2008, and General Director, TQ Pharma, 2008 – 2012, Currently he is the Executive Director, TQ Pharma since 2012. He supervised Master and PhD Theses Locally and Internationally.

Dr Hatim AlKhatib : Faculty of Pharmacy - University of Jordan

Dr. AlKhatib is currently an Associate Professor of Pharmaceutics and Industrial Pharmacy in the Faculty of Pharmacy at the University of Jordan (FP-UJ). He has earned his my BSc degree in Pharmacy from the University of Jordan in 1996 and his PhD in Industrial Pharmacy from the University of Cincinnati, USA.Afterwards. Dr. AlKhatib is also the vice Chairman of the Institutional Review Board (IRB) of the International Pharmaceutical Research Center (IPRC), the leading contract research organization in Jordan in the area of bioequivalence and clinical studies. Dr. AlKhatib has served as a member of the Technical Committee for New Drugs Registration and the Bioequivalence committee at the Jordan Food and Drug administration (JFDA). He has more than 48 publications in peer reviewed journals in the areas of film coating, granulation, tableting, spray drying, dissolution and drug release testing, in vitro in vivo correlation pharmaceutical analysis and drug discovery. Dr. AlKhatib has worked as a consultant on a wide range of pharmaceutical technology and regulatory projects with local, regional and international companies.

Dr Khaled Khraisat : Monojo Biotech

Dr Khraisat got his B.sc pharmacy faculty of pharmacy from The University of Jordan. He got 21 YEARS of experience in sales, marketing and business development in the pharmaceutical field in local and global pharmaceutical companies. Currently he is working as business development manager at Monojo Biotech. His role is to explore any business opportunities as well as commercializing the company patented in cosmeceutical markets.

Posters Competition- Abstracts

1. Building and Testing of a Thermoelectric Refrigerator Driven by Solar PV Panel

Bashar Saqer - Mechanical Engineering Department – The University of Jordan

This project is to design and build a portable solar thermoelectric refrigerator for trips, where the source of electric power is taken from separate battery, which is charged by photovoltaic panel. The design of the solar refrigerator is based on the principles of the Peltier effect (Peltier module), where the passage of the electric current through dissimilar conductors produces hot and cold sides. The cold side of the module is utilized to provide cooling for the refrigerator space by using heat sink and fan. On the other hand, the hot side of the module is rejected to the ambient surrounding by using the heat sink and fan. The refrigerator is designed to reject heat at rate of 21 Watts from polystyrene box located in a car, where the refrigerator contains 1 liter of water. The results indicated that the temperature of the water was reduced from 20^{o}C to 15^{o}C in one hour. The coefficient of performance of the refrigerator (COP) was calculated and found to be 0.22.

2. Hydrolysis of PET (Polyethylene Terephthalate) to produce Ethylene Glycol (EG) and TerephthalicAcid (TPA).

Ghada Soboh, Salam Al-Aghawat, Saba Al- Sbaihy and Razan Mesleh

Chemical Engineering Department – The University of Jordan

Chemical recycling involves the hydrolysis of post-consumed PET to produce TPA and EG. The first order chemical reaction was carried out in alkaline media using NaOH in addition to ethyl glycol for 90 minutes at 170 °C. The produced TPA is about 97.9 % pure and the Conversion of PET is about 99.

3. Heavy Metals Leaching From Faucets

Faten al-Sweiti, Naheel Abubaker and Dua'a Al-Nashash

Industrial Engineering Department - The University of Jordan

Faucet fixtures have been shown to be a significant source of lead and cadmium exposure. Contamination of drinking-water may occur as a result of the presence of cadmium as an impurity in the zinc of galvanized pipes or cadmium-containing solders in fittings, water heaters, water coolers and taps. For this study, samples were taken from faucets in residential use after an overnight standing time, approximately 20% of those faucets delivered lead concentrations that exceeded the Jordanian Environmental Protection Agency's action limit of 10 micrograms per liter for lead. Lead concentrations caused by faucets are significantly greater than lead concentrations that occur in the plumbing line just behind the faucets. Bathroom faucets leach more lead than kitchen faucets, Lead concentrations increase with standing times. Newer faucets leach more lead than older faucets, although for faucets of all age categories, at least five percent of the samples had lead concentrations that exceeded the action limit. Cadmium concentrations in unpolluted natural waters are usually below 3 µg/l, Median concentrations of dissolved cadmium measured at 6 samples were >3 µg/l. Treatment method(s) have proven to be effective for removing cadmium to below 0.003 mg/L or 3 ppb: coagulation/filtration, ion exchange, lime softening, reverse osmosis.

4. Wounds Healing by natural materials.

Odai Alkhateeb , Ahmad Azzam – The Jubilee Institute

Healing of wounds for Diabetics could be one of the most difficult challenges that Diabetes cause, and this research aims to help Diabetics to heal their wounds using 100% natural herb in the form of plasters or sprays with low cost. Through using Conyza Canadensis we can extract variety of chemical compounds that enhances the process of healing and encourages metabolism such as: Flavonoids, Gallic acid, Tannic acid, Monoterpenes and Tannins, and all these can form a very effective medicine that lowers the time for the wounds healing, especially that the volatile oil of Conyza Canadensis acts as an astringent, and through experimenting the result compound on bacteria, skin cells, blood samples and animal wounds we have noticed a notable difference between the time of healing of wounds with herbs and without the herbs, concluding that the Conyza Canadensis extraction can form an effective compound to lower the time of healing.

