JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH
MAURITIUS

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

JSS Health & Education Newsletter

XII Issue

September – December 2024

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About JSS Academy of Higher Education and Research, Mauritius

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 (HEC), 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 and Doctor of Pharmacy in 2023. The Bachelor of Pharmacy and Doctor of Pharmacy programmes of JSSAHERM have received Pre-accreditation from the Accreditation Council for Pharmacy Education (ACPE), USA, making JSSAHERM the first institution in the African region to get ACPE pre-accreditation. JSSAHERM has also received the accreditation of Doctor of Philosophy in Health Sciences, Life Sciences and Management Studies from HEC.

JSS Mahavidyapeetha (JSSMVP), Mysuru, India is the sponsoring society of JSSAHER, Mauritius. JSSMVP has established more than 350 educational institutions in India, Dubai, Mauritius, and USA, with a total student population over 100,000 and a staff strength of 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'. THE impact ranking 2024, JSSAHERM ranked 1st in the World for SDG 3 – Good Health & Well-being. Caring the legacy of JSSAHER, Mysuru, JSSAHERM entered the international ranking for the first time and has been ranked in the band of 81-100 in Times Higher Education Sub-Saharan Africa University Ranking 2024.

The School of Pharmacy, JSSAHERM started its Newsletter "Health & Education" in the year 2021 (Triannual issues) with the aim to cover general information related to health care & pharma sector, the latest happenings in the world of science, scientific articles of students and staff members on health and life sciences, invited papers and views, drug-related information and event corner of the JSSAHERM etc.

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Inside this Issue

Message

It is with immense honour and great pleasure that I present this foreword to introduce the XII Issue of the *JSS Health & Education Newsletter* (September–December 2024). This esteemed publication provides an opportunity to reflect on the achievements of an institution which is known in Pharmacy Education and Healthcare leadership.

As someone who has observed the journey of the JSS Academy of Higher Education and Research, Mauritius (JSSAHERM), I am moved by its continuous growth and unwavering dedication to shaping the next generation of healthcare professionals. The Academy's approach to education, blending academic excellence with practical experience is commendable.

JSSAHERM's commitment to empowering students is exemplified through its diverse array of initiatives, ranging from interactive workshops and industry collaborations to clinical internships and impactful community outreach programmes. I note with satisfaction that the Academy is endeavouring to ensure that its students are not only well-equipped to navigate the complexities of the healthcare sector but are also poised to make meaningful contributions to society.

I extend my heartfelt congratulations to the dedicated staff and talented students whose contributions have enriched this issue. The inclusion of scientific articles on ground-breaking topics such as Probiotics, E-tongue technology, Xenotransplantation, Hiccups, and the latest FDA-approved drugs highlights the Academy's commitment to advancing knowledge and innovation.

I also take this opportunity to commend JSSAHERM on celebrating its first Convocation—a significant milestone. My warmest congratulations go to the graduates of the Bachelor of Pharmacy, Bachelor of Science, Master of Science, and Management Studies programmes. May they carry forward the Academy's legacy of excellence and distinction as they embark on their professional journeys.

As JSSAHERM continues to evolve, I am confident that its dedication to academic brilliance and forward-thinking initiatives will empower its students to make a lasting impact in the fields of science and wellness. May the Academy continue to thrive and remain a shining example of excellence in healthcare education for generations to come.

I wish all readers an enlightening and enjoyable experience as they engage with this remarkable publication.

Dr The Hon. Kaviraj Sharma SUKON,PFHEA
Minister of Tertiary Education, Science and Research

Patient Safety

The global health care landscape is evolving due to the fact that health systems are functioning in ever complicated settings. New technology, service models, and therapies may have therapeutic benefits, but they may also present fresh risks to the provision of safe healthcare. Patient safety is a foundation of medical care and is currently acknowledged as a significant and expanding worldwide public health concern.

Despite ground-breaking work in certain health care settings, global attempts to lessen the burden of patient injury have not resulted in significant progress over the past 15 years. There is an inherent level of risk at every stage of the caregiving process.

To guarantee long-lasting and notable gains in the safety of healthcare, it is necessary to have clear policies, organizational leadership capacity, data to drive safety improvements, skilled healthcare personnel, and effective patient and family involvement in the care process.

Global public health is seriously and urgently concerned with patient safety in healthcare. Patient injury places a heavy load on all global health care systems. An unacceptable number of individuals are hurt or lose their lives each year as a result of unsafe and subpar medical care. The majority of these wounds are preventable.

The scope and size of the issue are emphasized by the burden of unsafe treatment in general. Adverse event-related patient harm is probably one of the top ten global causes of mortality and disability. The majority of these injuries and fatalities are preventable. Approximately 10% of hospitalized patients are said to suffer injury, of which at least 50% could have been avoided.

The annual cost of harm related to death or permanent disability, which causes the afflicted patients and their families to lose capacity and output, is estimated to be in the trillions of US dollars. Furthermore, even if it is more challenging to quantify, the psychological toll that losing a loved one or rendering them disabled has on the patient and their family is undoubtedly substantial. To combat this, the Nnations should come together to strengthen their National Policies which can create the better health care sectors with a motive of patient safety.

Dr Khayati Moudgil
Editor in Chief
JSSAHERM

Probiotics

From 'Pro' and 'Biota'

WHAT ARE THESE?

Probiotics are the living microbes given to help accomplish the work internal intestinal bacteria in keeping your digestive tract in great health.

WHAT ARE PROBIOTICS USED FOR?

Since the mid 90's, several clinical researches have shown that probiotic therapy can help treat various gastrointestinal disorders, thus significantly reducing the chance of allergies in children and help prevent vaginal and urinary infections in the female population.

Currently, probiotics are mainly being used for the treatment of DYSBOSIS, a condition of internal imbalance between the 'good' and 'bad bacteria of the gut. Dysbiosis is usually an initial condition which, if not properly managed, may lead to further complications such as:

Condition	Description
Obesity	Excess body fat that can lead to various health problems
Autoimmune Disease	A condition where the immune system attacks its own tissues.
Cancer	A disease characterized by abnormal cell growth and division.
Liver Disease	Conditions affecting the liver, such as fatty liver or cirrhosis.
Metabolic Syndrome	A cluster of conditions that increase the risk of heart disease, stroke, and diabetes.
Hypertension	High blood pressure.
Multiple Sclerosis	A chronic autoimmune disease affecting the central nervous system.
Early Aging	Premature signs of aging, often associated with chronic health conditions.
Allergies	Hypersensitivity reactions to substances in the environment.

Some of the commonly available probiotics of the Mauritian pharmaceutical industry are:

FOOD SOURCES FOR BENEFICIAL MICROBES

Even though probiotics are readily available in the form of capsules, powders or liquids, which are meant for daily oral consumption to complement our regular meals, these important microorganisms are also richly present in various common food items of different cultures such as:

Yoghurt	made from milk, fermented by probiotics
Kefir	fermented probiotic drink, made by addition of kefir grains to goat's or cow's milk
Sauerkraut	Finely shredded cabbage, which has been previously fermented by lactic acid bacteria. [It is a popular traditional food in Eastern Europe]
Tempeh	Fermented soybean firm patty, originating from Indonesia. It is a high protein meat substitute.
Kimchi	A fermented spicy Korean dish made mainly of cabbage. It contains the bacteria" Lactobacillus Kimchi".
Miso	A Japanese seasoning prepared by fermentation of soya beans along with a fungus known as koja and salt. [a very good source of fiber, manganese, copper and vitamin K']
Pickles	Vegetables, usually cucumber, which are preserved in salted water. However, Indian pickles made with vinegar, do not have probiotics
Traditional buttermilk	Commonly known as Grandma's probiotic, this fermented dairy drink is rich in vitamin B12, riboflavin, calcium, and phosphorus

In conclusion, probiotics hold a valuable role in maintaining and supplementing the gut microbiome, body immunity and overall wellbeing. Probiotics also come in handy in treatment of specific health conditions such as allergies, irritable bowel syndrome, infections as well as other skin disorders. In today's polluted environment, daily probiotic intake has become a must.

