JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS

A degree awarding institution registered with the Higher Education Commission, Mauritius

JSS Health & Education Newsletter

Volume III Issue I

January-April 2023

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About JSS Academy of Higher Education and Research, Mauritius (JSSAHERM)

The JSS Academy of Higher Education and Research, Mauritius (JSSAHERM) was established in 2018 with degree awarding powers and is an approved and registered institution with the Higher Education Commission, Mauritius.

JSSAHERM is located on a sprawling eight- acre freehold campus at Bonne Terre, Vacoas, the only one of its kind in the country, including some 15, 000 sq. mts of built- up area with necessary academic, learning, and recreational infrastructure. The campus also comprises of hostels for boys and girls students, sports facilities such as Volleyball, Basketball, Football and in- door games. There are also residential units for staff and guests.

Building on its philosophy of quality education at affordable costs, JSSAHERM aims to present itself as the destination of choice for higher education and training in Mauritius and the Indian Ocean region.

JSSAHERM launched the Bachelor of Pharmacy (BPharm) programme in 2020. The Bachelor of Pharmacy programme of JSSAHERM has received Pre-certification from the Accreditation Council for Pharmacy Education (ACPE), USA, making JSSAHERM the first institution in African region to get ACPE pre-certification.

JSS Mahavidyapeetha (JSSMVP), Mysuru, India is the sponsoring society of JSSAHER, Mauritius. JSSMVP has established more than 330 educational institutions in India, Dubai, Mauritius, and USA, with a total student population over 50,000 and a staff strength over 12, 000.

The parent institution for the establishment of JSSAHERM, is the JSS Academy of Higher Education & Research, Mysuru (JSS AHER, Mysuru, India), formerly known as the JSS University. JSSAHER, Mysuru, India has been ranked in 351 to 400 rank band by THE 2023 ranking. THE Subject Ranking 2023, JSSAHER, Mysuru is ranked in the band of 125 - 150 in the world and becomes the first institution in India in the subject ‘Clinical and Health’.

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Inside this Issue

FOREWORD

It is an honour for me to have this message included in the first issue of the 2023 "Health and Education" newsletter of JSS Academy of Higher Education and Research (JSSAHERM).

My Ministry is driven by the Health Sector Strategic Plan 2020-2024 which encapsulates Government's vision and ambition for the coming years. It has also been elaborated to address the forthcoming challenges, pertinent to an ageing population, accelerated use of new technologies in the dissemination of efficient medical care and potential new disease outbreak.

The continuous training and professional development of the health and non-health personnel is a priority for my Ministry as our objective is to deliver quality healthcare to the whole population across the different age groups ranging from pre-conception to old age.

Our healthcare system is shifting to develop high-value activities. Mauritius is promoting medical tourism and attracting foreign patients in several areas including cosmetic surgery, orthopaedics and fertility treatment.

I note that JSS Academy of Higher Education and Research is working in line with Government's vision and goal of providing the best health care services and patient care and safety.

With the pharmacy programs, JSSAHERM will, no doubt, provide a much-needed supply of trained professional workforce, which will be unfailingly helpful to our pharmaceutical hub project. .

Apart from the regular teaching-learning activities, the School of Pharmacy of JSSAHERM is engaged in conducting various health-based activities and this, in itself, is a commendable achievement.

Recently, I have had the opportunity to meet the Team of Assessors from the Accreditation Council for Pharmacy Education (ACPE), USA who came to assess the Pharmacy program run by JSSAHERM.

I am sure this accreditation will further enhance the country's education quality and give confidence to the stakeholders that the Pharmacy program at JSSAHERM is right on cue and at par with international norms and standards.

My heartiest congratulations to all members, staff and students of JSS Academy for Higher Education and Research for the success of the Newsletter – "Health & Education" and wish all the students a prosperous career ahead.

Dr the Hon. Kailesh Kumar Singh JAGUTPAL
Minister of Health and Wellness

28 March 2023

"DigitAll": Innovation, Technology for Gender Equality

This year the theme of the **International Women's Day** is "DigitALL: Innovation and technology for gender equality".

Strong technology integration is a necessity in many aspects of our lives, including attending classes, calling loved ones, handling financial business, and scheduling appointments. Currently, everything is processed digitally. 37% of women don't use the internet, nevertheless. Despite making up over half of the world's population, there are 259 million fewer women than males who have access to the Internet.

Women's prospects to pursue professions in science, technology, engineering, and mathematics (STEM)-related disciplines will be reduced by the fact that by 2050, 75% of occupations will be related to STEM subjects if they are unable to access the Internet and do not feel secure doing so. However, just 22% of roles in artificial intelligence, to name one, are held by women today.

The UN asserts that include women in technology leads to more innovative solutions and has a larger potential for breakthroughs that support gender equality and cater to the needs of women. Contrarily, their exclusion has significant financial consequences. The progress of transformative technology and digital education is being championed by women and girls this year, and they are being recognized and honoured on International Women's Day. In addition to highlighting the significance of safeguarding the rights of women and girls in digital environments and tackling online and ICT-facilitated gender-based violence, the observance will investigate how the growing economic and social inequities caused by the digital gender gap. According to the UN, 85% of women worldwide have either engaged in or observed digital violence against other women. Keep in mind that virtual is real.

Using language to discuss equality, the UN claims Considering how important language is in forming cultural and societal attitudes, employing vocabulary that is inclusive of both genders is an effective strategy to advance gender equality and combat gender bias. In 2022, 69% of men and only 63% of women use the Internet. 38% of women reported having personally encountered online assault, according to a study of 51 nations.

In July 1960, Sri Lanka achieved the distinction of producing the first female prime minister in history. "We are not here merely to demolish discrimination, but to envisage the benefits to the human race of integrating this forgotten half of mankind in development," says Sirimavo Banadaranaike, who held this position for twelve years.

Using digital technologies for professional purposes is crucial for successful integration into the digitalized economy and increasingly advanced kinds of IT work. The COVID-19 problem may have brought about considerable changes in women's and men's online activity and mobile internet use for professional purposes.

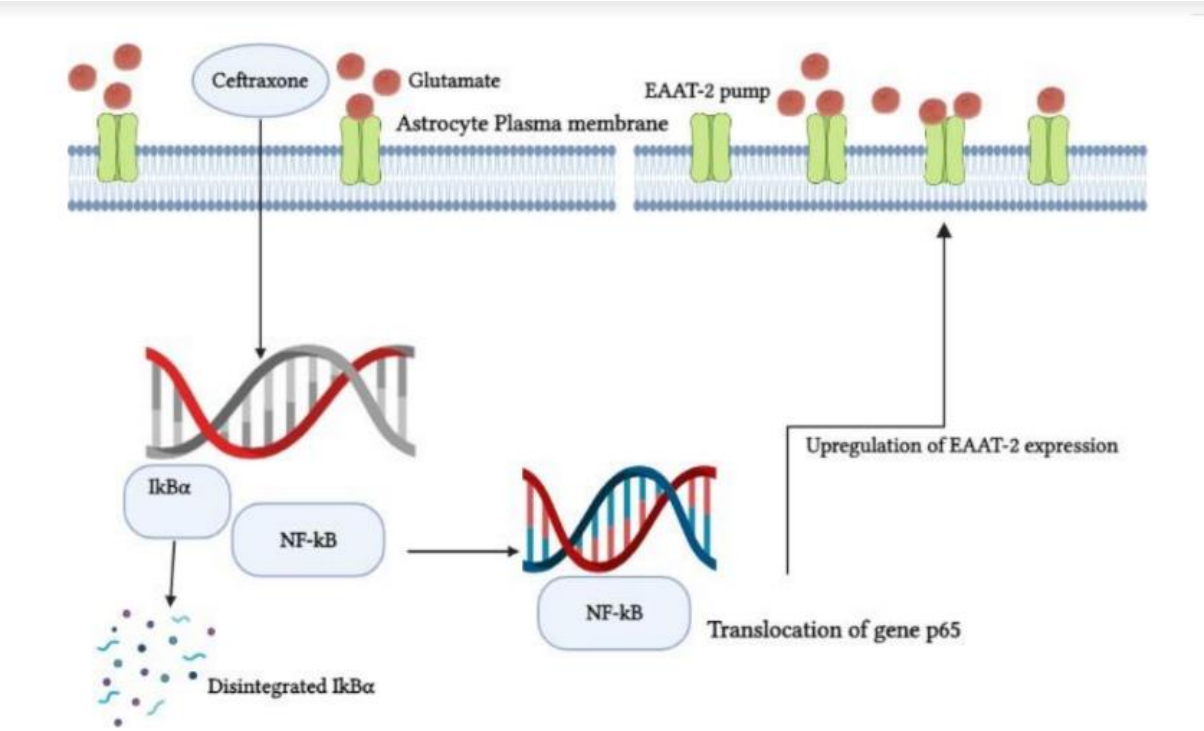
A gender-sensitive approach to innovation, technology, and digital education can promote women and girls' knowledge of their rights and participation in civic life. The advancements in digital technology present enormous prospects for addressing development and humanitarian concerns and achieving the Sustainable Development Goals of the 2030 Agenda. Regrettably, the benefits presented by the digital revolution also pose the danger of reinforcing existing gender disparities. In the context of digital skills and access to technologies, growing disparities are becoming increasingly apparent, with women falling behind as a result of the digital gender gap. For a sustainable future, inclusive and revolutionary technologies and digital education are essential.

Dr Khayati Moudgil,
Chief Editor
JSSAHERM, Newsletter

Role of Ceftriaxone in Neuroprotection

Excitotoxicity is one of the main causes of neuronal deterioration in acute and chronic neurodegenerative disorders[1] tissue plasminogen activators and thrombolytics have been used as the first-line agent for the treatment of stroke but the efficacy of these drugs is very limited, usually, thrombolytic treatment will be effective upon the administration of drug within 3-4.5 hours after the onset of ischemic stroke symptoms[2]. Recent studies have revealed that ceftriaxone is also having neuroprotective properties, it up-regulates the expression of EAAT-2 on astroglial cells and also Third generation cephalosporin, ceftriaxone is (Figure1) widely used as a broad-spectrum antibiotic for several bacterial-induced pathological conditions and also has been evaluated for the neuroprotection in suitable in-vitro neuronal cell line and in vivo animal models[3]. It has been proven that ceftriaxone enhances the expression of EAAT-2 in primary human fetal astrocytes (PHFA) via the NF-kB signaling pathway, NF-kB plays a crucial role in ceftriaxone-mediated EAAT-2 expression and it directly binds to -272 position of EAAT-2 promoter gene which will transcript the transporter proteins[4]. The activation of NF-kB mediating through degradation of the cytoplasmic inhibitor has the ability to protect the neurons from excitotoxicity-induced neuronal dysfunction in several neurodegenerative diseases. Inhibitory kappa-B alpha (IkB-α) from NF-kB complex resultantly degraded IkB-α liberates NF-kB to translocate gene p65 of nucleus for the expression of corresponding target genes, these conformational changes up-regulate the expression EAAT-2 over the plasma membrane of astrocytes.