5. Preparation and Characterization of Silica Gel from Wheat Straw

Hadeen AL Halawani, Amani Mahmoud , Yasmine AL Qaisi and Aroub AL Qudah

Chemical Engineering Department – The University of Jordan

This project can help us to reduce the overloaded agriculture waste that the farmers usually get rid of most of them, wheat straw residues is the most agriculture waste applied, about 600 million tons of wheat is produced around the world annually. It contains: carbon, oxygen, potassium, silica, and low levels of aluminum, magnesium, sodium phosphorous, and Sulphur. Wheat straw and wheat husk are being used also as fuel due to their high calorific value. Wheat husk ash contains 10-12% silica in complex form and 80-90% silica in amorphous form. Silica in its amorphous form has huge industrial applications. It can be used in coatings, detergents, rubber industry, plastics manufacturing, electronics, abrasives, refractory, and optics and also used as a catalyst in organic reactions. Silica gel has been widely used in pharmaceuticals and industrial applications like purification and dehydration of hazardous gases in industry, petroleum refining, distillations, oil hydrogenation process, use as a catalyst in Sulphuric acid production and also use as a grain drying absorbent. Generally, silica gel is prepared from commercially available sodium silicate. The manufacturing process of sodium silicate from quartz sand with calcium carbonate is very expensive due to high temperature requirement. In the present work, silica gel was prepared from agricultural waste – wheat straw. Alkaline-solubilization and acid-neutralization method was used to obtain gel from silica obtained from wheat straw.

6. Towards Targeted Delivery System: Nano-Encapsulation of Albumin in Polyethylene Glycol with Iron (III) Oxide Coating

Yazan Hamadneh – Islamic Scientific Collage

In this work, the albumin-polyethylene glycol (PEG) nanocapsules were synthesized using infusion method, the nanocapsules were then coated with iron (III) oxide nano-particles. The albumin was used as a protein model for antibodies. SEM micrographs showed aggregated nano-particles with average grain size < 150 nm. the un-capsulated albumin was detected via UV-Vis spectrophotometer with the aid of burette reagent at wave length of 568 nm. The encapsulation efficiency was found to be above 55%. These results had opened a new horizon for targeted drug delivery systems and also for anti-tumor research.

7. S.H.SE- Sensor-Enabled Heart Beat for Status Epilipticus Detection

Hala Al-Adwan - The Jubilee Institute

According to Florida Hospital, 150,000 to 195,000 cases of status epileptics each year. Unfortunately, this causes between 42,000 and 55,000 deaths annually. Fatality rates of Status epileptics 10-50% in contrast, 80% of people receiving medication within 30 minutes of the start of the status epileptics seizure recover. Therefore, the project aims to design a device that sends an emergency signal on behalf for those in need "**Patients having status epileptics"** as it requires emergency treatment by trained medical personnel in a hospital setting *that might help in reducing the number of brain damages, death caused mainly by status epileptics.* A pulse sensor is attached to the patient's wrist, the device senses the patient's vital sign (pulse rate) for 24-hour. If the pulse rate rises above 150 bpm for more than five minutes, a call will be automatically made to the nearest hospital. Afterwards, the signal will be transmitted to the guardian of the patient to do a neck massage (Carotid sinus massage) to monitor the heart rhythm and blood pressure, however, if the pulse rate falls to below 40bpm for more than five minutes, a call will be made to the nearest hospital . Another signal will be transmitted to the guardian of the patient to do a CPR as the heart is expected to stop .In conclusion the device demonstrates a reasonable assurance of safety and effectiveness as it reduces the risk of mortality by providing a non-surgical/simple method to provide a vital emergency needs for patients with epilepsy "having status epileptics ".

8. Pure bio honey

Raneem Hazem and Noor Barghouth – Al-Hassad School

Entomopathogenic nematodes are a group of nematodes (threadworms), causing death to insects. The term Entomopathogenic has a Greek origin entom, refers to insect, and pathogenic, which denotes causing disease. Entomopathogenic nematodes have symbiotic relationship with bacteria. They live parasitically inside the infected larval forms of moths. They can be used in the biological control of harmful insects. Steinernema was able to kill the wax mouth.

9. Acidic gases pollution controlling system

Mohammad Marei - The Jubilee Institute

Air pollution is major problem in our century, and the most affecting type of gases are acidic gases the main source of it, is the polluted air that emits from factories these gases are (SO_2, NO_x, CO_2) that's causes many issues in our environment such as (Acidic rain, Acidity of ocean, Damage the soil, Direct toxic effect on plant and aquatic organism) and issues on our health (diseases of the lung and other lung disorders such as wheezing and shortness of breath, ischemic heart disease, strokes, pulmonary disease, respiratory infections and lung cancer). My project aim is to find a way which can save our environment and health and in a way with low cost, so my system placed on the chimney of the factories as we know the polluted air emits from factories contain dust and heavy metal, so this system consist of layer of Zeolitic tuff its volcanic mineral have chemical structure of aluminum-silicate which can attract and trap dust and heavy metal and stabilize in its pours so we get pure acidic gases and by the pressure the gases go downward to react in the second layer with base solution (dependent on the type of salt we need) when PH for base solution become 7 PH we can evaporate the solution to get salts which can be used as nutrient for plants to enhance growth so in this situation we convert poisonous acidic gases into useful plant and soil nutritious salts. where gas emits so the acidic gases pass through the zeolitic tuff and any metal or dust carried by gas is trapped in zeolitic tuff and then the gas pass through it to react with base solution forming salt which can be used as nutrient for plants to enhance growth so in this situation we convert poisonous acidic gases into useful plant nutritious salts. The efficiency of the device is more than 97%, and we conclude that 50g of zeolitic tuff can store about 43ml of CO_2 (exchangeable gases), and the system works and convert gases into salt as it tested on CO_2 gas and the base solution is NaOH and all material used are usable material.