"We ingest probiotics because we don't eat enough "dirt" anymore."
Nassin Nicholas Taleb

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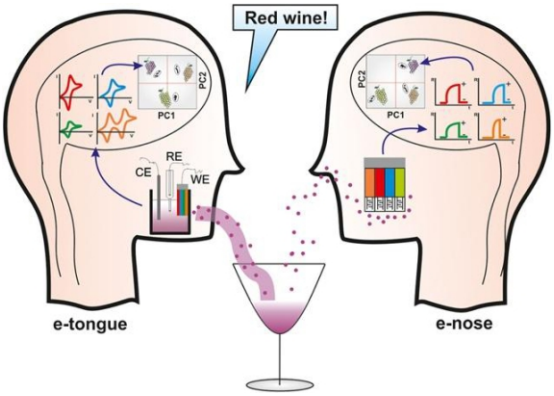
E-Tongue Technology: Transforming Pharmaceutical



The pharmaceutical industry is continuously evolving, driven by the need for innovative solutions that enhance drug development and patient compliance. One of the most promising advancements in this arena is E-Tongue Technology, an analytical tool that mimics human taste perception. This technology serves as a vital asset in evaluating the palatability of pharmaceutical formulations, particularly in addressing the inherently bitter tastes of many active pharmaceutical ingredients (APIs).

Understanding E-Tongue Technology:

An electronic tongue (e-tongue) is a sophisticated instrument designed to analyse and quantify taste profiles. It employs an array of nonspecific chemical sensors that generate electrical signals upon contact with various taste compounds. Each sensor in the array responds to different taste qualities—sweet, sour, salty, bitter, and umami—creating a unique "taste fingerprint" for each sample. This technology not only assesses taste but also aids in optimizing formulations to improve patient adherence.

How It Works?

The e-tongue operates through several key components:

- Sensor Array: A collection of sensors tailored to detect specific taste compounds.
- Data Acquisition System: Converts the signals from the sensors into digital data for further analysis.
- Chemometric Analysis: Utilizes statistical methods to interpret the data and classify the taste profiles.

When a liquid sample is introduced, it interacts with the sensors, generating distinct electrical responses that reflect its taste characteristics. This data can then be processed to provide insights into the formulation's palatability.

Applications in Pharmacy:

E-tongue technology has diverse applications within the pharmaceutical sector:

- Taste Evaluation: E-tongues provide an objective means of assessing the palatability of oral dosage forms. This capability is crucial given the ethical concerns surrounding human taste testing.
- Formulation Development: By integrating taste evaluation into stability studies and formulation processes, e-tongues streamline drug development timelines and reduce

costs. They allow formulation scientists to test more samples quickly compared to traditional human panels.

- Quality Control: E-tongues ensure batch-to-batch consistency and compliance with regulatory standards by providing reliable taste profiles for pharmaceutical products.

Advantages Over Traditional Methods:

E-tongue technology offers several advantages compared to traditional sensory evaluation methods:

- Objectivity: Unlike human panels, which can be influenced by personal biases, e-tongues deliver consistent and reproducible results.
- Speed: The automated nature of e-tongues allows for rapid analysis—samples can be evaluated in as little as three minutes.
- High Throughput: E-tongues can analyse multiple samples simultaneously, significantly increasing testing efficiency during formulation development.

Challenges and Future Directions

Despite their potential, e-tongues face certain challenges:

- Cross-Sensitivity: The nonspecific nature of the sensors may lead to overlapping responses from different compounds, complicating data interpretation.
- Calibration and Validation: Ensuring that e-tongue results align with human sensory perceptions requires rigorous calibration and validation processes.

Looking ahead, advancements in sensor technology and data processing techniques are expected to enhance e-tongue capabilities. Researchers are exploring biosensors and molecularly imprinted polymers to improve specificity and sensitivity further.

Conclusion:

E-tongue technology represents a significant leap forward in pharmaceutical science. By providing a reliable, efficient means of assessing taste profiles, it addresses one of the industry's critical challenges: making medications more palatable. As this technology continues to evolve, it holds the promise not only of improving patient compliance but also of accelerating drug development processes.

In a world where patient experience is paramount, e-tongues may very well shape the future landscape of pharmacy by ensuring that medications are not just effective but also pleasant to consume.

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Breakthrough in Hair Loss Treatment: The Role of 2-Deoxy-D-Ribose

Introduction

Male pattern baldness, scientifically known as androgenic alopecia, affects millions globally, representing a significant concern for self-image and confidence among men. Current treatment options approved by the U.S. Food and Drug Administration (FDA) are limited, primarily comprising of minoxidil and finasteride. However, recent research conducted by a collaborative team from the University of Sheffield and COMSATS University has unveiled a promising new approach utilizing a naturally occurring sugar: 2-deoxy-D-ribose (2dDR). This article examines the findings and implications of this research, highlighting the potential of 2dDR as a novel treatment for hair loss.

Background and Discovery

The journey towards this discovery began in an unexpected context—wound healing studies. Researchers observed that when deoxyribose sugar was applied topically to skin lesions in mice, the surrounding fur exhibited accelerated regrowth compared to untreated areas. This serendipitous finding prompted a deeper investigation into the sugar's role in stimulating hair follicles. Professor Sheila MacNeil, an expert in tissue engineering, emphasized that the fundamental problem of male pattern baldness remains inadequately addressed by current treatments. She suggested that enhancing blood supply to hair follicles through the application of 2dDR might provide a simple yet effective solution.

Mechanism of Action

2dDR is not merely a common sugar; it plays a crucial role in various biological processes. The research team posited that the efficacy of 2dDR lies in its pro-angiogenic properties, which facilitates the formation of new blood vessels—a critical component for healthy hair follicles. This mechanism contrasts with minoxidil, which works by widening existing blood vessels and does not always guarantee hair regrowth, especially for receding hairlines or older individuals.

In their experiments, the researchers applied a 2dDR gel to male mice engineered to exhibit testosterone-driven hair loss. The results were striking: the mice treated with 2dDR exhibited

80 to 90 percent hair regrowth, comparable to the effects of minoxidil. Notably, the 2dDR treatment showed an increase in both blood vessel formation and hair follicle density, suggesting a robust stimulation of the hair growth cycle.

Comparative Analysis with Minoxidil

Minoxidil, marketed under brand names such as Rogaine, is one of the two FDA-approved treatments for hair loss. While effective for many, it is not suitable for everyone and can lead to side effects, including scalp irritation and discomfort. In contrast, 2dDR, being a naturally occurring substance in the body, is posited to have a better safety profile with fewer adverse effects. This aspect makes it an appealing candidate for broader application in the treatment of hair loss.

In a comparative study involving different treatment groups—one receiving minoxidil, another receiving 2dDR, and a combination of both—the researchers found no significant added benefit in combining treatments. This finding implies that 2dDR could stand alone as a viable alternative to existing therapies, potentially offering a safer, more accessible option for those struggling with hair loss.

Future Implications and Applications

The implications of this research extend beyond male pattern baldness. Researchers have speculated that 2dDR could also benefit individuals experiencing hair loss due to chemotherapy, further broadening its potential application. However, it is crucial to note that the current findings are based on animal models, and additional studies are needed to evaluate the safety and effectiveness of 2dDR in humans.

Experts, including Dr. Claire Higgins from Imperial College London, acknowledge the promising nature of the results while advocating for caution. Human trials are necessary to

validate the effects observed in mice and to better understand the mechanism by which 2dDR promotes hair growth, particularly its influence on vascular endothelial growth factor (VEGF), a key player in blood vessel formation.