Figure 1: Mechanism of EAAT-2 expression mediating through Ceftriaxone via NF-kB pathway



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Written By:
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AI in Precision Medicine

“Predicting the future isn’t magic, it’s Artificial Intelligence.” ~Dave Waters

Biomarkers promise significant time and cost savings in drug discovery and development, but it is well known that it is difficult to find the right ones. Many presumed biomarkers fail validation after years of study, leaving developers poorer, but not much wiser, pointing to the complexity of biomarker development. However, a growing number of life sciences start-ups are saying they have the tools they need to discover the best biomarkers and how to use them.

“AI is perfect for precision medicine because it can reveal meaningful patterns across multiple omics datasets,” says Richard Wendell, founder, and CEO of AI start-up telic, a company that leverages AI in molecular biology, functional genomics, and drug discovery.

Most of the relatively young companies currently leveraging AI and machine learning are working on digital pathology or clinical decision support applications for cancer, or at least, that is their initial focus. However, an increasing number of life science start-ups claim to have the tools to discover and use the best biomarkers.

AI Takes Aim at Lung Cancer Screening

One study found that a group of researchers used some kind of artificial intelligence to improve lung cancer screening.

After several findings, Panayiotis Benos, vice chairman of computational and systems biology at the University of Pittsburgh and his colleagues entered CT scan data from 218 high-risk patients into a machine learning algorithm -- a form of artificial intelligence -- to create a model that calculates the probability of cancer. The study found that they were able to eliminate cancer in about a third of patients. This means they don't need biopsies, PET, or CT at short intervals. They could simply arrange to come back in a year. This was the first-time artificial intelligence has been used in this way, the researchers said.

Could 'AI' Become a Partner in Breast Cancer Care?

Machines equipped with artificial intelligence could also someday help doctors better identify high-risk breast lesions that could turn into cancer, new research shows.

'We thought there should be a better way of stratifying the risk of these lesions,' said the author of the study, Dr. Manisha Bahl, Executive Director, Breast Imaging Fellowship Program, Massachusetts General Hospital. Working closely with computer scientists at Massachusetts Institute of Technology, researchers developed a "machine-learning" model, a type of artificial intelligence, to distinguish high-risk lesions that need to be surgically removed from those that could just be watched over time.

"Women should know that there is a new kind of machine learning that has helped us identify high-risk, low-risk lesions for cancer. And we may soon have more information for them when it comes to deciding if they need surgery to remove these high-risk lesions," said Dr. Bonnie Litvack, Medical Director of the Women's Imaging Center at Northern Westchester Hospital in Mt. Kisco, N.Y.

"AI is an exciting area that will help us provide women with more data and help in shared decision-making," Litvack added.

AI Technology Detects Genetic Diseases Using Facial Photos

According to the researchers, certain genetic diseases can be detected thanks to a new artificial intelligence technology that looks at a person's face. Examples of conditions that can be identified by the technology include the nervous system disorder Angelman syndrome, in which patients have a wide mouth and widely spaced teeth, and strabismus, where the eyes point in different directions, CNN reported.

AI spreads its wings

AI is still skeptical, and precision medicine seems to become more complicated as the types of data and the ways in which they are analysed increase. 'The key now is to make people aware of what AI can do for research and get AI-based tools into the hands of scientists,' notes Wendell. However, Colarusso foresees a bright future. "We are now on the cutting edge of the AI era and over the next eight to ten years we should see it flourish."

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Written By:
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CAR T-cell Therapy and Its Side effects

Your immune system works by keeping track of all the substances normally found in your body. Any foreign particle triggers the immune system to stimulate an attack.

Chimeric antigen receptor (CAR) T-cell therapy is a way to get immune cells called *T cells* (a type of white blood cell) to fight cancer by changing them in the lab so they can find and destroy cancer cells. CAR T-cell therapy is also sometimes talked about as a type of *cell-based gene therapy* because it involves altering the genes inside T cells to help them attack the mutated cells.

This type of treatment can be very helpful in treating some types of cancer for instance lymphoma and leukemia even when other treatments are no longer working.

HOW CAR T CELLS THERAPY WORKS

Immune receptors and foreign antigens

The immune system recognizes foreign substances in the body by finding proteins called *antigens* on the surface of those cells. Immune cells called *T cells* have their own proteins called *receptors* that attach to foreign antigens and help trigger other parts of the immune system to destroy the foreign substance.

The relationship between antigens and immune receptors is like a lock and key. Just as a lock can only be opened with the right key, each foreign antigen has a unique immune receptor that is able to bind to it.

Cancer cells also have antigens, but if your immune cells don't have the right receptors, they cannot attach to the antigens and help destroy the cancer cells.

In CAR T-cell therapies, T cells are taken from the patient's blood and are changed in the lab by adding a gene for a receptor (called a *chimeric antigen receptor* or *CAR*), which helps the T cells attach to a specific cancer cell antigen. The CAR T cells are then given back to the patient.

Receiving the CAR T-cell infusion

A few days before the CAR T-cell infusion, the patient might be given chemotherapy to help lower the number of other immune cells. This gives the CAR T cells a better chance to get activated to fight the cancer. This chemotherapy is usually not very strong because CAR T cells work best when there are still some cancer cells to attack. Once the CAR T cells start binding with cancer cells, they start to increase in number and can help destroy even more cancer cells.

Possible CAR T-cell therapy side effects

CAR T-cell therapy can be very effective against some types of hard-to-treat cancers, but altogether can also sometimes cause serious or even life-threatening side effects. And therefore, it needs to be given in a medical centre that is specially trained in its use, and patients need to be under supervision for several weeks after getting the CAR T cells.

Cytokine release syndrome (CRS): As CAR T cells multiply, they can release large amounts of chemicals called *cytokines* into the blood, which can ramp up the immune system. Serious side effects from this release can include:

- High fever and chills
- Trouble breathing
- Severe nausea, vomiting, and/or diarrhea
- Feeling dizzy or lightheaded
- Headaches
- Fast heartbeat
- Feeling very tired
- Muscle and/or joint pain
- Changes in consciousness
- Confusion or agitation
- Seizures
- Shaking or twitching (tremors)
- Trouble speaking and understanding
- Loss of balance

Because of the risk of these side effects, adult patients are typically advised not to drive, operate heavy machinery, or do any other potentially dangerous activities for at least several weeks after getting treatment.

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Written By:
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Drug Delivery System (DDSs) & Drug Delivery Vehicles

What are drug delivery systems?

Drug delivery systems describe technologies, mediums, and/or carriers that carry drugs into or throughout the body. These technologies include the method of delivery, such as a pill that you swallow or a vaccine that is injected.

They can also describe the way that drugs are packaged like a micelle or a nanoparticle that protects the drug from degradation and allows it to travel wherever it needs to go in the body. By finding the best suitable delivery mechanism for a specific drug molecule, it is possible to optimize the performance of that drug inside the body.

Drug delivery methods

Drugs can be introduced into the body via several different routes each having advantages and disadvantages.

1. *Buccal drug delivery*

   It describes the administration of a drug through the buccal mucosa (lining of the cheek). This route of delivery avoids first-pass metabolism that is the rapid drug uptake and metabolism into inactive compounds by the liver. It also presents as a challenging barrier to drug absorption. The buccal drug delivery is often used for extended-release drug delivery whereby the drug is released in a controlled way over an extended time period.

   A variety of formulations have been developed for buccal delivery including tablets, gels, lozenges, and patches.

2. *Nasal drug delivery*

   It involves the delivery of a drug via the nasal cavity of the nose. Nasal spray medications are usually used for the treatment of local diseases affecting the upper respiratory tract such as nasal congestion and allergic rhinitis. This delivery approach can be used for systemic delivery (route of delivery directly into the blood stream) for rapid onset of action as the nasal mucosa is thin and heavily vascularized. For instance, migraine drugs are given as nasal sprays.

   Similarly, to buccal administration, first-pass metabolism can be avoided.

3. *Ocular drug delivery*

   Ocular drug delivery has been somewhat of a difficult task for drug delivery scientists due to the eye's unique anatomy and physiology. Static, dynamic, and metabolic ocular barriers impede the absorption of drugs through the eye. The static barriers are related to the different segments of the eye such as the cornea, sclera, retina, and blood retinal barriers while the dynamic barriers consist of choroidal and conjunctival blood flow. Ocular administration involves the treatment of conditions affecting the eyes using suspensions, solutions, ointments, and commonly eye drops.

4. *Oral drug delivery*

   It is by far the most well-known and often preferred route of administration due to its ease-of-use, cost-effectiveness, non-invasive nature, and highly absorptive properties by the gastrointestinal tract (GIT). Regarding drug delivery via the oral route, the aqueous solubility of the drug compound in the GI system should be assessed to determine if modifications are required to improve bioavailability of the drug. Bioavailability refers to the extent and rate at which the drug enters the systemic circulation when introduced into the body and is able to have a pharmacological effect. The most popular dosage forms for oral delivery include coated or uncoated tablets and capsules. However, this kind of delivery has drawbacks when it comes to its suitability for certain patient populations including pediatric, geriatric, and those with cognitive impairment.

5. *Pulmonary drug delivery*

   It describes the administration of a drug via inhalation through the mouth and into the airways. Inhaled medications are an effective means for treating local disease of the lungs. It has also been studied as a potential route of administration for systemic diseases due to the vast absorptive surface area and highly permeable membrane of the alveolar region. Pulmonary delivery is unaffected by dietary complications and interpatient metabolic variation. At present, there are three main classes of devices for pulmonary drug delivery: metered dose inhalers, nebulizers, and dry powder inhalers.

6. *Sublingual drug delivery*

   It is the term used for administration of a drug under the tongue, which is then absorbed into the bloodstream via the tongue's ventral surface and the floor of the mouth. Sublingual absorption is rapid and as a result, onset of action can be achieved quickly. This route of delivery avoids hepatic first pass metabolism. However, in smokers this route of drug delivery is not recommended as the absorption and efficacy of the drug is reduced by smoking due to vasoconstriction of the vessels.