10. A Battery-Free Flashlight

Raneem Awni and Deemah Shawabkeh – Al-Hassad School

It was aimed in our project to make a flashlight which works on the heat of the human hand using the electric potential difference. We succeeded in powering a flashlight using the heat of the hand with the difference of the water's temperature. We made two flashlights in which we did not use any batteries, toxic chemicals, or kinetic energy. And they work under any circumstances.

11. Milk Thistle (*SILYBUMMARIANUM*) is the New Medication for Typhoid Fever

Rona Asad and Mohammad Horani - The Jubilee Institute

Typhoid fever is a bacterial infection caused by a bacterium called *Salmonella typhi* that can be found in contaminated food and water. Typhoid can spread throughout the body affecting many organs, and without the proper treatment, fatal consequences may occur. According to the most recent estimates (published in 2014), approximately 21 million cases and 222000 typhoid-related deaths occur annually worldwide. So the aim of this research was to develop an effective treatment for this life-threating disease more effective than the antibiotics used nowadays, easier to use, readily available to everyone, lower in cost, and most importantly with no significant side effects, When testing the effect of *Silybummarianum* on the *Salmonella typhi*, inhibition zones that varied between 0.15cm, 0.35cm, 0.8cm, 1.1 cm & 1.2 cm were created affected by the different concentrations of the *Silybummarianum*'s extract (1-2, 1-3 & 1-8) that were added to the *Salmonella typhi*'s plates & the plates with the diluted concentrations ($1*10^{-4}$ and$1*10^{-5}$) of *Salmonella typhi* showed no bacterial growth, therefore, *Silybummarianum* can be considered as an effective medication to treat typhoid fever that has been and still is plaguing millions of people all around the world.

12. Absorption nickel using carob leaves

Reem Al-Haj and Aya Rababah - The Jubilee Institute

With the world's ever increasing human population, the issues related to environmental degradation of toxicant chemicals are becoming more serious. Humans have accelerated the emission to the environment of many organic and inorganic pollutants such as pesticides, salts, petroleum products, acids, heavy metals, etc. Among different environmental heavy-metal pollutants, Ni has gained considerable attention in recent years, because of its rapidly increasing concentrations in soil, air, and water in different parts of the world. This research aims to find a natural and an affordable way to filter out the nickel from the waste water in order to prevent its Existence in high concentration in soil and it is toxicity symptoms on the plants. Nickel may be removed from water by means of active carbon adsorption since carbon and other elements from the functional groups are found in the carob tree leaves, and its available in most of the countries, which made it a great choice for filtrating nickel. Drying the leaves out and grinding them forming powder was the most applicable way in order to make it easier to absorb the nickel and remove it from the waste water. The powder is mixed with the waste water and then filtrated, the solution is compared to the waste water, 85 of the nickel are now removed by a very simple process using a natural resource. This process solves an Enormous problem since it helps in providing pure water could be use in Agriculture so It saves plant from disorder growth which caused by nickel and protects Nature life.

13. Workers Safety System

Adam Alkhalili, Yazan Sulieman and Ayham Rawashdeh - The Jubilee Institute

Our project is fundamentally a system that works on protecting the hard workers of society “The working class”, and is a prominent project in the field of Ergonomics. It confronts the issue of the safety of workers from all the aspects of it, so it provides the optimum safety level that can be provided. And since the topic of safety is highly neglected and marginalized, WSS will lead an industrial evolution that will change the way things work in safety related business. (W.S.S) consists of a wearable hardware that enhances the level of safety in the working area, which consists of many of sensors that detect nearby dangers and alerts the worker from them, and those sensors are: Gas Sensor that detects nearby hazardous gases, Heat-Humidity Sensor that measures the temperature and humidity of working area, Pulse sensor that transmits the readings of worker’s pulse rate to the supervisor in real time, Force Sensor that measures the amount of pressure on the motor points of the muscle, GPS that detects the location of the workers at all times, and Ultrasonic sensor measures the distance between the worker and his surroundings, which is used to detect fast approaching vehicles. Hence the system interacts with the readings that have been plugged in using the sensors and transmits the readings to the supervisor to provide mediation when needed to ensure the safest environment for workers, assisting us in fulfilling our mission that is saving lives!

14. Novel Therapy For Prostate Cancer Using Camel Milk

Mariam Al Aalim and Dania Mubaideen- Al Dur Al Manthour School

Camel milk was lyophilized and added to normal cells(MRC-5) lung fibro blasts and (PC3) Prostate cancer cells in different concentrations and we left a blank line (un treated). MTT was added to the cells to know the toxicity of the cells: Blank (untreated)PC3 cells absorption average = 0.72, Treated PC3 cells absorption average = .46, Toxicity percentage =36 %. Blank (un-treated) MRC-5 cells absorption average = 0.62 Treated MCR-5 cells absorption average = .079. Toxicity percentage:-17%. Relying on the data we collected from our experiment we came with the following conclusion: Camel milk used on PC3 cells gave us promising results not only killed cancer cells it also increased the number of MRC-5 cells (camel milk can be a treatment for the prostate cancer). Right now the Ic that we have got is 36% and we are aiming to find a way to reach to 50% (IC50). As said earlier camel milk increased the number of healthy cells. We hope that we could use it to decrease the side effects of chemotherapy.