Conclusion

The discovery of 2-deoxy-D-ribose (2dDR) as a potential treatment for male pattern baldness marks a significant advancement in hair loss research. Its ability to stimulate blood vessel growth offers a fresh perspective on addressing this common condition, promising a safer and more natural alternative to existing treatments like minoxidil. By harnessing the natural properties of this sugar, researchers may be on the cusp of providing a safer, non-invasive, and potentially more effective alternative to existing therapies like minoxidil and finasteride. As research progresses, the implications of 2dDR could extend beyond male-pattern baldness, offering hope for various hair loss conditions. The journey from laboratory findings to clinical application will require careful evaluation, but the early results suggest a sweet solution to a pervasive problem.

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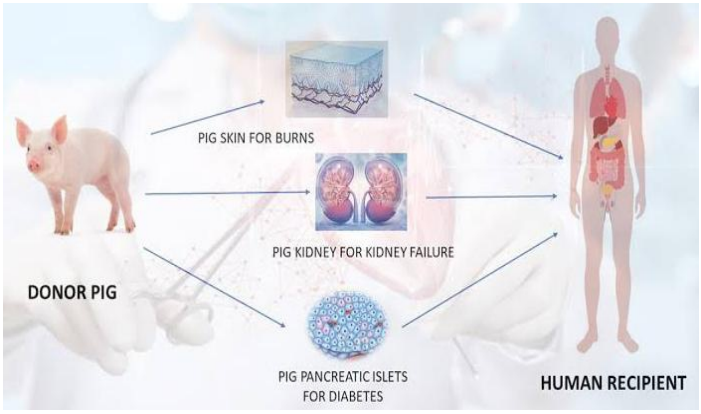
Xenotransplantation: The Quest for Organ Transplant Beyond Species



As the global demand for organ transplants continues to rise, the shortage of available human organs poses a significant challenge in modern medicine. One promising solution that has garnered attention in recent years is xenotransplantation. Xenotransplantation is the process of transplanting organs, tissues, or cells from one species to another. It can be any procedure that involves the transplantation, implantation or infusion into a human recipient of either:

a. live cells, tissues, or organs from a nonhuman animal source,

or

b. human body fluids, cells, tissues or organs that have had ex vivo contact with live nonhuman animal cells, tissues or organs.

How Xenotransplantation works

Xenotransplantation primarily involves the use of genetically modified pigs as organ donors. Pigs are chosen because their organ size and physiological characteristics are similar to those of humans. Scientists are working on modifying these animals genetically to reduce the risk of rejection by the human immune system. The process begins with selecting and modifying donor pigs to reduce immune rejection and eliminate disease risks. After thorough health screenings, the necessary organs are harvested in a sterile environment and preserved for transplantation. Potential human recipients undergo medical evaluations and immunological testing to tailor immunosuppressive therapy. During surgery, the organ is implanted, and recipients are closely monitored for complications. Post-transplant care includes regular assessments of organ function and long-term management with immunosuppressive therapy.

Significant challenges in Xenotransplantation

1. Immunological Rejection

- **Hyperacute Rejection**: This occurs immediately after transplantation when the recipient's immune system recognizes the animal organ as foreign and mounts a rapid immune response.
- **Acute and Chronic Rejection**: Even after hyperacute rejection is overcome, the body can still reject the organ over time, leading to complications and organ failure.

2. Zoonotic Diseases

- **Transmission of Pathogens**: There is a risk of transmitting diseases from animals to humans, including viruses and bacteria. Zoonotic diseases can pose severe health risks to recipients and the broader population.

3. Ethical and Welfare Concerns

- **Animal Rights**: The use of animals for organ donation raises ethical questions about animal welfare and the morality of genetic modifications.
- **Public Acceptance**: Gaining public trust and acceptance is crucial. Concerns about animal treatment and the implications of genetic engineering can affect support for xenotransplantation.

4. Genetic Modification Risks

- **Unintended Consequences**: Genetic modifications made to enhance organ compatibility may have unforeseen effects on the animal's health and the function of the transplanted organ.
- **Long-Term Effects**: The long-term health impacts of using genetically modified animals for organ donation are not yet fully understood.

5. Immunosuppressive Therapy

- **Need for Long-Term Immunosuppression**: Patients receiving xenotransplants may require long-term immunosuppressive therapy, which can have significant side effects and increase the risk of infections and other complications.

Current Status of Xenotransplantation In 2024

According to NATIONAL KIDNEY FOUNDATION,

In March 2024: Massachusetts General Hospital successfully transplants a genetically edited pig kidney into a living adult with end-stage kidney disease. The recipient, Mr. Slayman, passed away in May 2024.However, it is not believed that the transplant played a part in the death.

In April 2024: NYU Langone Health successfully performs the first-ever combined heart pump and pig kidney transplant.

As xenotransplantation continues to evolve, collaboration among scientists, ethicists, and regulatory bodies will be crucial. The future of xenotransplantation is promising, but it requires a balanced approach that prioritizes ethical considerations alongside scientific advancements. As researchers work to refine techniques and establish protocols, the hope is that xenotransplantation can become a standard practice in organ transplantation.

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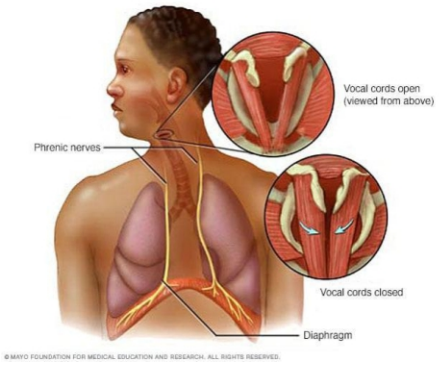
Hiccups



Hiccups are repeated spasms of the diaphragm accompanied by a hic sound from the vocal cords.

WHAT HAPPENS WHEN ONE GETS HICCUPS?

1. The diaphragm suddenly pulls down between breaths making one quickly gasps for air
2. The glottis closes to stop air from entering.

TYPES OF HICCUPS

- Temporary hiccups- last for few seconds or minutes
- Persistent hiccups- last for more than 48 hours up to a month
- Intractable hiccups- last for more than 1 month
- Recurrent hiccups- recurring with an episode lasting longer than a few minutes

CAUSES

1. If hiccups last for less than 48 hours, they will be results of
    - Drinking too much alcohol
    - Eating excessively
    - Drinking carbonated beverages
    - In excited / emotional stress
    - Experiencing sudden change in temperature

2. If hiccups last for more than 48 hours the results will be due to
    - Nerve irritation/ damage- vagus or phrenic nerves which supply diaphragm muscle
    - Central nervous system disorders- tumour/ infections disrupting body's normal control of the hiccups
    - Metabolic issues- when body's metabolism doesn't function properly e.g electrolyte imbalance, diabetes

COMPLICATIONS OF HICCUPS

Temporary hiccups don't lead to complications but persistent hiccups may lead to

- ° difficulties in breathing, swallowing and speaking
- ° trouble in sleeping and exhaustion
- ° weight loss

HICCUPS AND BABIES

They are very common and normal in babies and they even occur in the womb. The exact reason of why hiccups happen to babies is not known but health care professionals believe it may be because of increased gas in the stomach as babies tend to eat a lot or swallow too much air while eating leading to an expanded tummy which irritates the diaphragm.

TESTS TO BE DONE IN CASE OF PERSISTENT HICCUPS

1. Blood tests
2. Chest X Ray
3. Electrocardiogram
4. Upper endoscopy
5. Brain MRI
6. Abdominal CT scan

TREATMENT FOR PERSISTENT/ INTRACTABLE HICCUPS

One shall visit a physician if the hiccups last for more than 48 hours. The health care provider will examine the patient and will prescribe medication. Hiccups may be a sign of a health issue and one shall not ignore them.

OVERVIEW

Hiccups are usually nuisances which tend to go away on their own. However sometimes they last for longer periods of time and they tend to affect the quality of life. Hence, one shall never hesitate to visit a physician if hiccups are troubling one.