7. *Transdermal drug delivery*

   It is a method of delivering a drug systematically by applying a formulation onto the skin. Initially, the drug penetrates the stratum corneum and then progresses through the deeper epidermis and dermis where it is finally systematically absorbed via the dermal microcirculation. It is non-invasive and suitable for unconscious or vomiting patients.

8. *Vaginal/anal drug delivery*

   It has a faster onset of action compared to the oral route and also higher bioavailability. Rectal medications can be used to exhibit local effects like laxatives for constipation or systemic effects such as analgesics for pain when other routes are contraindicated. Vaginal drug administration avoids first pass metabolism and is unaffected by gastrointestinal disturbances. It is often considered for administration of hormones.

Drug delivery vehicles

Drug molecules that exhibit low bioavailability require protection from degradation such as enzymatic and acid catalyzed reactions once inside the body. The most commonly used carrier-based delivery is nanoparticles.

Nanoparticles

Their size typically ranges from 100 to 500 nm. They make ideal carriers for delivering a particular drug to a specific target tissue as they can optimize bioavailability, increase stability and solubility due to their small size and larger surface area. Their appeal as drug carriers is enhanced by their ability to:

- Cross the blood brain barrier (BBB)
- Enter the pulmonary system
- Pass through the tight junctions of endothelial cells

Nanoparticles can enter the body through injection, inhalation or when taken orally. However, if the body detects a nanoparticle as a foreign matter, the body's natural immune response will destroy it. This can be prevented by changing the surface properties of the particle by incorporating polymer complexes onto the surface. Nanoparticles have been explored as carriers for drugs to treat numerous conditions including cancer, neurological disorders, and acquired immune deficiency syndrome (AIDS).

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Sources of Compounds Used in Pharmaceutical Substances

Pharmaceutical substances are used in the treatment, diagnosis, or prevention of disease, moreover for the restoration, correction, and modification of organic functions. The use of medicinal plants and minerals goes back to the ancient Chinese, Hindu, and Mediterranean civilizations. It was in 1546 that the first pharmacopoeia appeared in Germany and in the 1617 that came the profession of pharmacy with the founding of the society of Apothecaries in London. Throughout the years, various novel sources came up with the advent of technology and new discoveries. Some of these existing sources include plant sources, animal sources, minerals/earth sources, microbial sources, semi synthetic/synthetic sources, and recombinant DNA technology.

Plant sources

Plant sources is one of the most dominant natural medicine sources because of their chemical and structural diversity and biodiversity of their components. In current clinical practice, there is around 80% of antibiotics, immunotherapy, cardiovascular, and anticancer drugs that comes from plants. Different parts of the plant are used in the fabrication of drugs such as the leaves, roots, seeds, fruit, bark, and flowers. For example, aspirin, which is a popular active pharmaceutical ingredient, is a synthetic derivative of the natural compound salicylic acid obtained from the willow bark, digoxin from the flower digitalis lanata, and morphine from opium.

Animal sources

According to WHO, out of the 252 essential chemicals, it was found that 8.7% come from animals and around 11.1% from plants. These animal products in pharmaceutical products play a role in active and inactive ingredients such as binders, carriers, fillers, and colorants. For example, pepsin is obtained from the stomach of cow, gelatin is made from the animal bones, frozen pork, or calf skin and insulin from the cow. Just like for plant sources, the animal sources are not only available from land but also from the ocean such as bryostatin extracted from the bryozoan which are aquatic invertebrate animals. It has even been found that insects are full of useful compounds, for example, the blow fly larvae produce alloferon which is an antimicrobial compound. There is also research by president of Shandong insect industry Association who says that cockroaches can cure oral and peptic ulcers, skin burns, and wounds and even prevent stomach cancer. Though the use of animal sources is widely use, it was found to be an area of growing concern for some patients for religious, cultural, and ethical concerns.

Mineral sources

Since the ancient times, minerals (both metallic and non-metallic) have been used as drugs. Minerals are normally found in food and earth. There exist two types of minerals namely: macro minerals and trace minerals, whereby the body requires a larger amount of macro minerals which include calcium, phosphorus, magnesium, sodium, potassium, chloride, and sulfur whilst the trace minerals include iron, manganese, copper, iodine, zinc, cobalt, fluoride, and selenium. It is essential for the maintenance of homeostasis in our body, help in muscle contractions, triggering immunity, supporting the nervous system and thyroid functions, and strengthening of teeth and bones. When patients lack minerals in their body, they can take mineral-based drugs to raise the level of minerals. For example, ferrous sulfate is used for anemia, sodium hydrogen carbonate is used for antacid, magnesium sulfate is used as purgative etc.

Microbiological sources

The era of microbial drug started with the discovery of Penicillin by Alexander Fleming. Microorganisms are widely used in the manufacturing of antibiotics, vaccines, steroids, antivirals, antifungals, and antiparasitic drugs. For example, we obtained Penicillin from Penicillin Notatum, Streptomycin from Streptomyces Griseus, and Neomycin from Streptomyces Fradiae. According to UC San Francisco researchers, it has been found that bacteria that live inside and on us have genetic blueprints which enable them to make thousands of molecules that act like drugs and some of them may help in the basis for new human therapeutics. The production of drugs from microbes is a very distinctive process for instance, in the production of Penicillin, the Penicillin is synthesized in the lab using Penicillium mold in which the Penicillin is naturally produced. The mold is grown with sugars and other ingredients in a deep fermentation tank until the Penicillin is able to be separated from the mold.

Semi synthetic sources and synthetic sources

In the production of synthetic drug, it uses chemical synthesis which rearranges the chemical derivatives for the formation of a new compound. This technique involves human skills in the laboratory, advanced knowledge, and the comprehension of phytochemical investigation. The types of synthetic drugs are cannabinoids and stimulants. Examples of synthetic drugs are acetylsalicylic acid known as aspirin, antihistamines, chloroquine, oral antidiabetics, general and local anesthetics, paracetamol etc. The advantage of synthetic drugs is that there is a higher yield with a better quality, purity and it is of lower cost.

Semi synthetics drugs are defined as neither completely natural nor completely synthetic as they are hybrid meaning that are generally made by chemically modifying substances, available from natural sources for the improvement of its potency, efficacy, and reduction of the side effects. The nucleus of drug in semi synthetic drugs, obtained from natural sources is kept intact

but the chemical structure is modified. Semi synthetic drugs are made when the natural resources may form impure compounds or when the synthesis is tough, costly, and commercially unviable. Examples of semi synthetic drugs are heroin from morphine, bromoscopolamine from scopolamine, ampicillin from penicillin, homatrophine from atropine etc.

Recombinant DNA technology

This is a new field that has been developed by mixing discoveries pertaining to molecular biology, recombinant DNA technology, DNA alteration, gene splicing, immunology, and immune pharmacology. Biologics are drugs developed using living organisms with the help of biotechnology or genetic engineering. Examples are Hepatitis B vaccine, recombinant insulin etc.

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Written By:

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Tourette's Syndrome

The term was first coined by Gilles de la Tourette in 1885. Tourette's is an inherited neurodevelopmental disorder affecting the development of the nervous system in terms of emotion, learning ability, and memory. Tourette's is categorized as the most severe type of tic disorder. Tics are sudden, rapid, and involuntary movements or sounds (vocals).

They are observed in early childhood and gradually weaken later in adolescence. Patients in their 20s may become symptomless and do not need to consume medications to suppress their tics. TS is chronic and can last for a lifetime, tics weakens with age however, co-occurring disorders may persist, affecting the adult patients tremendously. TS patients have a normal life expectancy.

Etiology

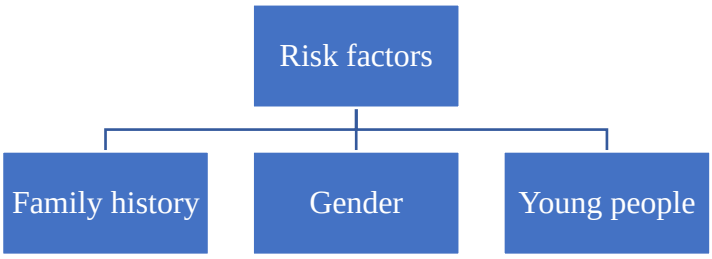
The exact etiology is still unknown however, studies suggest that it may involve genetic and environmental factors.

Possible causes:

- TS is genetic, caused by an unknown gene (responsible for brain development) mutation (e.g., NRXN1 and CNTN6) that can be inherited or developed when the fetus is still growing in the uterus. These may cause brain dysfunction particularly in the basal ganglia (responsible for body movements), affecting the neurotransmitters (chemicals and nerve cells including serotonin, dopamine, and norepinephrine) which carry information in the brain. As a result, the patient cannot control their movements.

  If someone has contracted TS in the family before, an individual has a higher chance to have TS but does not necessarily have the same signs and symptoms.

- Environmental factors which alter genes (genetic) such as smoking or consuming alcohol during pregnancy, birth complications, born underweight, or having Group A streptococcal infection during childhood.



- Family History: If a member of the family has any tic disorder or has TS then it is more likely that someone contracts it, especially if one of the parents has it.
- Gender: Males are about 3-4 times more prone to contract TS than females.
- Young people: The condition can be first diagnosed between 2-15 years of age.

Treatment

1. *Medication*
   - Antipsychotics: To reduce or block the effects of dopamine. Side effects include recurring involuntary movements and weight gain.
     E.g., Pimozide (Orap), Haloperidol (Haldol), and Fluphenazine (Prolixin)
   - Stimulants: That are given to ADHD patients in order for them to concentrate for a longer lapse of time.
     E.g., methylphenidate (Ritalin & Concerta) and dextroamphetamine (Dexedrine & Adderall XR)
   - Anti-seizure medications such as *topiramate (Topamax)* to reduce TS' symptoms. The side effects are weight loss and sleepiness.
   - Adrenergic inhibitors (Usually given to hypertension patients): To regulate urges and rage. Side effect is sleepiness.
     E.g., guanfacine (Tenex) and clonidine (Catapres).
   - Antidepressants: To regulate symptoms of anxiety and depression.
     E.g., fluoxetine (Prozac & Sarafem)

2. *Therapy*
   - Behavioral therapy-teaches techniques and strategies to manage tics
     E.g., Habit-reversible training
   - Psychotherapy-Treat symptoms like anxiety, depression, and ADHD with the help of a psychiatrist or psychologist.
   - DBS (Deep Brain Stimulation)-recommended for severe cases of TS. It involves using a battery-operated medical device implanted in the brain which transmits electrical stimulation to specific areas of the brain that control movement.