15. Enhancing Solar Panels Using Biosynthesized CuO/ZnO Nanoparticles and By Changing Its Design

Ahmad Mansi and Laith Al-Saqqa, - The Jubilee Institute

Copper II oxide & Zinc oxide nanoparticles (CuO/ZnO NPs) were synthesized from copper II Nitrate & Zinc Nitrate (Cu(No3)2, Zn(No3)2) using Olea Europaea leaf extract (Olive leaf extract) in one pot reaction with sodium hydroxide solution at room temperature in order to use the NPs in enhancing the efficiency of the traditional solar panels. These NPs were characterized with Fourier Transform Infrared Spectroscopy (FT-IR) which showed that NPs were coated as predicted and Scan Electron Microscopy (SEM) showed the shape and the diameter of the NPs while the X-Ray Diffraction (XRD) was used to identify the formula of the tested powder (CuO/ZnO NPs). In order to examine the effect of nanoparticles in enhancing the traditional solar panels, two Iron plates were painted with black paint and with black paint mixed with CuO/ZnO NPs. Results showed that there was a 14.4% increase in efficiency. Furthermore, we have redesigned the solar panel to a hemispherical shape so its surface area will increase.

16. Muscle Atrophy Treatment That's caused from the lumbar belt

Anas Mahadin, Zaid Hammad and Hala Shaker - The Jubilee Institute

Wearing the lumbar belt by individuals who suffer from back problems is a risky way of curing, and the most noteworthy risk associated with wearing back-belts is that during the period of wearing it, the supportive spinal muscles that normally support your spine will become weaker, so creating something that solves this problem was our main goal. The main objectives are things that make our product much better than any other treatment in the field, such as; making it easy for old people's use, letting the affected muscles start working again in few weeks, letting you cure yourself at home without the need of an expert around you and for patients to be able to switch the device on whenever and wherever they want. The method we followed in our project is having a vibration device which makes the muscle contract and relax, to enhance the blood flow to lower the blood pressure in order to help the back-pain sufferers. It also has a heater to enhance the efficiency of the vibration devices and to help in muscle relaxation. The position of the vibration devices will be carefully chosen with the help of physio-therapists in points called "trigger points" that are right next to the spinal cord. Our product is easily controlled by an application on windows phone that has simple buttons for turning it on and off to reduce muscles atrophies caused by the lumbar belt.

17. Devil's Claw Herb Used as Pain Reliever

Ghena Almasri and Rasha Otoom – The Jubilee Institute

One of the biggest and most wides pared problems many people face are aches resulting from previous trauma, as well as the wearing out of cartilage in joints, usually the knee joints, especially in elderly people. Even after a long search for any treatment available for either healing or just relieving the pain ,there is no way highly efficient made based off herbs and 100% natural ingredients ; and this is how our project's idea formed by creating an all natural pain relieving cure for joint pains. It has been found the natural ingredient that contained the biggest amount of vitamins and anti-inflammatory properties to help ease pain, the devil's claw herb (Harpagophytum) which is a unique African herb, previously used in lots of medical recipes, proving its efficiency. A patch was designed and made of linen to help the chemicals transfer smoothly , contain our ingredients (the devil's claw, cinnamon, chamomile, lemon and nuts) , all of which have been proven beneficial to healing ,and all of which's amounts have been scientifically measured and determined in a way that does not harm the human body, along with a heating device to induce and increase the healing rate. This patch then is heated up and placed on the body areas that suffer muscles pain, allergy or osteoarthritis for 5 – 10 minutes. The results showed that this mix of natural herbs is effective to be used for "hardening of the atherosclerosis, arthritis, gout, muscle pain, back pain, tendonitis, and chest pain, In the final analysis; it has been concluded that this project helps relieve pain in general ,and joint pain (arthritis) in particular with a low cost technology and ease to use with no negative side effects.

18. Transport blood container

Huda Baidon and Sadeel Sulaiman - Al Dur Al Manthour School

The aim was to make a transport blood container and compresses to help the war victims. The hypothesis was to use the endothermic dissolving salts to decrease the temperature to the suitable temperature that the blood need and to decrease the compresses temperature. The endothermic dissolving salts were (NH_4Cl,NH_4NO_3,KBr,KCl). The formula that has been used is : Enthalpy= specific heat * mass* T. There were three modals before the final one: 1) Stainless steel container, 2) Plastic bottles, 3) Big plastic container. The final modal was to put plastic bag in a high isolation container.

19. How to reduce the electric bill?

Heba Alawneh - The Jubilee Institute

The electric meter calculates the cycles (frequency that comes from the national electric company) and unfortunately the cycles don't come in a regular shape and that affects the bill. The non stable cycles comes with frequencies more than 60 Hz so This circuit contains capacitor with 26 Micro farad which will bypass the higher frequencies regarding to the law 1/2*π*fc. Because of that if we block this frequency the electric bill will be reduced. Simply because the electric meter won't count them if they are suppressed . The idea of this circuit is to use the passive low pass filter (passive because we are not using active elements like the operational amplifier) which contains resistor "R" and capacitor in series and the output is taken through the capacitor. The main idea of this project is that the capacitors will by-pass all the higher frequencies (ripples) to the Resin, and the effective cycles will be passed to the load (home net work). That means the electric meter will count the effective cycles of the electricity and the cycles with higher frequencies won't be counted by the electric meter and as a result, our electric bill will be reduced 26% approximately. I have tested the circuit and used a clamp meter to measure the current before and after using the circuit, before using the circuit the current was 10 amps and after using the circuit the current was reduced to 7.4 amps.