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FDA Approved Drugs

S.No	Drug	Indication	Date of approval
1	Tecelra (afamitresgene autoleucel) Suspension for Intravenous Infusion	Treatment for: Synovial Sarcoma	08/1/24
2	Voranigo (vorasidenib) Tablets	Treatment for: Malignant Glioma	08/6/24
3.	Crexont (carbidopa and levodopa) Extended-Release Capsules - formerly IPX203	Treatment for: Parkinson's Disease	08/7/24
4	Zurnai (nalmefene hydrochloride) Injection	Treatment for: Opioid Overdose	08/7/24
5	Lymphir (denileukin diftitox-cxdl) for Injection	Treatment for: Cutaneous T-cell Lymphoma	08/7/24
6	Neffy (epinephrine) Nasal Spray	Treatment for: Anaphylaxis	08/9/24
7	Enzeevu (aflibercept-abzv) Injection	Treatment for: Macular Degeneration	08/9/24
8	Yorvipath (palopegteriparatide) Injection - formerly TransCon PTH	Treatment for: Hypoparathyroidism	08/9/24
9	Nemluvio (nemolizumab) for Injection	Treatment for: Prurigo Nodularis	08/12/24
10	Livdelzi (seladelpar) Capsules	Treatment for: Primary Biliary Cholangitis	8/14/24
11	Niktimvo (axatilimab-csfr) Injection	Treatment for: Graft-versus-host disease	8/14/24
12	Lazcluze (lazertinib) Tablets	Treatment for: Non-Small Cell Lung Cancer	8/20/24
13	Pavblu (aflibercept-ayyh) Injection	Treatment for: Macular Degeneration, Macular Edema Following Retinal Vein Occlusion, Diabetic Macular Edema, Diabetic Retinopathy	8/23/24

14	Boruzu (bortezomib) Injection	Treatment for: Multiple Myeloma, Mantle Cell Lymphoma	9/5/24
15	Tecentriq Hybreza (atezolizumab and hyaluronidase-tqjs) Injection	Treatment for: Non-Small Cell Lung Cancer, Small Cell Lung Cancer, Hepatocellular Carcinoma, Melanoma, Alveolar Soft Part Sarcoma	9/12/24
16	Ebglyss (lebrikizumab-lbkz) injection	Treatment for: Atopic Dermatitis	9/13/24
17	Ocrevus Zunovo (ocrelizumab & hyaluronidase-ocsq) Injection	Treatment for: Multiple Sclerosis	9/13/24
18	Miplyffa (arimoclomol) Capsules	Treatment for: Niemann-Pick Disease	9/20/24
19	Aqneursa (levacetylleucine) Granules for Oral Suspension - formerly IB1001	Treatment for: Niemann-Pick Disease	9/24/24
20	Cobenfy (xanomeline and trospium chloride) Capsules	Treatment for: Schizophrenia	9/26/24
21	Flyrcado (flurpiridaz F 18) Injection	Treatment for: Positron Emission Tomography Imaging	9/27/24
22	Otulfi (ustekinumab-aauz) Injection	Otulfi (ustekinumab-aauz) Injection	9/27/24
23	Itovebi (inavolisib) Tablets	Treatment for: Breast Cancer	10/10/24
24	Hympavzi (marstacimab-hncq) Injection	Treatment for: Hemophilia A, Hemophilia B	10/11/24
25	Imuldosa (ustekinumab-srlf) Injection	Treatment for: Plaque Psoriasis, Psoriatic Arthritis, Crohn's Disease, Ulcerative Colitis	10/10/24
26	Vyalev (foscarbidopa and foslevodopa) Injection - formerly ABBV-951	Treatment for: Parkinson's Disease	10/16/24

27	Vyloy (zolbetuximab-clzb) Injection	Treatment for: Gastric Cancer	10/18/24
28	Orlynvah (sulopenem etzadroxil and probenecid) Tablets	Treatment for: Urinary Tract Infection	10/25/24
29	Emrosi (minocycline hydrochloride) Extended-Release Capsules - formerly DFD-29	Treatment for: Rosacea	11/1/24
30	Aucatzyl (obecabtagene autoleucel) Suspension for Intravenous Infusion	Treatment for: Acute Lymphoblastic Leukemia	11/8/24
31	Kebilidi (eladocagene exuparvovec-tneq) Suspension for Intraputaminal Infusion - formerly Upstaza	Treatment for: AADC Deficiency	11/13/24
32	Danziten (nilotinib tartrate) Tablets	Treatment for: Chronic Myelogenous Leukemia	11/7/24
33	Revuforj (revumenib) Tablets	Treatment for: Leukemia, Acute Myeloid Leukemia, Acute Lymphoblastic Leukemia	11/15/24

Drug Profile: Boruzu (Bortezomib) Injection

Brand name: Boruzu.

Generic name: Bortezomib.

Dosage form: Subcutaneous administration or intravenous (IV) administration. 3.5 mg/1.4 mL (2.5 mg/mL) in a single-dose vial.

Class: A proteasome inhibitor, (carboxylic acids and derivatives)

Indication: For the treatment in adult patients with multiple myeloma and mantle cell lymphoma.

Clinical purpose: Multiple myeloma is a blood cancer that develops in plasma cells in the bone marrow and lead to low blood counts. Plasma cells are transformed into cancerous cells that grow out of control, crowding out the normal cells that help fight infection. These malignant plasma cells then produce an abnormal antibody called M protein, high levels of which are a hallmark characteristic of multiple myeloma.

Mantle cell lymphoma is a rare type of B cell non-Hodgkin lymphoma (NHL). NHL is a type of blood cancer that affects lymphocytes. It is a cancer of the lymphatic system. Lymphoma develops when white blood cells called lymphocytes grow out of control. There are two types of lymphocytes: T lymphocytes (T cells) and B lymphocytes (B cells).

Mantle cell lymphoma develops when the body makes abnormal B lymphocytes. So, it is a type of B cell lymphoma. It develops in the part of the lymph node called the mantle zone. The abnormal lymphocytes build up in the lymph or in other body organs and therefore can no longer work properly. Therefore, they can't fight infection as normal white blood cells do. They form tumours and begin to cause problems within the lymphatic system or the organ where they are growing.

Pharmacology: Bortezomib is a reversible inhibitor of the 26S proteasome, which is made up of a 20S core, complexed with a 19S regulatory complex.

Individual β-subunits allow specific catalytic action of the 20S core. In mammalian cells, bortezomib is a potent inhibitor of the proteasome's chymotryptic-like activity, which is attributed to the β5-subunit of the 20S core particle. Bortezomib binds to the active site of the threonine hydroxyl group in the β5-subunit. A probing study showed bortezomib also binds to and inhibits the β1-subunit, which mediates the caspase-like activity of the proteasome, and β1i-subunit, which is an altered subunit that is expressed to form immunoproteasomes in response to cell stress or inflammation. By inhibiting the proteasome-mediated degradation of key proteins that promote cell apoptosis, bortezomib induces a cell cycle arrest during the G2-M phase. It is believed that multiple mechanisms, other than proteasome inhibition, may be involved in the anticancer activity of bortezomib. The anticancer activity of bortezomib was largely associated with suppression of the NF-κB signalling pathway, resulting in the downregulation of anti-apoptotic target genes and expression of anti-apoptic proteins. This may be explained by bortezomib preventing uncontrolled degradation of IκB, which is an inhibitory

protein of NF-κB. NOXA, which is a pro-apoptotic factor, induced by bortezomib selectively in cancer cells; thus, it is suggested to be another key mechanism of bortezomib.

The ubiquitin-proteasome pathway is a homeostatic proteolytic pathway for intracellular protein degradation: proteins marked with a poly-ubiquitin chain are degraded to small peptides and free ubiquitin by the proteasome, which is a large multimeric protease. Aberrant proteasome-dependent proteolysis, as seen in some malignancies, can lead to uncontrolled cell division, leading to tumorigenesis, cancer growth, and spread.

Pharmacodynamics: Bortezomib works to target the ubiquitin-proteasome pathway, an essential molecular pathway that regulates intracellular concentrations of proteins and promotes protein degradation when they are no longer needed. The ubiquitin-proteasome pathway is often dysregulated in pathological conditions, leading to aberrant pathway signalling and the formation of malignant cells.