3. *Education*
   E.g., Tourette Syndrome Association

Conclusion

TS is a neurological condition which can be diagnosed using DSM-5-TR, [The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision] or neuroimaging tests. The search for its exact pathophysiology is still ongoing. The hypothesis is that it is an inherited developmental disorder of synaptic neurotransmission. There is no cure available except treatment for its symptoms. No two individuals in a family having TS have the same signs and symptoms. It is important not only to educate patients and their relatives but also make the general population aware of such disorders by doing advertisements such as campaigns and brochures among others.

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Written By:
Ms. Madiihah Mahamoodally, 2nd Year BPharm Student, JSSAHERM

Paleo Diet: What is it and why is it so popular?

If you're a foodie and you're not living under a rock, chances are you've heard of the paleo diet, because it's similar to what our ancestors ate. It's been featured in many books, praised by many celebrities, and is generally gaining popularity in the food world. Paleo diet is a diet which is an eating plan based on foods that human might have eaten during Palaeolithic Era. Palaeolithic Era is an Era that started 2.5 million to 10 000 years ago. Paleo diet is also referred as Palaeolithic diet, stone age diet, hunter – gatherer diet as well as cave man diet. It is a way of eating which truly goes back to basics and centers on the idea that eating like our ancestors aligns with our genetics and promotes good health. The aim of this diet is to eat as natural as possible. The food choices of paleo dieters are limited to what could be hunted, fished, or gathered in prehistoric times such as meats, fish, and vegetable.

Purpose of this diet and why people are following this diet:

The theory is that the rise in chronic diseases in modern society stems from the agricultural revolution. It suggests that adding grains, legumes, and dairy to meals may lead to a host of chronic diseases and conditions such as from obesity to allergies as well as diseases such as diabetes and heart rate.

Paleolithic diet as a dietary concept was first promoted by Gastroenterologist, Dr Walter L Voeglin. The diet is usually low in carbs but rich in protein and plant foods. Plant foods all the mandatory fibres, vitamins, minerals and phytochemicals. It does not promote any processed meats food and encourages the inclusion of fruits and vegetables. Many people follow paleo diet if they want to lose weight or keep healthy weight or reduce heart disease or cardiovascular risk factors or even maintains healthy bones and reduces inflammation. It also points to the diet being a way to solve the problems of increasing cancer, diabetes, heart diseases, and other illnesses that have been linked to our unhealthy current diets. Paleo diet helps in healing faster from injuries.

Foods that should be eaten	**Foods that are forbidden to eat**
Meat, fish, poultry, some fruits, veggies, nuts, seeds, and coconut. Emphasis is on pasture-fed animals who were raised in a humane environment under sustainable conditions.	All refined sugars, dairy products like milk, yogurt, butter and cheese; cereal grains like barley, wheat, corn, oats and rice; legumes, including all beans, lentils, peas and soybeans and soy products; starchy vegetables like potatoes and all potato products, sweet potatoes, and yams; salty or cured meats such as deli meats, and bacon; pickled foods, many condiments, and really all packaged or processed foods.

Advantages and disadvantages of adopting a Paleo diet:

Advantages	Disadvantages
Eliminates reliance on white refined carbohydrates	Very little science backing up some of the Paleo Diet claims
Encourages lots of vegetables	No large studies assessing Paleo Diet for long-term weight loss and maintenance
No more processed snack foods, which are high in calories and low in nutrients	Ultra-restrictive diets like Paleo don't last
Paleo diets are naturally low in sugar	Too hard to maintain over a long period of time, which leads to yo-yo dieting and can mean poorer health
Encourages careful selection of meats, poultry, eggs, and fish which have been humanely raised and/or pasture-fed	Beans & whole grains, which are not allowed, are an important source of nutrients and fibre, plus an eco-friendly source of protein
Weight loss may occur because fewer calories are being eaten, and empty calories have been eliminated	If weight is lost due to healthier eating, it would be hard to maintain this weight loss over a lifetime
	Large reliance on meat, which has repeatedly been shown to increase risk of disease and is very taxing on the environment
	Most Paleo eaters rely heavily on coconut products, which are imported from far away and thus carry a huge carbon footprint
	Time consuming & expensive

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Written By:
Ms. Shristee Devi Sawranut, 2nd Year BPharm Student, JSSAHERM

Women's Innovation in Technology

Nowadays technology is present all around the world and women had and still have a major contribution to its success. "Girls are capable of doing everything men are capable of doing. Sometimes they have more imagination than men" – Katherine Johnson, NASA Mathematician.

One of the women who changed the face of technology is Ada Lovelace. Her mathematical talent shone through in her early life, and her skills and interest in machines lead to a working relationship with Charles Babbage, who was the inventor of the "Analytical Engine", a device that was never created but resembling a modern computer. As a result of her work on the project, Ada is often referred to as the "world's first computer programmer".

Furthermore, Katherine's trajectory analysis as a mathematician for NASA was crucial to the success of the first ever US space flight. Her complex manual calculations were also critical in future space missions, including the first American in orbit, John Glenn. Katherine ran the numbers programmed into the computer at NASA for the flight by hand, at the request of Glenn.

In today's world, women are still contributing to the success of technology. Debjani Ghosh is a veteran of the technology. She is also a staunch champion of gender diversity in corporate India, Debjani was the first woman to lead Intel India, Manufacturers' Association for Information Technology (MAIT). But now she leads NASSCOM. Over her illustrious career spanning over two decades, she held diverse leadership roles across geographies in South and Southeast Asia at Intel.

Being a woman in technological world shows just how innovation works. Outstanding women can function as inspirational examples of success, illustrating the kinds of achievements that are possible for women around them. They demonstrate that it is possible to overcome the traditional barriers and become independent. Happy women's day to all women around the world.

Written By:
Mr. Yuvraj Dany, 1st Year BPharm Student, JSSAHERM

FDA Approved Drugs

S.N	Drug	Indication	Date of Approval
1	Leqembi (lecanemab-irmb) Injection	To treat Alzheimer's disease	06/01/2023
2	Brenzavvy (bexagliflozin) Tablets	To improve glycemic control in adults with type 2 DM as an adjunct to diet and exercise	20/01/2023
3	Jaypirca (pirtobrutinib) Tablets	To treat refractory mantle cell lymphoma	27/01/2023
4	Jesduvroq (daprodustat) Tablets	To treat anaemia caused by chronic kidney disease	01/02/2023
5	Lamzede (velmanase alfa-tycv) Lyophilized Powder for Injection	To treat non-central nervous system manifestations of alpha-mannosidosis	16/02/2023
6	Syfovre (pegcetacoplan) Injection	To treat geographic atrophy (GA) secondary to age-related macular degeneration (AMD).	17/02/2023
7	Filspari (sparsentan) Tablets	To reduce proteinuria in adults with primary immunoglobulin A nephropathy.	17/02/2023
8	Altuviiio (antihemophilic factor recombinant, Fc-VWF-XTEN fusion protein-ehtl) Lyophilized Powder for Injection	A recombinant DNA-derived, factor VIII concentrate indicated for use in people with hemophilia A.	22/02/2023
9	Skyclarys (omaveloxolone) Capsules	Treatment of Friedreich's ataxia	28/02/2023
10	Zavspret (zavegepant) nasal spray	For the acute treatment of migraine	09/03/2023
11	Daybue (trofinetide) Oral Solition	For the treatment of Rett Syndrome	10/03/2023
12	Zynyz (retifanlimab-dlwr) injection	For the treatment of Metastatic or Recurrent Locally Advanced Merkel Cell Carcinoma (MCC)	22/03/2023

Drug Profile: Xylazine

- **Class:** Central nervous system depressant

- **Indication:**

Farbenfabriken Bayer in Leverkusen, Germany, discovered xylazine as an antihypertensive agent in 1962.

The FDA approved xylazine for veterinary use, where it is used for sedation, anesthesia, muscle relaxation, and analgesia in animals such as horses, cattle, and other non-human mammals. Veterinarians also use xylazine as an emetic, especially in cats. It is an analog of clonidine and an agonist at the α2 class of adrenergic receptor.

- **Clinical purposes**

Xylazine is in many cases utilized as a calming, muscle relaxant, and analgesic. It is habitually utilized in the treatment of tetanus. Xylazine is basically the same as medications like phenothiazine, tricyclic antidepressants, and clonidine. As a sedative, it is regularly utilized related to ketamine. Xylazine seems to lessen aversion to insulin and glucose take-up in humans.Yohimbine, an α2 adrenergic receptor antagonist, has been utilized to diminish glucose levels to a sound level. In clinical settings, yohimbine can switch the unfriendly impacts of xylazine whenever regulated intravenously not long after xylazine administration.

- **Incidental effects**

Xylazine glut is normally deadly in humans. On the grounds that it is utilized as a medication defilement, the side effects brought about by the medications going with xylazine administration fluctuate between individuals.

The most well-known side effects in people related with xylazine administration incorporate bradycardia, respiratory wretchedness, hypotension, transient hypertension auxiliary to alpha-1 stimulation, and other focal and hemodynamic changes. Xylazine altogether diminishes pulse in creatures that are not premedicated with drugs that have anticholinergic effects.

Xylazine organization can prompt diabetes mellitus and hyperglycemia. Other conceivable secondary effects that can happen are areflexia, asthenia, ataxia, obscured vision, bewilderment, dazedness, tiredness, dysarthria, dysmetria, blacking out, hyporeflexia, slurred discourse, sluggishness, faltering, unconsciousness, apnea, shallow breathing, drowsiness, untimely ventricular constriction, tachycardia, miosis, and dry mouth. Once in a while, hypotonia, dry mouth, urinary incontinence and vague electrocardiographic ST fragment changes occur. It has been accounted for that the term of side effects after human excess is 8-72 hours. Further exploration is important to order the incidental effects that happen when xylazine is utilized related to heroin and cocaine.

Persistent use is accounted for to be related with actual disintegration, reliance, abscesses, and skin ulceration, which can be genuinely weakening and painful. Hypertension followed by

hypotension, bradycardia, and respiratory discouragement lower tissue oxygenation in the skin. In this manner, constant utilization of xylazine can advance the skin oxygenation shortfall, prompting serious skin ulceration. Lower skin oxygenation is related with hindered mending of wounds and a higher opportunity of infection. The ulcers might overflow discharge and have a trademark odor. In serious cases, removals should be performed on the impacted extremities.