20. Enterobacter Biodegrade Plastic

Saif Smadi and Issa Shirri - The Jubilee Institute

The plastic is a main material in our life, which is used in many industries that helps us. On the other hand the plastic a major problem for decades, the small water bottle needs years to biodegrade, 300 million tons was the total plastic wastes in 2005. A lot of diseases and effects on the environment causes by plastic such as (cancers, affect the animals if they eat them, water and soil pollution). Our project's aim is to find a way to biodegrade the deadly plastic in less time and in a safe way that can be used in factories and places that use plastic a lot and in a high quality. Using *Bacillus subtilis,Enterobacter aerogenes* will help in biodegrade plastic after we cleaned the bottles with alcohol we measured the weight of each, preparing the bacteria inside the LB media, place the solution inside the bottles, put the bottles inside the incubator, a day after the other we measured the OD and at the end of the 9 days we cleaned the bottles again and measured them. The weight of the bottles decreases around 4-5% in the 9 days and the *Enterobacter aerogenes*showed that it worked more efficient than the *Bacillus subtilis,* many changes on plasticoccurred the main changes was plasticviable biofilms formed, obvious damage, including pits and cavities, was observed on the surfaces of the bottle, and the decreasing in the weight of the bottles show the biodegradation of it.

21. A Device for Protection against Falling due to a Balance Disorder

Mousa Al-Zoubi, Mohammad Al-Isawi and Tala Remash - The Jubilee Institute

Vertigo and dizziness are among the most prevalent symptoms in neurologic disorders. Although many of these patients suffer from postural instability and gait disturbances, there is only limited data on their risk of falling. In April 2015, a German center for Vertigo and balance disorders conducted a controlled cross-sectional study at their tertiary care outpatient clinic using a self-administered questionnaire to assess falls, fall-related injuries, and fear of falling. The recruitment period was 6 months. A total of 569 patients and 100 healthy participants were included. Dizzy patients with central balance disorders (Parkinson, cerebellar, and brainstem oculomotor syndromes) had the highest fall rates. The rate of recurrent fallers was 30% in bilateral vestibular failure and peripheral neuropathy. Patients with functional dizziness (somatoform or phobic vertigo) were concerned about falling but did not fall more often than healthy controls. Falls are common in patients presenting to a dizziness unit. Those with central syndromes are at risk of recurrent and injurious falling. Fall rates and fear of falling should be assessed in balance disorders and used to guide the regimen of rehabilitation therapy. The identification of risk factors would help provide protective measures to these groups of patients. We have created a device that would help people who suffer from balance disorder in having a semi-normal life with less chances of falling down. The percentage of people who suffer from balance disorder is large due to many reasons caused by various diseases such as, infection of the inner ear, low and high blood pressure, diabetes, head injury…etc. Therefore those people face hard times throughout their lives because of the high chances of losing their balance or orientation and fall which leads to serious injuries. In order to make their life easier, we have created an app-linked device that is worn around the pelvis and linked with the knees which works as a pillar to the body. The device works as follows: It consists of three main parts, three servo motors (high torque), gyroscope sensor, and two linear gear systems. The motors are placed on both sides of the pelvis and the gyro sensor plus the arduino are placed at the lower back, while the cylinders are placed on each thigh. When the gyro sensor detects any change in the normal slope the arduino would send a message for the cylinders to work in the opposite way of the inclination, this hydraulics maintains the left right falls, but for the front back falls, the servo motors will work in the opposite angle of fall. The device is light, easily used and has low cost. There are other amendments such as a balloon jacket that would inflate if the patient falls to prevent any serious injuries.

22. Pomegranate Peel Total Extract and Purified Tannin Extract Disinfectant Properties, an experimental study 2017

Enas Ghazi Sharkas, Innovators International Academy

There is a global increase of infectious diseases outbreaks, with concomitant rise in antimicrobial resistance. Discovering new substances with antimicrobial properties enhances the control of epidemics. This experimental study aims to examine Pomegranate Peels (PP) as natural source plants, and materials extracted from them for hypothesized disinfectant properties. Tannin was extracted from PP using High Performance Liquid Chromatography (HPLC). PP extracts were diluted by Ethanol and distilled water. Bacterial strains were prepared from reference culture stocks, mixed with NaCl solution and placed in a spectrophotometer to obtain the absorbance of each bacterial strain. Bacterial steaks were pipetted then spread in agar plates. After dried, four holes were created on the media, labeled and filled with Tannin, PP, Ethanol and water separately. The inhibition zones were measured in mm after 24 hours of incubation with the experimented materials. A total of 57 samples of 19 bacterial strains each with three replicates were examined for the effect of PP and Tannin. Out of 18 strains, 11 were gram negative (GN), and 8 were gram positive (GP). PP and Tannin have inhibited bacterial growth in all replicates of GP strains. For GN strains, the growth was also inhibited except for Klebsiella Pneumonia-ATCC 13885, Moraxella Catarrhalis, Enterobacter, and Citrobacter. The strains with the largest average inhibition zones after PP were Corynebacterium diphtheria (29.6), Proteus mirabilis (19.3), Bacillus subtilis (17.6), Staphylococcus aureus-ATCC 33591 (17.3), E.coli-ATCC 25922 (17.3),andHelicobacter Pylori (17.3), Whereas, those with the largest average inhibition zones after Tannin were Corynebacterium diphtheria (29.6), Bacillus subtilis (18.6), E.coli-ATCC-25922 (18), Staphylococcus aureus-ATCC-33591 (16.3), and Proteus mirabilis (16.3), all in decreasing order. PP and Tannins extracted from them have demonstrated considerable antibacterial activity against several types of GP and GN bacteria. These naturally extracted substances could serve as disinfectants which are free of the potential side effects of chemical antimicrobials. Large scale experimentation on more bacterial species and other pathogens like fungi and viruses is recommended to consider manufacturing PP and Tannin as antimicrobials.