In one study, patient-derived chronic lymphocytic leukaemia (CLL) cells contained 3-fold higher levels of chymotrypsin-like proteasome activity than normal lymphocytes. By reversibly inhibiting proteasome, bortezomib prevents proteasome-mediated proteolysis. Bortezomib exerts a cytotoxic effect on various cancer cell types in vitro and delays tumour growth in vivo in nonclinical tumour models. Bortezomib inhibits the proteasome activity in a dose-dependent manner. In one pharmacodynamic study, more than 75% of proteasome inhibition was observed in whole blood samples within one hour after dosing of bortezomib.

Pharmacokinetics

Absorption:

Following intravenous administration of 1 mg/m2 and 1.3 mg/m2 doses, the mean Cmax of bortezomib were 57 and 112 ng/mL, respectively. In a twice-weekly dosing regimen, the Cmax ranged from 67 to 106 ng/mL at the dose of 1 mg/m2 and 89 to 120 ng/mL for the 1.3 mg/m2 dose. In patients with multiple myeloma, the Cmax of bortezomib following subcutaneous administration was lower than that of intravenously-administered dose; however, the total systemic exposure of the drug was equivalent for both routes of administration.7 There is a wide interpatient variability in drug plasma concentrations

Distribution: The mean distribution volume of bortezomib ranged from approximately 498 to 1884 L/m2 in patients with multiple myeloma receiving a single- or repeat-dose of 1 mg/m2 or 1.3 mg/m2.7 Bortezomib distributes into nearly all tissues, except for the adipose and brain tissue.

Protein Binding: Over the concentration range of 100 to 1000 ng/mL, bortezomib is about 83% bound to human plasma proteins.

Metabolism: Bortezomib is primarily metabolized by CYP3A4, CYP2C19, and CYP1A2. CYP2D6 and CYP2C9 are also involved in drug metabolism, but to a smaller extent.7 Oxidative deboronation, which involves the removal of boronic acid from the parent compound, is the main metabolic pathway. Metabolites of bortezomib are pharmacologically inactive and more than 30 metabolites have been identified in human and animal studies.

Elimination: Bortezomib is eliminated by both renal and hepatic routes.

Side effects: asthenic conditions, diarrhoea, nausea, constipation, peripheral neuropathy, vomiting, pyrexia, thrombocytopenia, psychiatric disorders, anorexia and decreased appetite, neutropenia, neuralgia, leukopenia and anaemia**.**

Contraindications: Patients with hypersensitivity (not including local reactions) to bortezomib, boron, or mannitol, including anaphylactic reactions. Bortezomib is also contraindicated in intrathecal administration.

Drug interactions: Strong CYP3A4 Inhibitors: closely monitor patients with concomitant use. Strong CYP3A4 Inducers: avoid concomitant use.

References:

1. https://www.cancerresearchuk.org/about-cancer/non-hodgkin-lymphoma/types/mantle-cell
2. https://www.cancer.org/cancer/types/multiple-myeloma/about/what-is-multiple-myeloma.html
3. https://themmrf.org/multiple-myeloma/
4. https://go.drugbank.com/drugs/DB00188

Events' Corner

Event 1: Guest Lecture on Bioassays

A guest lecture held on 16th September 2024, for the 5th semester B Pharm students of JSSAHERM on the topic Bioassay, Module- Pharmacology II, which was lectured by Dr Jayanthi M K, Professor, JSS Medical College, JSS Academy of Higher Education & Research Mysore.

Dr Jayanthi is specialized in Pharmacology, Cancer biology, Inflammatory Pharmacology & Endocrinology, Pharmacoeconomic Analysis and Drug Utilization Evaluation for Enhanced Medication Quality Optimization.

The lecture was quite an interactive one starting off with a recap on the basics of pharmacology. An overview of the topic was given on how;

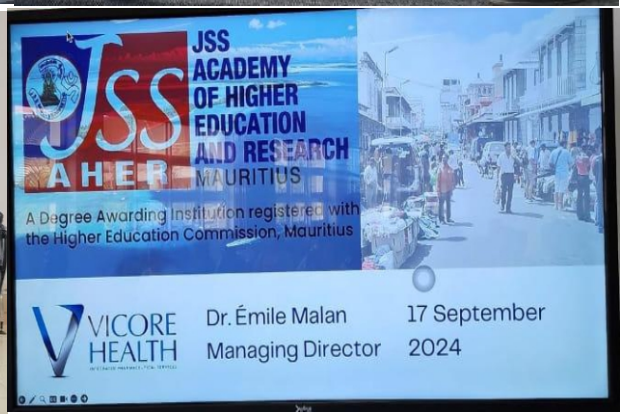
1. Concentration is important to determine therapeutic effect for drugs
2. Difference between qualitative and quantitative
3. Types of bioassays
4. Importance of bioassay
5. Applications of bioassay &
6. Computer assisted learning

The lecture finished off with a Q & A session and Dr Khayati Moudgil thanked Dr Jayanthi M K for the enticeful presentation.

Event 2: Guest Lecture on Role of Regulatory Affairs and Pharmacovigilance in the Healthcare Industry

JSSAHER MAURITIUS organized a guest lecture on 17th September 2024 for the topic **"Understanding the critical role of regulatory affairs and pharmacovigilance in the healthcare industry - THINK INSIDE BUT ALSO OUTSIDE THE BOX"** by Dr Émile Malan, Managing Director of Vicore Health, South Africa.

Vicore Health is a pharmaceutical-industry service and technology provider specialising in Pharmacovigilance, Governance, Regulatory and Medical Affairs solutions. The lecture emphasized on diverse topic points including the Global Pharma Market, Regional Pharma Trends, Effects of Innovations as well as The Pharma Value Chain. The JSSAHERM is in process of signing a MoU with Vicore Health. This will help the students in the placements and can create many opportunities in future.



Event 3: World Pharmacist Day 2024

The World Pharmacist Day, was celebrated at JSS Academy of Higher Education and Research, Mauritius, on 25th September 2024 under the theme, **"Pharmacists: Meeting Global Health Needs".**

Pharmacists are integral to our health-care systems, often being the first point of contact for health advice and primary health care, as well as addressing the health needs of our populations in various ways.

The well planed event was organized over the period of four days to educate and to bring the awareness about the importance of pharmacist in our healthcare system. The inauguration function was held on 25th September 2024 at Institution premises followed by two online CPD's and lastly Free Health Check up at Tribeca Mall.

Day 1: Wednesday 25th September 2024 (Inaugural Function Program)

The inaugural function started with a prominent personalities speech which provided a motivation to the students. The World Pharmacists Day was inaugurated by **H.E. Marie Cyril Eddy Boissézon G.O.S.K**, **Vice President, Republic of Mauritius.**

H.E. Marie Cyril Eddy Boissézon G.O.S.K, **Vice President, Republic of Mauritius,** congratulated JSSAHERM for celebrating the day that highlights the importance of pharmacist. He mentioned that the pharmacists are often the unsung heroes of our society and that their importance needs to brought to surface. He mentioned that the pharmacist role extends far beyond dispensing medications; they are the custodians of our health providing valuable guidance and expertise and emphasised that the pharmacist are our trusted advisors, guiding us on how to manage our health conditions and answering our questions about medications. He elaborated beautifully around the WPD 24' theme and finished off with beautiful rhyme which left everyone in awe.

Mr Mungur Roy Mike Manfred, **Mayor, Municipal Council of Vacoas-Phoenix** mentioned how:

- Pharmacists are essential members of our healthcare team.
- They work closely with doctors, nurses and other healthcare professionals to ensure that patients receive the best possible care.
- In today's fast-pace world, where health concerns are paramount, pharmacists have become even more crucial.
- They are the ones who keep us informed about the latest developments in the pharmaceutical world, ensuring that we receive the most effective and safe treatments.