- **Overdose**

The known portions of xylazine that produce harmfulness and casualty in people differ from 40 to 2400 mg. Little dosages might deliver poisonousness and bigger dosages might be made due with clinical assistance. Non-lethal blood or plasma focus goes from 0.03 to 4.6 mg/L. In fatalities, the blood grouping of xylazine goes from follow to 16 mg/L. It is accounted for that there is no characterized protected or deadly convergence of xylazine due to the critical cross-over between the non-deadly and after death blood centralizations of xylazine.

Right now, there is no particular counteractant to treat people who glut on xylazine. Hemodialysis has been proposed as a type of treatment, yet is generally ominous because of the enormous volume of dissemination of xylazine. The discovery of xylazine in organic liquids in people includes different screening strategies, like urine screenings, slight layer chromatography, gas chromatography mass spectrometry (GC-MS) and fluid chromatography mass spectrometry (LC-MS).

Different medications have been utilized as steady restorative mediation like lidocaine, naloxone, thiamine, lorazepam, vecuronium, etomidate, propofol, tolazoline, yohimbine, atropine, orciprenaline, metoclopramide, ranitidine, metoprolol, enoxaparin, flucloxacillin, insulin, and water system of the two eyes with saline. Impacts of xylazine are additionally switched by the analeptics 4-aminopyridine, doxapram, and caffeine, which are physiological adversaries to focal sensory system depressants. Joining yohimbine and 4-aminopyridine with an end goal to irritate xylazine is better as thought about than the organization of both of these medications separately because of decrease of recuperation time. Exploration drives might be vital to normalize therapy and decide compelling measures for recognizing constant xylazine use and intoxication.

- **Pharmacology**

Pharmocodynamics

Xylazine is a strong agonist of the 2nd adrenergic receptor. Xylazine and other 2 adrenergic receptor agonists are distributed throughout the body within 30-40 minutes of administration.

Since xylazine is highly lipophilic, it stimulates central 2 receptors as well as peripheral -adrenoceptors in a variety of tissues. As an agonist, xylazine reduces norepinephrine and dopamine neurotransmission in the central nervous system. It accomplishes this by binding to presynaptic surface auto receptors in the same way that norepinephrine does, resulting in feedback inhibition of norepinephrine.

Xylazine also acts as a transport inhibitor, inhibiting norepinephrine transport via competitive

inhibition of substrate transport. As a result, xylazine significantly increases Km while having no effect on Vmax. This is most likely caused by direct interaction with an area that is in contact with the binding site of the antidepressant

Pharmacokinetics

Xylazine is rapidly absorbed, metabolized, and eliminated. To provide reliable anesthesia effects, xylazine can be inhaled or administered intravenously, intramuscularly, subcutaneously, or orally, either alone or in combination with other anesthetics such as ketamine, barbiturates, chloral hydrate, and halothane. Injection is the most common method of administration. The medication is used as a veterinary anesthetic, and the recommended dose varies depending on the species.

The action of xylazine is usually seen 15-30 minutes after administration, and the sedative effect may last for 1-2 hours and up to 4 hours.

Once xylazine enters the vascular system, it is distributed throughout the bloodstream, allowing it to perfuse target organs such as the heart, lungs, liver, and kidney.

Blood plasma concentrations in nonfatal cases range from 0.03 to 4.6 mg/L. Because of the compound's uncharged, lipophilic nature, xylazine diffuses widely and penetrates the blood-brain barrier.

Cytochrome P450 enzymes in the liver metabolize xylazine. When xylazine reaches the liver, it is metabolized and then excreted as urine by the kidneys.

Urine excretes approximately 70% of a dose. Because urine contains many metabolites, which are the main targets and products in urine, it can be used to detect xylazine administration. Within a few hours, xylazine levels are undetectable. Other factors, such as sex, nutrition, environmental conditions, and prior diseases, can all have a significant impact on the pharmacokinetics of xylazine.

- **Recreational use**

Since the mid 2000s, xylazine has become famous as a medication of maltreatment in the US and Puerto Rico. Xylazine's road name in Puerto Rico is anestesia de caballo, which means "horse anesthetic". Xylazine's road name in US is "tranq," "tranq dope" and "zombie drug".

Xylazine clients are bound to be male, under age 30, living in a provincial region, and infusing as opposed to breathing in xylazine. Xylazine has comparable conduct results as heroin, subsequently it is usually utilized as a defilement. Xylazine is likewise habitually viewed as in "speedball" (a combination of a few manhandled drugs - typically cocaine, heroin or morphine, and fentanyl). The mix of heroin and xylazine produces a possibly more dangerous high than organization of heroin alone. Utilization of xylazine in mix with "speedball" may potentiate or delay the effects of different medications, which can prompt unfriendly results.

In 1979, the main instance of xylazine poisonousness was accounted for, in a 34-year-old male who had self-cured for sleep deprivation with infusion of 1 g of xylazine. Deliberate inebriation

from ingesting, breathing in, or infusing xylazine has been accounted for. The intravenous course is the most well-known course of organization for the people who misuse heroin or xylazine casually. In Puerto Rico, xylazine has expanded in ubiquity. Its utilization was related with countless detainee passings at the Guerrero Remedial Organization in Aguadilla, Puerto Rico, from 2002 to 2008.

When abused by people, recurrence of xylazine use relies upon social or monetary elements, as well as every client's abstract reaction to the medication's habit-forming properties. Naloxone can switch the impact of narcotic excess, however meaningfully affects xylazine. As of November 2022, its location in the circulation system requires a spectrophotometer-based test.

Causal variables hidden xylazine's rising prevalence are as yet unclear. Further examination is expected to acquire data on the circulation of xylazine in the body, actual side effects, likely therapies, and variables prescient of persistent use.

- **Veterinary use**

As a veterinary sedative, xylazine is directed once for expected impact before surgeries (trademark: Rompun)

In creatures, xylazine might be directed intramuscularly or intravenously. As a veterinary sedative, xylazine is regularly just regulated once for planned impact previously or during careful procedures.

Incidental effects

Incidental effects in creatures incorporate transient hypertension, hypotension, and respiratory depression. Further, the diminishing of tissue aversion to insulin prompts xylazine-prompted hyperglycaemia and a decrease of tissue glucose take-up and utilization. The length of impacts in creatures endures up to 4 hours.

Pharmacokinetics

In canines, sheep, ponies, and cows, the half-life is extremely short: just 1.21-5.97 minutes. Complete disposal of the medication can require up to 23.11 minutes in sheep and up to 49.51 minutes in horses. In youthful rodents, the half-life is one hour. Xylazine has an enormous volume of dissemination = 1.9-2.5 for ponies, cows, sheep, and dogs. However, the pinnacle plasma fixations are arrived at in 12-14 minutes in all species, the bioavailability fluctuates between species. The half-life relies upon the age of the creature, as age is connected with delayed term of sedation and recuperation time. Poisonousness happens with rehashed organization, considering that the metabolic freedom of the medication is generally determined as 7-9 times the half-life, which is 4 to 5 days for the leeway of xylazine.

Events' Corner

Event 1: ACPE Pre Accreditation

Brief Report on ACPE Visit for Pre-Accreditation of

Bachelor of Pharmacy and Doctor of Pharmacy Programs of JSSAHER Mauritius

7 – 9 February 2023

The Accreditation Council for Pharmacy Education (ACPE), USA team comprising Mr. Michael J. Rouse, Director, International Services, ACPE, Dr Jacob P. Gettig, Assistant Director, Accreditation Services, ACPE and Dr Jenelle Sobotka, Professor and Director, Online Certificate and Master's Programs in Pharmacy Leadership, University of Cincinnati, James L. Winkle College of Pharmacy, USA visited JSS Academy of Higher Education and Research, Mauritius (JSSAHERM) for assessment of the continuation of pre-accreditation of B Pharm and Pharm D programs.

The three days assessment process started as per the visit schedule and discussions were held in different sessions.

Day 1: 7th Feb 2023: Two sessions were discussed covering 07 criteria and post lunch the tour of the practice site was arranged. The assessors visited Two Hospitals viz., Clinic Darné and Wellkin hospital and two pharmacies viz., Transphorm Pharma and Love Life Pharmacy as part of the accreditation process.

Day 2: 8th Feb 2023: Three sessions were discussed covering 14 criteria and meeting with preceptors was arranged over lunch. The volunteer preceptors from Transphorm Pharma, Pyramid Pharmacare, Wellkin Hopstial and Clinic Darné participated in the discussion.

Day 3: 9th Feb 2023: One session covering 05 criteria was discussed. The interaction meet with students was arranged where the individual team member met the students in a separate cohort. The interview with the members of the academic staff was also part of the assessment and nine faculty members were interviewed. The accreditation process ended with Final Q&A session with Dean and Exit Report with the management of JSSAHERM.

Overall, the ACPE accessors were satisfied and appreciated the progress made for B Pharm program in terms of teaching and learning, curriculum, students and academic policies, staff resources and facilities and resources. The Pharm D program was also evaluated and ACPE awaits the approval of HEC for accreditation of the Pharm D program to be offered by JSSAHERM.

During the process, three courtesy visits were arranged to meet different stakeholders.

1. The Higher Education Commission, Mauritius – 8th February 2023, 10:30 to 11:15 AM

2. The Ministry of Health and Wellness, Mauritius – 8th February 2023 – 11:30 AM to 12:35 PM

The ACPE Team members and the officials from JSSAHER, Mauritius met Honorable Dr Kailesh Kumar Singh JAGUTPAL, Hon'ble Minister of Health and Wellness, Government of Mauritius. The Minister advised his officials to expedite the process of collaborating Government Hospitals with JSSAHER, Mauritius for the training/internship of the students.

3. The Ministry of Education, Tertiary Education, Science and Technology – 9th February 2023 – 03:30 PM to 04:10 PM

The ACPE Team members and the officials from JSSAHER, Mauritius met Hon. (Mrs) Leela Devi Dookun-Luchoomun, Vice Prime Minister, Government of Mauritius. The Vice Prime Minister appreciated the progress of JSSAHER, Mauritius in the higher education landscape and also congratulated JSSHAER, Mauritius as a health-based institution for playing a key role in training and empowering its students and other healthcare professionals in several capacities.