23. Effect of Miswak extract on reversing effect of phenytoin fibroblast growth

Dima Nidal Younes and Sara Bashar Alkhaldi- Al Dur Al Manthour School

Phenytoin is a commonly used antiepileptic drug. Its effect on causing gingival overgrowth with a prevalence of 50%. This problem caries both hygiene and cosmetic impact on patients[1-3]. Miswak has been reported to have anti-inflammatory as well as antibacterial activities. The aim of this study is to examine the effect of Miswak extracts on fibroblast growth that is induced by application of phenytoin. The study was conducted in Hmadi Mango Research culture lab, the University of Jordan. Miswak sticks were extracted using soxhextrator for one week. The extracted liquid was dried using rotavapor to obtain a concentrated extract of miswak. The weight of the extraction was 9.018 g. A stock solution was prepared by dissolving 27.3mg of miswak extract in 5ml of DMM.After three days of seeding human fibroblast cells donated by Hamdi Mango culture lab, cells were treated as follow: control (DMM only), phenytoin only (The concentrations were 20mg/ml, 50mg/ml, 100mg/ml, and 200mg/ml), Miswak extract only (5.46 mg/ml stock, then using 75% of it, 50%, 25%), and both phenytoin (20mg/ml) and miswak extract (5.46 mg/ml stock, then using 75% of it, 50%, 25%). The effect on the cells was tested using MTT assay.Phenytoin caused toxicity to fibroblasts. There was a direct relationship between the concentration of the phenytoin used and the number of living cells toxicity ranging from 35.5% to 68.4%. Miswak extract used alone caused minimal toxicity for cells, the 25% extract showed improved cells growth. When miswak and phenytoin were used together, miswak extract helped in decreasing the toxicity of phenytoin. The 25% of the extract which equals 1.365mg/ml had the best result in reversing phenytoin toxicity (-4.3%). Miswak extract has the potential in reversing fibroblast cell toxicity induced by phenytoin. Further studies are needed to determine the mechanism of this effect like studying the effect on miswak extract on the level of IL1β and PGE2 production by HGFs.

24. EPIC: Epilepsy seizure predictor using brainwaves

Ali Al-Nees, Dana Ibrahim, and Rahaf Hajeer- The Jubilee Institute

Epilepsy is a neurological chronic disorder in which nerve cell activity in the brain become disrupted, causing seizures or periods of unusual behaviour or sensations, and sometimes loss of consciousness, often leading to physical damage. EPIC (Epilepsy seizure predictor) is a project that includes an EEG (Electroencephalograph) headset that aims to predict the upcoming seizures using the pre-seizure electrical brain activity (brainwaves) recorded at the time of the first seizure. The purpose of the recording is to compare the current electrical brain activity with the previously recorded one to find out if there's any similarity between them, indicating that a seizure is about to start. The project also includes a mobile phone application, which will have the patient's medications and will activate emergency procedures when the seizure is detected–using ECG (Electrocardiograph) and abnormal EEG. The emergency procedures, such as inflatable clothes to protect the patient if he has lost consciousness and alerting his family through the mobile application, take place when the seizure is detected. In addition, the mobile application will walk the patient through the recommended steps to avoid physical injuries. This aims to strengthen the patient's self -confidence, in addition to avoiding the seizure itself. EPIC would, in theory, predict epileptic seizures within 20 minutes of seizure onset using pre-seizure brainwaves.

٢٥. نظام الكتروني للسكنات في الجامعة الأردنية

رواء ناصرالصمادي، أسيل رياض، ديما سليمان- قسم نظم المعلومات الإدارية – الجامعة الأردنية

عمل نظام الكتروني للسكنات الداخلية في الجامعة الأردنية، يقوم على تبديل العمليات الروتينية التقليدية والأوراق إلى أعمال الكترونية مفيدة وتسهل عمليات المراقبة والتنظيم بدقة عالية، حيث قمنا بدراسة على عينات عشوائية من طالبات السكنات وتعرفنا إلى أكثر المشاكل التي يعانون منها واستمعنا إلى بعض الاقتراحات، وقمنا أيضا بعمل مقابلة مع المشرفات واستمعنا إلى المشاكل والاقتراحات وتناقشنا في موضوع عمل النظام الإلكتروني فحصل المشروع على دعم كبير وإصرار بعمله لما فيه من المميزات والحلول لمشاكل كانت تعتبر عوائق كبرى، فقمنا بإضافة كل مشكلة إلى الموقع لتعتبر حل، والذي يميز المشروع ويجعله نادر ومختلفاً عن غيره هو انه أول موقع مخصص لطالبات الجامعة في مجال السكنات حيث تتمكن الطالبة من تعبئة كامل النموذج الخاص بالتسجيل في السكن والدفع بكل سهولة وذلك عن طريق الدخول إلى الموقع الإلكتروني وتعبئة جميع البنود المطلوبة ، وهذا النظام مزود بمعلومات دقيقه عن السكنات، وهو موقع لمساعدة الطالبات والمشرفات حيث يساعد الطالبات في الحجز والتنظيم كما ويساعد المشرفات في الإدارة والمراقبة والتنظيم، وأيضا يعمل على توفير الوقت والجهد للمشرفات والطالبات على حد سواء .