Mr Siddique Khodabocus, Chairman, Pharmacy Council of Mauritius, he highlighted the role of our educators which leads to the delivery of a mass of workforce as pharmacists. He thanked JSSAHERM for providing the world-class education and pointed out the importance of pharmacists during the period of covid notedly in India and Brazil. He also brought to surface that pharmacists are the heart of communities as they are the most accessible people.

Earlier Prof (Dr) Praveen Mohadeb in his opening remarks highlighted on the legacy of JSS Mahavidyapetha and emphasized on various health-based programmes offered by JSSAHER Mauritius. He also mentioned the importance of Pharmacy programme with specific reference to Clinical Pharmacy.

On this occasion the11th edition of the JSSAHERM “Health and Education” newsletter was released by the dignitaries.

Later, the lecture by MedActiv from **Christian Flore** was organised and he promoted the various aspects and benefits about MedActiv and how the JSSAHERM collaboration works together.

A brief explanation of the hierarchy of positions was explained and the involvement of IBL was shown.

Ms Hanna, took the stage afterwards, a pharmacist from IBL and she elucidated her journey with IBL on how she was a pre reg pharmacist and now she is a pharmacy manager.

JSSAHERM Meritorious Scholarship

The scholarship event is an important phase after the completion of each cohort's studies, annually. It is a prestigious award only given to those students who have scored above 90% and who have topped in their respective classes.

H.E. Marie Cyril Eddy Boissézon G.O.S.K, Vice President, Republic of Mauritius along with Prof (Dr) Praveen Mohadeb, CEO and Vice-Chancellor presented this award to Ms Salvi Wahidna from Cohort 2. Ms Wahidna received this scholarship for the third consecutive year.

Day 2: CPD webinar on "Challenges and Innovations in Paediatric Dosage Forms: Navigating Availability & Development Across Pharmacy Profession."

JSSAHERM conducted an online CPD on the challenges and innovations in paediatric dosage forms. This CPD was curated by Professor Marique Aucamp from the faculty of Natural sciences, from the university of Western Cape, South Africa.

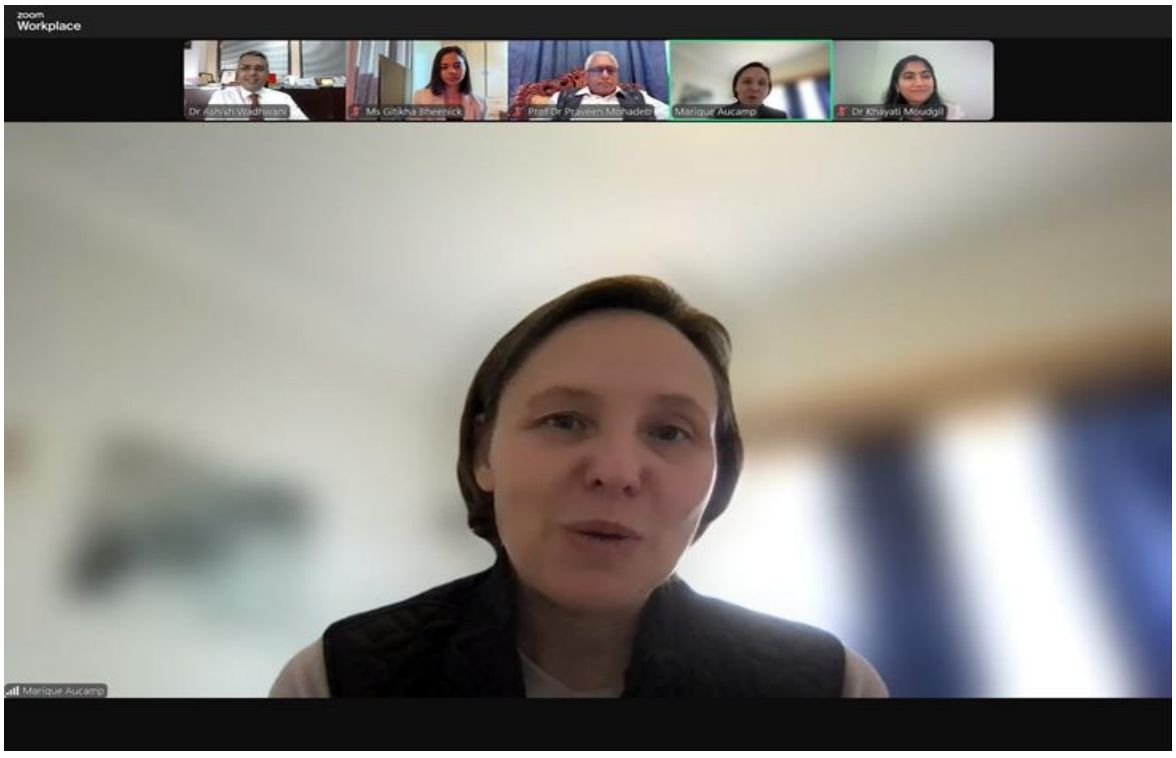
The session started with the welcoming address from the Dean and Head of faculty of Health sciences, Professor (Dr) Ashish Wadhwani, followed by the opening remarks from the CEO and Vice- Chancellor, Professor (Dr) Praveen Mohadeb. The main focus of this intricate lecture

was about the different challenges faced in the development of paediatric dosage form which ranges from physiological variability to clinical trials restrictions faced as this is a special population that is being targeted.

Through the extensive knowledge of Prof Aucamp, our participants also got to learn about the new emerging technologies that are being instigated which is causing a paradigm shift from the conventional ways of producing dosage forms to newer and safer manufacturing processes, especially in the sense that tailored dosage forms can be designed based on individual needs.

Some of these new technologies are: 3-D printing, the use of nanotechnology, crystal engineering, and E-tongue technology. Furthermore, Prof Aucamp gave us an insight of why it is very crucial to focus on the paediatric population as they are not only the most vulnerable individuals but are also considered frivolous to pharma companies as it is not very lucrative investments.

Coming towards the end of this enriching lecture, the Q&A segment and the closure of the webinar was handled by the student representative, Ms Gitikha Bheenick.



Day 3: CPD webinar on Translational Quest for Producing Sustainable Biomaterials and Pharmaceutical Excipients

On the occasion of the World Pharmacist Day, a CPD Webinar was conducted in the 27th September 2024 under the theme ‘Translational Quest for producing Sustainable Biomaterials and Pharmaceutical Excipients’. The CPD was welcomed by more than 200 participants worldwide. Prof (Dr) Pradeep Kumar (University of Witwatersrand-Johannesburg) was the speaker. Prof (Dr) Ashish Wadhwani welcomed everyone and gave the opening remarks.

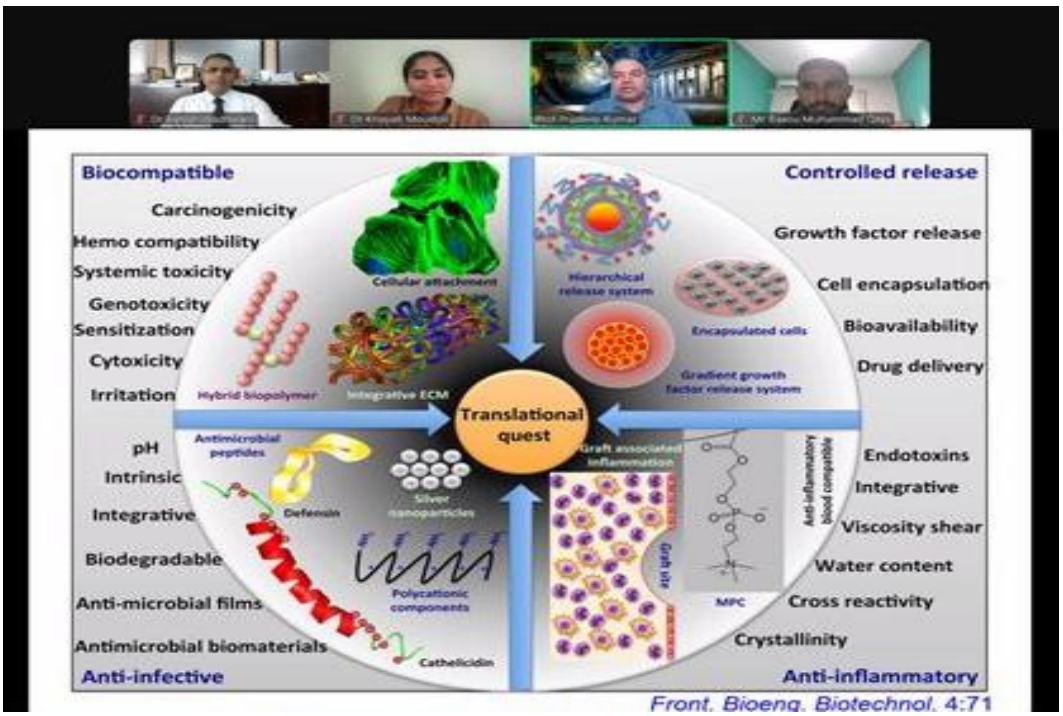
Prof (Dr) Pradeep Kumar started the lecture by introducing the topic itself and the current use of biomaterials in the world as of present and the different research he and his team have been doing.