On 9th February 2023, the meet and greet session was organized with various stakeholders at Racing Club, Mauritius. The ACPE team members, the JSSAHERM team, and representatives from the Pharmacy Board, Pharmacy Council of Mauritius, Pharmaceutical Association of Mauritius, and Economic Development Board attended the dinner meeting. The discussion was held on the way forward for uplifting pharmacy education in the country. The members appreciated the efforts taken by the JSSAHERM for bringing all the stakeholders together for the discussion.

Event 2: International University and Career Expo 2023

JSSAHER, Mauritius participated at the International University and Career Expo 2023 from 10th to 12th February 2023 at Swami Vivekananda International Conference Centre (SVICC).

It is the biggest Career Expo in Mauritius organised every year in the month of February by Rotary Club. There were around 100+ enquiries for the various programmes and the most enquiries were received for BPharm programme and there were some enquiries for BSc (Hons) Biotechnology and BSc (Hons) Environmental Sciences programmes as well.

Event 3: Orientation Week for B Pharm Freshers' – 28th February to 4th March 2023

Day 1: Tuesday 28th February 2023

School of Pharmacy welcomed its 4th cohort of students on the 28th of February 2023 and organized the introductory week to familiarize the new batch of aspiring pharmacists with activities such as campus visit, guest and motivational lectures, library-use handling, introduction to E-Learning platform, fire safety instructions, and the traditional ice-breaking session with senior students.

As part of the orientation program, JSSAHERM organised an ice breaking session in an effort to bring about social interaction and familiarisation between freshers and seniors. A total of 24 students were involved among which 13 students were from cohort 4 and the rest from cohort 1, 2 and 3.

The Associate Professors, Dr. Khayati Moudgil and Dr. Yerrakula Goutham were the coordinators of the program. The ice breaking session composed of the following:

- Address by Dr. Khayati Moudgil.
- Welcoming speech by Ms. Misbah Dhuny from cohort 1, during which she urged the incoming students to learn new skills, make the most of their academic years, and utilize the resources offered by JSS AHERM. Also, she encouraged them to conduct research, write articles and publish their findings.
- A series of games like pass the pillow, pictionary, birth map and 'never have I ever'.
- Vote of thanks by Ms. Chunalvee Ramparsad.

The icebreaker activity was successfully carried out, and students from cohorts 1, 2, 3, and 4 actively participated. Everybody had the opportunity to introduce themselves and, in one way or another, inspire each other.

A glimpse of the sessions:

School of Pharmacy

JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS

A degree awarding institution registered with the Higher Education Commission, Mauritius

Orientation Program - B Pharm Freshers
28 February – 03 March 2023

AGENDA

Day 1: Tuesday, 28 Feb 2023 — **Venue: Classroom 1.1**

10:00 AM	Welcome and About JSSAHER, Mauritius, and Transition from School to College	Prof (Dr) Praveen Mohadeb, CEO & Vice-Chancellor
10:30 AM	Overview of administrative and student services	Mr Naveen K P, Registrar
11:00 AM	General Laboratory Safety Measures (Dos and Don'ts)	Prof (Dr) V Jaishree, Head, Faculty of Life Sciences
11:20 AM	Campus Visit	Dr Goutham Y, Assistant Professor and Ms. Smita, Admin Assistant
01:15 PM	Introduction and Icebreaking sessionwith II, IV, and VI semester students	Dr Khayati Moudgil, Assistant Professor and selected students

Day 2: Wednesday, 1 Mar 2023 — **Venue: Conference Room 2.11**

09:15 AM	Guest Lecture: Drug Abuse and Drug Prevention	N. Maudhoo Chief Inspector of Police ADSU Education and Training Cell.
10:00 AM	Guest Lecture: Crime Prevention and Safety	Representatives from the Police Crime Prevention Unit, Mauritius
10:45 AM	Guest Lecture: Current Scenario of Pharmacy in Mauritius	A Representative from the Pharmaceutical Association of Mauritius (PAM), Mauritius
01:00 PM	Guest Lecture: Campus Mental Health Awareness Lecture	Prof (Dr) M Kishore, MBBS, MD Head of Department, Psychiatry JSS Medical College & Hospital, JSS Academy of Higher Education & Research, Mysuru, India

Day 3: Thursday, 2 Mar 2023 — **Venue: Conference Room 2.11**

08:00 AM	First Aid Foundation Course	Mauritius Red Cross Society

Day 4: Friday, 3 Mar 2023 — **Venue: Conference Room 2.11**

10:00 AM	Guest Lecture: Awareness on Environmental protection and conservation	Mr Daksh Beeharry Panray Vice President and Project Leader Environmental Protection and Conservation Organisation (EPCO)
11:00 AM	Briefing on JSSAHER E-learn Platform	Dr Datta Kumar and team Enhanzed, India
01:00 PM	About the School of Pharmacy and Program Orientation	Prof (Dr) Ashish Wadhwani, Head, Faculty of Health Sciences

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The handwritten welcoming speech of Ms. Misbah Dhuny, entitled "Unwinding New Potentials of JSSAHERM" is as follows:

Respected teachers and dear friends,

A very good afternoon to you all! I am Misbah, 3rd year, 6th semester BPharm student.

First of all, heartiest congratulations to you all for your HSC performance.

I would like to start this speech by quoting a very successful, best-selling author, Mr Robin Sharma, and I quote:

"Success cannot be pursued; success ensues. It flows as the unintended by product of efforts concentrated in the direction of a worthy cause."

With that, it is with immense pleasure that I am welcoming you all today to your campus, to your university and to your home for the next 4 years, here, at JSS Academy of Higher Education and Research, Mauritius.

You may already know that JSSAHERM is the only institution in Mauritius, providing excellent BPharm course, accredited by the Higher Education Commission of Mauritius, and now, I can proudly say that it is also pre-accredited by the Accreditation Council for Pharmacy Education, the ACPE, which is based in America.

I would like to say that your teachers will always be here to support you, to inspire you, be your role models and give you feedbacks. Beyond that, it is your own determination, your own perseverence that will help you achieve your goals.

Be persistent, Do not give up!

All of you may be motivated now to start your course, but for me, motivation is only volatile and small disciplines repeated with consistency everyday will lead to great achievements.

You should understand that university life is not just about learning. Make use of and exploit the facilities provided by your institution, try to develop new skills like leadership skills, communication skills and creativity. Do some research, write some articles, publish your work, because why not!

Enjoy your university life, make new friends and participate in different competitions.

Hopefully, in 4 years time, you all will be pharmacists, respected pharmacists, may I add and believe me when I say that nothing will bring you more joy than listening to your patients, counselling them and after some days, they come back to you to thank you.

Of course, there is not only this aspect when it comes to the career prospects of a pharmacist. You can be in the research sector, clinical settings or even the manufacturing sector, among others. May be some of you would like to continue your studies, because now JSS Academy is also offering courses in MPharm.

With that, I would like to end my speech with another quote from the great Robin Sharma; I quote:

"The way to an extraordinary life lies in exploring ourselves, in learning of our greatest capacities and in understanding who we fundamentally are as people. Then, equipped with this essential knowledge, we can go out into the world to do what we have been wired to do and create the goodness that we have been placed here to create. Remember, you have a duty to shine, and this world will be less of a place if you choose to play small with your life."

I would like to thank Dr Khayati for making us part of this ice breaking session. I hope that you all will enjoy the activities we planned out for you.

Thank you all for your kind attention.

Day 2: Wednesday 1st March 2023

Guest Lecture on "Drug Abuse and Drug Prevention"

The guest lecture was organized by the School of Pharmacy of JSSAHER Mauritius for the benefit of the students on the topic "Drug Abuse and Drug Prevention". This session was done to sensitize the youth about the situation of illicit drugs in Mauritius.

Dr. Praveen Mohadeb, CEO, JSSAHERM did the opening remarks and welcomed the speaker, Chief Inspector of Police Mr. N. Maudhoo, part of the Anti-Drug Smuggling Unit (ADSU) and who is in the Education and training cell for this guest lecture.

Mr. N. Maudhoo in his lecture covered on the following main topics:

- ✓ What is a drug?
- ✓ Effects of drug on the individual and on his family
- ✓ Types of illicit drugs in Mauritius
- ✓ Dangerous drugs and the Dangerous Drug Act
- ✓ Drug cases in Mauritius
- ✓ Abuse and prevention

The chief inspector of police also shared his personal experience as below:

- Altered mental status of drug addicts
- The cultivation of drugs is done in remote places such as forests
- Adulteration of drugs, found often upon arrest (include rat poison and insecticides)
- The trend of illicit drug use in Mauritius uses cough syrup mostly and synthetic drugs

A glimpse of the session:

Guest Lecture on "Crime Prevention and Safety"

As part of the guest lecture on "Crime Prevention and Safety", Representatives from the Police Crime Prevention Unit of Mauritius were the invited guests.

Mr. Jayaprakash, Inspector covered the following points:

- ✓ The general situation in Mauritius
- ✓ The role and responsibilities of the youth
- ✓ Juvenile Delinquency
- ✓ Character of Certificate
- ✓ What is a crime?
- ✓ Causes of crime
- ✓ Crime prevention – so as not to be in police cell
- ✓ 3 things lead to a crime namely: Target, Criminal and Opportunity
- ✓ Larceny means theft according to Section 309
- ✓ Culpable omission – had an opportunity to stop something
- ✓ Computer misuse, Cybercrime Act 2003
- ✓ Information and Communication Technology Authority (ICTA) 2003

Important contact number of the Police Crime Prevention Unit: 6703112

A glimpse of the session:

Guest Lecture on "Current Scenario of Pharmacy in Mauritius"

The guest lecture was organized by the School of Pharmacy of JSSAHER Mauritius for the benefit of the B Pharm students on the topic "Current Scenario of Pharmacy in Mauritius".

Two representatives from the Pharmaceutical Association of Mauritius (PAM) were the speakers of the guest lecture.

Firstly, Mr. Chetan Rambans Dookun delivered a speech.

During the first talk, the following points were covered:

- ✓ Status of the pharmaceutical sector in Mauritius
- ✓ Pharmacy is a miscellaneous science
- ✓ An individual should not only be exam oriented but instead career oriented
- ✓ Develop the 3Cs namely: build your character, confidence and comprehension towards the pharmacy course
- ✓ The pros and cons of Pharmacy whereby there are more pros than cons

Then Mr. Sohawon Hossen who is the Secretary of the Pharmaceutical Association of Mauritius (PAM) covered the following points:

- ✓ The role of the Pharmaceutical Association
- ✓ The pharmaceutical Association was founded in 1979 with 110 registered pharmacists but today there are more than 450 registered pharmacists
- ✓ The PAM is acting against the regressive market currently taking place in Mauritius
- ✓ The Pharmacy Board of Mauritius issues licenses to the retail or wholesale pharmacies
- ✓ The Pharmacy Council is in charge of registering pharmacists as well as involved in Code of Ethics
- ✓ Pharmacy has a bright future towards industrial pharmacy and research
- ✓ His advice to be a good pharmacist is to be well-versed in pharmacology

The guest lecture was very beneficial to all students but mostly to our new students of the 4th cohort and to the students who are in their 3rd year of the B Pharm program as they will be the very first pharmacists to be taken by PAM.