٢٦. البيت الأخضر

بتول نوفل ، سندس خالد – مدارس الحصاد

يهدف المشروع إلى التقليل من استخدام مصادر الطاقة الغير متجددة باستخدام الألواح الشمسية والتوربينات الهوائية في توليد طاقة كهربائية للتقليل من تلوث البيئة كون مصادر الطاقة الغير متجددة في نضوب فلجأنا إلى استخدام الطاقة المتجددة فكانت فرضيتنا تنص على انه يمكن استغلال الطاقة البديلة بأنواعها مثل الرياح والمياه والشمس كما يمكن إنتاجها من حركة الأمواج والمد والجزر أو من طاقة حرارية أرضية في توليد طاقة حرارية و حركية ثم تحويلها إلى طاقة كهربائية تستخدم في الإنارة ،تشغيل الأجهزة الكهربائية وغيرها حيث كان التصميم للمنزل كالتالي : وظفت الطاقة الشمسية في عدة أوجه :

- جاءت غرفة النوم من الجهة الشرقية من التصميم وذلك لكي تدخلها الشمس في فترة الصباح بهدف الإنارة بينما تقابل الشمس غرف المعيشة والضيوف والمطبخ بقية النهار لتدفئتها

- قمنا باستخدام ألواح زجاجية سوداء لشبابيك المنزل و ذلك لكي تمتص الحرارة داخل المنزل وتغذيته بالدفء عبر الجدران في المساء

- النوافذ جاءت ضمن تصميم خاص ب فتحات عرضية وذلك لتمنع أشعة الشمس و تسمح بمرور الهواء من اجل تدويره في المنزل

- قمنا بوضع أشجار دائمة الخضرة مثل الزيتون والليمون على محيط المنطقة الشمالية و الغربية وذلك لصد الرياح وكذلك قمنا بوضع أشجار متساقطة الأوراق في المحيط المتبقي لتمنح الظل إلى واجهة المنزل في فصل الصيف وعند حلول فصل الخريف تتساقط الأوراق لتسمح بمرور أشعة الشمس و تدفئة المنزل شتاء

- قمنا بوضع نظام لاستغلال المياه الرمادية في المنزل (المغاسل ، الجلايات ،الغسالات،ومياه الأمطار) بعد تصفيتها من الشوائب واستغلالها في ري مزروعات الحديقة والمصارف الصحية في الحمام

فبذلك نكون قد توصلنا لبيت زجاجي يقوم باستخدام الأشعة الشمسية وحركة الرياح لتوليد كهرباء تستخدم لإنارة المنزل وتشغيل العديد من الأجهزة فيه و في التدفئة و تشغيل المراوح ومرشات الحديقة مما وفر من استخدام الكهرباء الناتجة عن مصادر الطاقة غير المتجددة والتقليل من التلوث الناتج عنها بالإضافة لحمايتها من النضوب و بهذا تكون فرضيتنا صحيحة

الداعمون


AL SHAKER
للأجهـزة الطبيـة والعلميـة


شركة حلمي أبو شام وشركاه
Hilmi Abu Sham & Partners Co.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SENA Establishment
For Laboratory Equipment Trading


GENETICS COMPANY
Biotechnology Products and Services
شركة الوراثة لخدمات ومنتجات التكنولوجيا الحيويه والطبية ذ. م. م.


دار الغذاء


شركة اليمامة
Al-Yamama

الداعمون

مستودع أدوية بابل

نيروخ فارما

الداعمون

ACDIMA

MANASEER
GROUP

ACDIMA
BIOCENTER

HAYAT
Pharmaceutical Industries


مركز حمدي منكو للبحوث العلمية
HAMDI MANGO CENTER FOR SCIENTIFIC RESEARCH (HMCSR)

الفائزون بجائزة الباحث المتميز للعام ٢٠١٦

جائزة علي منكو للباحث المتميز

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المجالات الطبية

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الفائزون

جائزة السيدة سامية منكو للباحثة المتميزة في الأردن

٢٠١٥

أ.د. أميرة طاهر المصري
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جائزة علي منكو للباحث المتميز

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جائزة علي منكو للباحث المتميز

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كلية طب الأسنان – الجامعة الأردنية

٢. جائزة السيدة سامية منكو للباحثة المتميزة في الأردن

بتبرع من السيدة تمام منكو أطلق مركز حمدي منكو للبحوث العلمية في العام ٢٠١٥ جائزة الباحثة المتميزة في الكليات العلمية والصحية في الأردن. و يأتي تخصيص جائزة أفضل أداء في البحث العلمي تقديراً من مركز حمدي منكو للبحوث العلمية لمستوى الباحثات في الجامعات الأردنية والمؤسسات والمراكز العلمية، وتشجيعاً على إثراء البحث العلمي والمساهمة في خدمة العملية الأكاديمية في الأردن وتكثيفاً لنشاط الباحثات ومنحهن حوافز لاستمرارية هذا النشاط العلمي.