He emphasized on the following:

- The anti-infective and anti-inflammatory properties of the biomaterials, their compatibility and the aspects of their controlled release.
- For drug conjugation, the biological activity of polyphenols with Gellan Gum.
- Development of a fluid-absorptive alginate-chitosan bio platform for potential application as a wound dressing.
- Design and characterization of PHBV-magnesium oleate directional nanofibers for neuronal support.
- Folate-induced nano-structural changes of oligochitosan nanoparticles and their fate of cellular internalization by melanoma.
- Design and characterization of neurodurable gellan-xanthan pH-responsive hydrogels for controlled drug delivery.
- Synthesis and in-vitro characterization of a pH-responsive chitosan-polyethyleneimine nano system for the delivery of therapeutic proteins.
- The Template specifications for the biomaterials.
- RSD (Roundtable on Sustainable Biomaterials)
- Nanocellulose and its sources.
- Chitosan and its origins special emphasis on Crustaceans shells.

He concluded by explaining how the sustainability of the biomaterial and the pharmaceutical excipients will be of great importance in the near future.

The webinar ended with a Q&A session by the student representative Mr Quaz Baxou of JSSAHER Mauritius and the closing remarks by Prof (Dr) Ashish Wadhwani.



Day 4: Saturday, 5th October 2024 (Free Health Camp)

A free Health Check Up was organized by JSSAHER Mauritius on Saturday, 05th October 2024 at Tribeca Mall.

Free health check-ups on a range of examinations such as eye, ear, and dental examinations, and complete blood tests, body fat analysis, BMI, blood pressure among others were executed on the occasion. Dietary advise by Nutritionist and Patient guidance was also provided.

October is observed as Pink October as people around the world adopt the pink colour and the display of a pink ribbon to raise awareness about breast health was noted. The pink ribbons were pinned to support breast cancer awareness

Everyone who underwent an examination has had a chance to participate in a quiz and win prizes such as glucometers, multivitamins, sugar free cookies and many more.

The collaborators were MedActiv, Sihha Medical Centre, Lions Club Albion, Trident Health Care, Soza Health, Biswas Traders, Trident Health Care Limited and Pharmaceutical Association of Mauritius.

Event 4: First Convocation Ceremony of JSSAHER MAURITIUS

The first Convocation Ceremony of JSSAHERM was successfully organized. The function was inaugurated by H.E. Mr. Marie Cyril Eddy Boissézon, G.O.S.K, Vice President of the Republic of Mauritius who was the Chief Guest of the Ceremony. The convocation was attended by the students, parents and other esteemed guests. JSSAHERM honored the students with Bachelor of Pharmacy, BSc Cosmetic Science, MSc Microbiology and MBA in Hospital administration degrees.

The following images gives a glimpse of the event:

Event 5: Sports Fest 2024

JSSAHERM conducted a sports fest week starting with preliminary rounds from the 12th of November 2024 and concluding with an official 2-day sport event in Hindu Girls College, Curepipe and on and off campus between 14th and 15th November.

The festivities took place with great participation from students and staffs. The week was full of togetherness, joyful spirit and friendly competitiveness. The students were the coordinators for the different games and did their work very well.

The off- campus events were carried out on the 14th of November and the activities were:

- Handball
- Volleyball
- Badminton
- Long Jump
- Basketball

The on-campus events on the 15th of November were:

- Petangue
- Domino
- Chess
- Carrom
- Table-Tennis
- Tug of war
- Football
- Musical Chair

The Sports Fest kicked off with Welcome Address by Dr Goutham Yerrakula and opening remarks by the CEO & VC Prof (Dr) Praveen Mohadeb followed by words of motivation from Dr Ashish Wadhwani, Prof & Head of Faculty of Health Sciences. A beautiful dance performance was performed by the B Pharm students.

The following table depicts the list of winners for the sports fest:

LIST OF WINNERS	
TUG OF WAR	Karthik, Arshad, Laxshati, Zeenat & Joshua
PETANQUE	Saniya & Anasheed
TABLE TENNIS	Arshad
CARROM	Mr. Naveen & Dr Ashish
DOMINO	Salvi & Farhaan Maudarboccus
ARM WRESTLING MALE	Pravir
ARM WRESTLING FEMALE	Ishita
CHESS	Gitikha
MUSICAL CHAIR	Tabassoum
FOOTBALL	Anasheed, Yuvraj, Karthik, Qays, Raees, Jeyvin & Qays
BASKETBALL	Farhaan Maudarboccus, Anasheed, Waseem, Gitikha, Raees, Saniya & Yaseen
VOLLEYBALL	Karthik, Yaseen, Anasheed, Vanshita, Saniya & Kitisha
HANDBALL	Farhaan Maudarboccus, Anasheed, Qays, Amishka, Haadiya, Melvina & Saniya
LONG JUMP MALE	Yuvraj
LONG JUMP FEMALE	Harsha
BADMINTON MALE	Yaseen
BADMINTON FEMALE	Saniya
BADMINTON DOUBLES	Haadiya & Farhaan Mawlaboccus
MOST MEDALS MALE	Anasheed
MOST MEDALS FEMALE	Saniya

A glimpse of the sports day:






Event 6: Short Course on "Basic First Health Care to Patients, Immunisation and Injection Techniques for Pharmacists"

It is essential for pharmacists to be trained as basic first health care providers as well as vaccinators and be skilled in practicing immunization and injection techniques.

JSSAHER MAURITIUS initiated the course and successfully completed three batches where the Pharmacists were hands on training was provided on "Basic First Health Care and Immunization and Injection Techniques". The course is approved by MQA and Pharmacy Council of Mauritius for 4 CPD points.

The training focused on basic first health care to patients and clinical workshop on injection techniques specifically Intramuscular and Subcutaneous routes of administration.

Students' Learning Experience - Internship

Internship of Mr. Yuvraj Dany at MedActiv Forbach

I joined the MedActiv team as a pharmacist intern. Under the guidance of my preceptor Ms. Hanaa Abdoulkader, I acquired the required knowledge and skills for my journey as a future pharmacist.

For the first day of my five-week internship, I was warmly welcomed by the dispensers with whom I learned as much as possible. I started slowly by understanding how a community pharmacy works, studying different types of medicines available and observing how my preceptor interacts with customers. Then the following weeks I learned more about:

- Types of prescriptions: antibiotic, triplicate, pediatric and veterinary prescription
- Understanding the prescriptions: abbreviations used by general practitioners
- The different laws governing the pharmacy practice
- Use of computer system in the pharmacy: medicine identification and automated dispensing of drugs
- Dose calculation for pediatric patient
- Types of medicines: tablets, capsules, suppositories, eye and ear drops, nasal sprays, contraceptive pills and creams
- Storage of different drugs: Insulin, antibiotic and dangerous drugs
- Management of inventory stock
- Process of purchasing medicines
- Adverse drugs reactions: allergies, contraindications and drug interaction
- Patient counselling skills

During my journey, I came across different challenges. With the help of my preceptor and the dispensers, I overcame them. One of the challenges I faced was to deal with unpleasant customers in a professional way. I also built a trust with all the patients I served and I kept a good relationship with my colleagues working along as a team and my preceptor helped me to understand better the role and responsibilities that come with the title of a pharmacist. She also helped me with my pharmacology studies and my upcoming pre-registration examinations.