Guest Lecture on "Campus Mental Health Awareness Lecture"

The guest lecture was organized for the benefit of the students of Faculty of Health Sciences and Faculty of Life Sciences on the topic "Campus Mental Health Awareness". The session was conducted via Google meet with all the students attending in the conference hall on the 1st march 2023 at 1pm.

Dr Ashish Wadhwani, welcomed the speaker and briefed about the importance of mental health.

Prof (Dr) M Kishore, who is a MBBS holder as well as a Doctor of Medicine, Head of Department, Psychiatry JSS Medical College & Hospital, JSS Academy of Higher Education & Research, Mysuru, India was the speaker of the guest lecture.

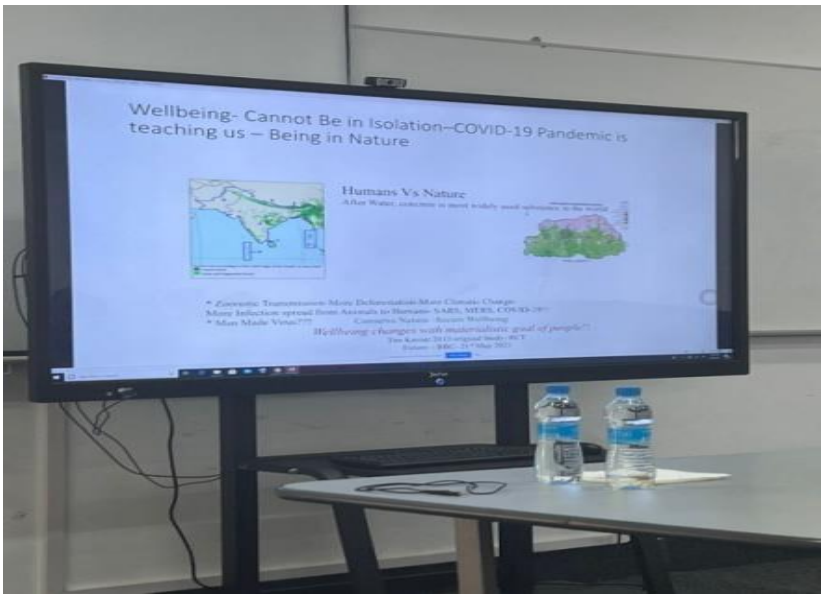
The following points were covered during the session:

- ✓ What is good life?
- ✓ Campus mental health – well-being promotion in campus, engage in campus activities
- ✓ Awareness to well-being – nutrition, sleep, exercise, relaxation and social support
- ✓ Mental health awareness – state of mind, chemistry of the brain
- ✓ Covid pandemic – role of pharmacists in the Covid era
- ✓ Technology dependent – more use leads to loneliness, tiredness and distressing
- ✓ Depression vs sadness
- ✓ Suicide and self-harm
- ✓ Peer pressure – smoking and drinking are cool things for fools, must learn to say "NO"

The session was interactive and the students enjoyed it thoroughly.

Dr Ashish Wadhwani thanked the speaker for his time in engaging the students and giving them good moral values as a good mental health leads to good productivity and growth in an individual.

A glimpse of the session:



Day 3: Thursday 2nd March 2023

Event: First Aid Foundation Course

On the 2nd of March 2023, the students, teaching and non-teaching staff of the JSS Academy of Higher Education and Research, Mauritius had a First Aid Training by the Red Cross Society of Mauritius. This training was given after numerous students and staff of the institution manifested their interest to have first aid training after a previous brief session on the latter. A total of 29 participants including staff, students and non-teaching staff participated in this MQA approved training program. and the training was given by Mr. Dooshian Tannoo. The training consisted of a theory part and a practical part which was held at the end. The aim of First Aid training is:

- Preserve life
- Promote recovery
- Prevent situations from worsening.

At the beginning of the session, everyone was given a personal first aid kit. The trainer then started by introducing the trainees to the basic of first aid, its definition, and aims and asked them the reason they chose to take part in this training. He then proceeded with how we should act when we are in front of a situation where someone is in difficulty. We should assess the danger surrounding ourselves and the casualty, check for his response, shout for help, and check his airway, breathing, rate, and circulation. We learned about the recovery position to put the casualty in while waiting for the SAMU to come. We then proceeded to learn about CPR and how to do a bandage which he demonstrated and afterward we practiced. We then learned about different cases that we could happen to be confronted with one day and how to diagnose the problem along with how to help the casualty in each case.

The different topics he covered were:

- Asphyxia
- Hanging and Strangulation
- Shock
- Fever and Convulsions
- Seizures and Absence Seizures
- Hypothermia
- Heat stroke
- Heat exhaustion
- Wound and Bleeding
- Fracture
- Poisoning
- Fainting
- Burn

The trainees learned how to handle adults, children, and infants, as the treatment given will differ.
Many participants were actively involved during the training where the trainer needed volunteers to act as the casualty.
At the end of the training, all the participants were asked for feedback on the training.
Certainly, all participants went back home that day with the knowledge and practice to help someone in difficulty more efficiently than they would have before.

Day 4: Friday 3rd March 2023

Event: Guest Lecture on "Awareness on Environmental Protection and Conservation"

Mr. Daksh Beeharry Panray, Vice-President of the EPCO, had been invited with pleasure, on the 3rd of March, to talk about conservation of the environment. The EPCO has been involved in the conservation of the environment since 1988- way before the Ministry of Environment was founded.

His fondness about Mother Nature led him to study and proudly obtain degrees in Environmental Science and Zoology in Mysore, India.

EPCO- Environmental Protection and Conservation Organization- is accredited with UNFCC and UNCCD and is in consultative status with the ECOSOC/UN/DPI.

While presenting EPCO's past achievements, a sense of fulfilment was sensed in the room.

EPCO's past achievements date since the year 1988.

Some fascinating projects EPCO will be covering this year are as follows:

- Resilient Island Endeavour- RISE Project
- Climate Change Awareness- funded by IKI
- Increased Socioeconomic Resilience of Fishing Communities- funded by Common Wealth Foundation

The RISE Project has fascinated the teaching staff, non-teaching staff and students mostly, since Mr. Daksh Beeharry Panray has mentioned the forgotten plant present in Mauritius- SEAWEED.

More specifically, sea lettuce sea weed will be used as a sustainable source of fertilizers in Mauritius.

Additionally, we could definitely see how comfortable Mr. Daksh was in his casual outfit and funnily stated that he works in his shorts.

Seeing his passion about Mother Nature, we simply could do nothing, but be moved.

After all, Mother Nature is the first pharmacy available to human kind and it is our duty to conserve and protect it.

Event 3: International Women's Day Celebrations 2023

"***Women are strong though, at one time, they were considered the weaker sex. With perseverance and confidence, a woman can achieve what was once thought to be unachievable....***", it was on these powerful words written on the board, that our guest of honor made her entry and hereby started the ceremony.

On the occasion of the International's Women's Day celebrated on the 8th March at the JSSAHERM, **Dr. Jayantee Naugah**, chairperson of the MIE, started by introducing herself by telling us some strong moments of her life revolving around her professional career and her childhood as a woman. Despite being such a successful figure, she still highlighted how hard it was at that time for women to stand out, which indeed showed the constant struggle that women have to face. Moreover, her speech focused on this year's theme; "**DigitALL: Innovation and Technology for Gender Equality**".

Dr. Ashish Wadhwani also delivered a small speech on how he is grateful and appreciative of a woman's contribution to the society and to her own family. Following the introductions and orations given by Dr. Jaishree as well as Dr. Khayati, an elocution contest was organised allowing students, not only girls but boys also to share their thoughts on women and their achievement as well as empowering women's journey.
Some wished to make good opportunity of this event to raise awareness on the health risks women encounter often due to some controversial contraceptive methods; the issues faced by a lot of women due to persisting stereotypes, lack of access to a lot of basic necessities and facilities and the discrimination they tend to face in pharmaceutical and other fields, but nonetheless some shared how they were appreciative of how women paved their way in the world during these last decades and how they made themselves a name in the science sector.

Others highlighted the incredible discoveries made by women who revolutionised the medical world and how women of today are asserting themselves more boldly. Each student delivered an amazing and powerful speech, but only one winner was to be proclaimed in each category:

Topic	**Winners**
Women in innovation & technology	Khatoon Juwairya Jafferally
Women in science & women pharmacists	Neelakshi Joyram
Achieving gender equality	Chetramsingh Chummun
Women rising in a male dominant sector (breaking the stereotype)	Zeenaat Bhatoo

And cherry on top of the cake, what else can be a better symbolic way of demonstrating the sweetness of women other than serving delicacies to end this day on a sweet note!

Glimpses of the event:

JSS Academy of Higher Education and Research, Mauritius

(A degree awarding institute registered with the Higher Education Commission, Mauritius)

INTERNATIONAL WOMEN'S DAY

DigitALL: Innovation and Technology for Gender Equality

08th March 2023

09:30 AM	Welcome Address:	Prof Dr V Jaishree
09:35 AM	Opening Remarks:	Prof Dr Ashish Wadhwani
09:45 AM	Chief Guest Address:	Prof Dr (Mrs) Jayantee Naugah Chairperson, MIE, Mauritius
10:15 AM	Elocution Competition - Empowering Women's Journey	

1. Women in innovation & technology
2. Women in science & women pharmacists
3. Achieving gender equality
4. Women rising in a male dominant sectors (breaking the stereotype)

11:15 AM	Felicitation talk (Open to all for sharing womanhood)	
11:25 AM	Prize distribution	
11:35 AM	Vote of thanks:	Mr K P Naveen
11:40 AM	Celebrations - Cake Cutting	

EmbraceEquity

Event 4: 55th Independence Day Celebrations at JSS AHERM

***Independence Day* is not just a one-day *celebration* but it is *celebration* of freedom and cultures.**

Like the previous year, JSS Academy of Higher Education and Research, Mauritius (JSSAHERM) celebrated the 55th Independence Day of Mauritius on the 10th March 2023. The preparations were made for all the staff and students but due to bad weather only the teaching and non-teaching staff gathered for the Flag raising Ceremony.