ويعلن المركز كل عام عن جائزة علمية للباحثة المتميزة في الأردن في **المجالات العلمية والهندسية والصحية**.

مكونات الجائزة:

١. شهادة تتضمن اسم الجائزة واسم الفائزة.

٢. مكافأة مالية مقدارها **(٥٠٠٠)** خمسة آلاف دينار أردني للباحثة المتميزة

يمكن أن تمنح الجائزة الواحدة لأكثر من فائزة وتقسم بالتساوي، أو أن تُحجب إذا لم تستوف أي من المرشحات شروطها.

مكونات الجائزة:

١. شهادة تتضمن اسم الجائزة واسم الفائز.
٢. مكافأة مالية مقدارها (٥٠٠٠) خمسة آلاف دينار أردني للباحث المتميز.
٣. مكافأة مالية مقدارها (٢٠٠٠) ألفي دينار أردني لطالب الدراسات العليا المتميز.

يمكن أن تمنح الجائزة الواحدة لأكثر من فائز وتقسم بالتساوي، كما يمكن أن تحجب إذا لم يستوف أي من المتقدمين شروطها.

الجوائز التي يقدمها مركز حمدي منكو للبحوث العلمية

١. جائزة علي منكو للباحث المتميز في الأردن

تُمنح هذه الجائزة بتبرع من السيد حسان منكو، وقد أطلقها المركز منذ العام ٢٠١٠ . حيث يقدم ثلاثة جوائز لباحثين متميزين في الكليات العلمية والصحية في الأردن. ويأتي تخصيص جائزة أفضل أداء في البحث العلمي تقديراً من مركز حمدي منكو للبحوث العلمية لمستوى الأداء البحثي لأعضاء هيئة التدريس والباحثين وطلبة الدراسات العليا في الجامعات الأردنية والمؤسسات والمراكز العلمية، وتشجيعاً على إثراء البحث العلمي والمساهمة في خدمة العملية الأكاديمية في الأردن وتكثيف نشاط الباحثين ومنحهم حوافز لاستمرارية هذا النشاط العلمي.

يعلن المركز كل عام عن:

جائزة لطلبة الدراسات العليا في التخصصات العلمية والصحية.

جائزتين علميتين للباحث المتميز في الأردن تُمنحان في المجالات العلمية والصحية التالية بالتناوب ضمن دورة مدتها عام:

- **جائزة في مجالات الهندسة والزراعة أو العلوم وتكنولوجيا المعلومات.**
- **جائزة في مجالات الطب والتمريض أو طب الأسنان والصيدلة وعلوم التأهيل.**

١٢:٥٠-١:١٥	د. السيد العربي سلام / شركة أدوية التقدم Scientific Interactions Between Academia and Industry
١:١٥-١:٤٠	د. حاتم الخطيب/ كلية الصيدلة - الجامعة الأردنية Application of nanotechnology in drug formulation
١:٤٠-٢:٠٠	د. خالد خريسات / الشركة الأردنية لإنتاج الأجسام المضادة (مونوجو) Novel Bio-Product for the treatment of *Acne vulgaris* in human
٢:٠٠-٣:٠٠	استراحة الغداء
٣:٠٠-٤:٠٠	تقييم مسابقة المشاريع البحثية لطلبة المدارس والبكالوريوس تكريم الفائزين بالمسابقة الطلابية تكريم المشاركين بدورة "اعوان مكافحة المخدرات" من ضمن مبادرة حياتك أغلى من المخدرات

برنامج اليوم العلمي

٩:٠٠-١٠:٠٠	التسجيل
١٠:٠٠-١٠:٣٠	حفل الافتتاح • السلام الملكي • آي من الذكر الحكيم • عرض فيديو قصير عن المركز • كلمة ترحيبية • توزيع جوائز الفائزين بجوائز المركز للتميز العلمي • تكريم الداعمين لليوم العلمي
١٠:٣٠-١١:١٥	الاستراحة الأولى + افتتاح المعرض
	فعاليات اليوم العلمي
١١:١٥-١٢:٠٠	كلمات الفائزين بجوائز المركز للتميز العلمي
١٢:٠٠-١٢:٢٥	د. هبة زعرور / شركة ادوية الحكمة Pharmaceutical Patent and Research
١٢:٢٥-١٢:٥٠	ا.د.عبير الغنانيم / كلية الصيدلة- جامعة العلوم و التكنولوجيا الاردنية Risk Assessment: How far are we from registering drugs in USA

لجنة اليوم العلمي

أ.د. ياسر البستنجي

نجاح النـــل

د. رنـد أبـو زريـق

د. نهاية الكرابلية

هبـة زلـــــوم

آيـات بـوزيـــة

م. تمارا القضاة

م. شيرين القصراوي

م. سائدة أبو ملوح

بشائر أبو رميلة

وفاء الحجاجة

رمضان الساحوري

خالد العواملة

أحمد الأعرج

MANASEER
GROUP

مركز حمدي منكو
للبحوث العلمية
HAMDI MANGO CENTER
FOR SCIENTIFIC RESEARCH

اليوم العلمي السابع لمركز حمدي منكو للبحوث العلمية

١٣ / ٤ / ٢٠١٧

" التوجهات المحلية في التكنولوجيا الصيدلانية"

Local Trends in Pharmaceutical Technology

مركز حمدي منكو للبحوث العلمية—الجامعة الأردنية