The quadricolour flag was hoisted while the National Anthem was played. A sense of pride and happiness could be seen on all the faces. The message of the Prime Minister was also read, which highlighted the importance of education as a powerful agent of change.

After the ceremony, refreshments were served to everyone present on that day and pictures were taken to conclude the event.

Students' Corner

My Expectations on Pharmacy 'Learning and as a Career

Pharmacy as a career

'If you change the way you look at things, the things you look at change'- Wayne Dyar, an American writer. Pharmacy in Mauritius is portrayed as a very little profession where pharmacists are recognized as merely dispensers who work in a pharmacy. Untruthfully behind these years of hardship of learning to become a pharmacist, there are many gates which open up once you really know the backbone of the prospect of pharmacy. I myself have not yet seen a clinical pharmacist in public hospitals or even private ones. From my perspective, I see it as a passionate and exciting choice as career. In addition, there is a plethora of professions that are less likely to be recognized and tend to be undervalued. One such example is the nuclear pharmacist which is extremely rare as there is only one individual in Mauritius who is licensed to practice this job. I acknowledge that the role of the pharmacist is quite underestimated, however, this does not mean that their profession is mediocre. It was rightly said by Confucius, a Chinese philosopher that: 'It does not matter how slowly you go as long as you do not stop'. As pursuing every child's dream of becoming a doctor I learned that this pathway is an uphill struggle. Little did I know that the level of dedication and mentality is as demanding since my choice to study BPharm is a new pathway for me. Nevertheless, after a fortnight of studying at JSSAHER, I knew that I had to completely change my mindset. My level of confidence assumed a crescendo trend and today I am more motivated than ever.

Written By:
Mr. Qays Baxou, 1st Year BPharm Student, JSSAHERM

Students' Learning Experience - Internship

Internship of Mr. Chetramsingh Chummun at C-Care Darné Hospital

As a pharmacy intern at C-Care Darné Hospital, I had a unique opportunity to gain hands-on experience in the healthcare industry working in both the inpatient and outpatient pharmacy settings. The experience was both challenging and rewarding, and working in both of these environments provided me with a well-rounded understanding of pharmacy operations, patient care and working within a team.

In the inpatient pharmacy, I was responsible for performing medication reconciliations, reviewing medication orders, ensuring that medications were appropriately prescribed, and preparing and dispensing medications for patients. This required a high level of attention to detail, as patients often have complex medication regimens that need to be carefully managed. One of the most important aspects of working in the inpatient pharmacy was ensuring medication safety. This required a thorough understanding of the pharmacology of numerous drugs, drug interactions, side effects, dosage forms and dosages. I was also provided with the opportunity to participate in patient care rounds whereby I reviewed a number of patient treatment charts. This helped me to enrich my clinical knowledge.

In addition to working in the inpatient pharmacy, I also had the opportunity to work in the outpatient pharmacy. In this setting, I was responsible for filling prescriptions and counseling patients on their medications. Working with patients from a variety of backgrounds helped me to develop my communication skills, cultural competence and taught me the importance of patient-centered care.

Overall, my internship at the hospital was an invaluable experience that helped me to develop my skills as a pharmacist. I gained a deeper understanding of pharmacy operations, patient care, and working within a healthcare team. I would highly recommend this type of internship to any pharmacy student looking to gain practical experience in the field.

Internship of Mr. Sheik Muhammad Abdallah Sultan at FBI Pharmacy

The very end of my 5th semester signified my dive into my first work exposure in the pharmaceutical world. One hundred and fifty hours- this is the minimum working time required as part of the BPharm curriculum set by JSSAHERM, a measure which I truly welcome as not only students discover the practical aspects of the profession but would also least likely encounter somewhat an unfamiliar shock when undergoing their pre-registration.

I decided to opt for a retail pharmacy for my first internship and the 4th of January 2022 was my first day on the job. After some socialising time with my employers and my colleagues, one of my first tasks was to analyse the stock which included but not limited to:

1. Discover how the products are arranged (whether First Expired First Out or based on aesthetic/ customer view) and how they correlate to market demands
2. Counting the stock
3. Learn how stock arrives to the pharmacy and its processing

Throughout my internship as I evolved into the profession, I became more accustomed to pharmacy software such as SIGMA ® which at first was tough to manage but my pharmacist's guidance came with a sense of easement.

My working schedule comprised of a 5-days-a-week programme which typically lasted from 0900-1700 with a one-hour break in between.

The following days more working tasks/objectives were laid upon under pharmacist supervision which were amongst others:

1. Dealing with customers (feelings/understanding/recommendations)
2. Handling purchases receipts and their filling for accounting purposes
3. Balancing of cash books and cash register at the end of work routine for night shifters
4. Understanding the practical aspects of the Prescription Book and its crucial legal/ethical importance
5. How to deal with expired products and their proper discard
6. Perform health tests such as Blood pressure and Blood-Glucose Level
7. Decipher prescriptions and clarifications if needed with medical practitioner

With the start of the 6th semester coming close, it was time for the end of my first internship which may have only lasted for one month, but it was an enriching and much needed good experience. Looking forward, I am really keen for more unconventional/unorthodox internships to encounter different settings of the pharmaceutical field.

Memorandum of Understanding/Agreements

The JSSAHER Mauritius also signed MoUs with the following placement sites:

1. Clinique Muller
2. Clinique Bon Pasteur
3. Bonne Terre pharmacy

This MoU focuses on Community Pharmacy Practice and management such as;

- procurement and inventory management,
- dispensing of medicines,
- computer applications
- pharmaceutical and patient care practices and
- any other specific best practices followed by the hospital/company

This MoU further enlightens the need to engage in Hospital Pharmacy such as:

- Participating in ward rounds, reviewing patient treatment charts, allowing patient reviews and monitoring ADRs
- Assessing possible drug interactions and performing dose divisions
- Inventory management and performing medication audits
- Use of Hospital Information System (HIS) to indent, issue, and print labels, prior to dispensing of medications

JSSAHERM Faculty Publications and Conferences Attended
(January-April 2023)

1. Anindita De, Ashish Wadhwani, Sauraj, Parikshit Roychowdhury, Ji Hee Kang, Young Tag Ko and Gowthamarajan Kuppusamy. ***Decorated Metformin-Carboxymethyl Chitosan Nanoparticles for Targeting Breast Cancer Metabolism***. *Polymers* ***2023***, *15, 976.*
   Available at: https://doi.org/10.3390/polym15040976

polymers

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CERTIFICATE OF PUBLICATION

Certificate of publication for the article titled:

WZB117 Decorated Metformin-Carboxymethyl Chitosan Nanoparticles for Targeting Breast Cancer Metabolism

Authored by:

Anindita De; Ashish Wadhwani; Sauraj; Parikshit Roychowdhury; Ji Hee Kang; Young Tag Ko; Gowthamarajan Kuppusamy

Published in:

Polymers **2023**, Volume 15, Issue 4, 976

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Basel, February 2023

Solar X Grand Challenge 2022/2023 workshop

International Solar Alliance, Children's Investment Fund Foundation and Invest India Partnership (National Investment Promotion and Facilitation Agency) have organized the Capacity Building of the Solar X Grand Challenge 2022/2023 workshop on 17th March 2023 in Collaboration with the Economic Development Board, Mauritius in High Commission of India Building Ebene. SolarX Grand Challenge Capacity Building Workshop was on the energy crisis in Africa and the startup Ecosystem in Africa. The program started with opening remarks by Dr. Drishtysingh Ramdenee (Director EDB) and Mrs Zeenat Guness Goolbar (Ministry of Energy and Public Utilities) and welcome address by Ms. Shobhita Bhatia (Consultant-Communications and Outreach) and a keynote address by H.E. Mr. Vimarsh Aryan (Deputy High Commissioner) on "Synergies between India and Mauritius" and brief information on SolarX Grand Challenge in Africa by Ms. Pallavi Gupta (Assistant Manager, Invest India).

Enabling the Growth of Start-ups was explained in detail by Ms. Shruti Singh and elaborated, Mr. Deujen Mungur Manager, EDB Mauritius discussed on Start-up Ecosystem in Africa and the Funding and Investment Climate and Mrs Archana Audit (Lead Professional, EDB Mauritius) explained about power sector in Mauritius and Opportunities for start-ups. At the end of the workshop, there was an online lecture by Mr. Abiy Girma (ISA East African Programme Coordinator) on Introduction to Solar Energy Ecosystem and its linkages and potential with a focus on Africa. And questions from the spectators and live application support session for SolarX Grand Challenge.

The Solar X grand challenge addressed a three-fold benefit for the African region such as financial (attracting investment in the solar energy sector), technical (thinning the gap of energy crisis in Africa) and innovation (Building the African startup ecosystem to develop innovative solutions).

Dr. Jaishree Vaijanathappa

Professor & Head
Faculty Life Sciences, JSSAHERM

International Pre-certification for B Pharm Program

MAKING IT THE 1ST INSTITUTE IN AFRICAN REGION TO GET ACPE PRECERTIFICATION

Accreditation Council for Pharmacy Education (ACPE), USA

Grants

International Precertification for B.Pharm Program

(Bachelor of Pharmacy - 4 Years Program)

Accreditation Council for Pharmacy Education

Certifies that the
Bachelor of Pharmacy Degree of

JSS Academy of Higher Education and Research Mauritius
School of Pharmacy

has fulfilled the Precertification requirements set forth by ACPE for the Professional Degree Program in Pharmacy and Precertification is hereby granted through June 30, 2025.

Executive Director

Director, International Services

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Accreditation Council for Pharmacy Education (ACPE), USA

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- B.Sc (Hons) Biotechnology (F/T)
- B.Sc (Hons) Cosmetic Science (F/T)
- B.Sc (Hons) Environmental Sciences (F/T)
- BBA (Hons) Hospital and Health System Management (F/T)

PG Programmes:

- M.Sc Environmental Sciences (F/T & P/T)
- M.Sc Microbiology (F/T & P/T)
- M Pharm (Pharmaceutics) (F/T &P/T)
- M Pharm (Pharmacy Practice) (F/T & P/T)
- M Pharm (Pharmacology) (F/T & P/T)
- M Pharm (Regulatory Affairs) (F/T & P/T)

For Clarifications/Feedback, Write

To:

The Chief Editor

JSS Health & Education Newsletter

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