At the end of the day, I realized that I would not have learned so much during my theory classes. I really enjoyed my first experience working in a community pharmacy. I am grateful for the support that I received from my preceptor and the opportunity given by MedActiv and JSSAHERM.

Memorandum of Understanding/Agreements

The JSSAHER Mauritius signed MoUs with the following;

1. University of Antananarivo a Primary Public University of Madagascar on 16th Oct 2024.
2. MC Biotech- A Pharmaceutical Manufacturing Company on 12th Nov 2024.

The MoU with University of Antananarivo aims;

Article 1 : Objet de la convention

L'établissement de la présente convention a pour objectif de promouvoir la coopération entre les deux institutions, et puis, d'explorer les éventuelles collaborations potentielles dans le but améliorer l'éducation et la recherche scientifique dans les deux pays.

Article 2 : Axes du partenariat

Les parties au présent protocole d'accord souhaitent s'engager l'une avec l'autre dans un programme de coopération pour explorer des collaborations potentielles telles que :

(a) Collaboration mutuelle dans les domaines de l'éducation et de la recherche
(b) Propositions de recherche conjointes selon l'intérêt mutuel
(c) Coauteur de publications conjointes
(d) Programme d'échange des personnels, de professeurs et d'étudiants
(e) Proposition des cours communs de courte durée en fonction de l'expertise et de la demande.
(f) Codirecteurs de programmes de recherche

The MoU with MC Biotech enlightens:

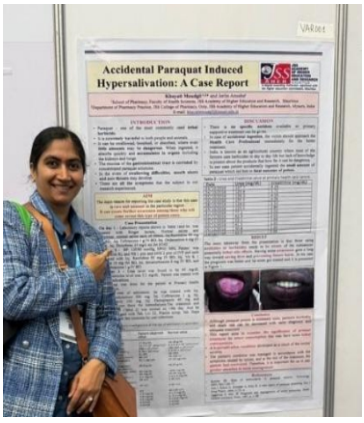
- experiential learning for internship/training/project work/placement for the students,
- mutual research collaboration and sharing of the facilities and manpower for academic and research for the benefit of both parties
- joint publications
- guest lectures and external examinership to the host institution scientists

Publications, Workshops and Conferences Attended (September-December 2024)

Conference Attended:

1. **International Pharmaceutical Federation (FIP) Conference at Cape Town, South Africa**

Dr Khayati Moudgil, Faculty of Health Sciences, School of Pharmacy JSSAHER Mauritius attended and presented the paper at the prestigious 82 FIP (International Pharmaceutical Federation) World Congress of Pharmacy and Pharmaceutical Sciences at Cape Town, South Africa from 1-4 September 2024. The congress theme was Innovating for the future of health care. Dr Khayati Moudgil represented the JSS Academy of Higher Education and Research, Mauritius JSSAHER Mauritius at the global platform, which was attended by 3,365 people from 97 countries. The conference theme was "Pharmacist: meeting global health needs". It covered many interesting and highly impactful topics such as: Data integration and interoperability for the modern pharmacist, Equitable quality healthcare: a call to action for pharmacy, Innovation in supply chain of health commodities: Pharmacists role in equitable and affordable access to medicines and medical devices, New Strategies for Pharmacists in the Fight Against Substandard and Falsified Drugs, Adapting pharmacy practice: Navigating patient behaviour and AI use, Pharmacovigilance: Redefining Medicine and Vaccine Safety Using Technological Innovations, Specialisation in pharmacy — A global perspective, Pharmacists' education as a game changer in saving lives with vaccination, Precision pharmacy: unleashing the power of pharmacogenetics in community pharmacy for optimal chronic patient care and many more.



2. International Ayurveda Conference – Swasthya 2024

Prof (Dr) Jaishree V, Head, Faculty of Life Sciences and **Prof (Dr) Ashish Wadhwani**, Head, Faculty of Health Sciences and Dean, School of Pharmacy attended International Ayurveda Conference – Swasthya 2024 "Ayurveda for Global Health" between 28th to 30th Oct 2024 and shared their experience working with Medicinal Plants. They presented their invited talks entitled "Bridging Ayurveda: Tradition to Trend an evidence Based Approach" and "Integration of traditional medicine into evidence-based research: our experience on ethnopharmacological approval to the medicinal plants" respectively. The presentations were well appreciated and fruitful discussion was held on their research findings.

There were over 200+ delegates from 10 different nationalities, including doctors, scientists, students, scholars, basic scientists, pharmacists, industry experts attended the conference.

Award:

Dr Khayati Moudgil received STEM Academic & Research Award - Silver Winner 2024 from His Excellency M ZHU Liying, Ambassador Extraordinary and Plenipotentiary of the People's Republic of China to the Republic of Mauritius at a conference organized by Women in Tech Africa, Mauritius Chapter on 19 November 2024 at Caudan Arts centre, Port Louis, Mauritius.

Publications:

1. Binit Makoottaahil Benny, Greeshma Sai Sree N, Maria Adil Khan, Simran Trehan, Praveen Mohadeb, **Khayati Moudgil***, Alcoholism in Transgenders: A Significant Concern. African Journal of Biological Sciences; 2024, 6(15) (Q4, Impact factor- 1.08)

2. Raja Shekhar Nunavath, Madhu Tanya Singh, Ajaykumar Chittipolu and **Goutham Yerrakula**. Food Processing Technology to Produce Hypoallergenic Food with High Quality" in "Food Allergies: Processing Technologies for Allergenicity Reduction" published by CRC Press (An Imprint of Taylor & Francis Group). 2024, Pg No 276-297, 1 edition, ISBN 9781003433781

3. Vatsa Kapadia, **Ashish Wadhwani***, Rihana Begum, Sivasankaran Ponnusankar, Praveen Mohadeb, Medha Gujadhur and Piyush Kumar. A Step Towards Combating Antimicrobial Resistance: Global Prescriptive and Programmes – A Review. Biosciences Biotechnology Research Asia, September 2024. Vol. 21(3), p. 877-892

4. Aishwarya Susil, Haritha Harindranath, Rajeshwari S, Mahendran Sekar, **Ashish Wadhwani**, Saleem Javid, B. R. Prashantha Kumar. Extraction, Isolation, Structural Analysis, PPAR-γ Binding Studies & Transactivation, Glucose Uptake, Lipid Lowering Activity and In Silico Studies of Pterocarposide, Sabioside and Pterostilbene Journal of Molecular Structure. Available online 1 December 2024, 140946 – In press (Q2, Impact factor - 4).

Binit Mamkoottathil Benny /Afr.J.Bio.Sc. 6(15) (2024) ISSN: 2663-2187

https://doi.org/10.48047/AFJBS.6.15.2024.4685-4705

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

Alcoholism in Transgenders: Significant Concern

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JSS Academy of Higher Education and Research, Mauritius

Faculty of Health Sciences, School of Pharmacy, JSS Academy of Higher Education and Research, Mauritius

15 Food Processing Technology to Produce Hypoallergenic Food with High Quality

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15.1 INTRODUCTION

Food is an essential cornerstone of human sustenance, significantly impacting our physical, mental and social dimensions of well-being [1]. A food allergy is characterized by adverse health effects driven by immunological responses, specifically allergic reactions, triggered in sensitized individuals upon exposure to allergenic substances present in their diet [2]. The prevalence of food allergies in Europe is estimated to range from approximately 0.1% to 3.2% among adults and 0.1% to 5.7% among children [3]. The majority of food allergy cases are linked to a limited set of food items. Traditionally, the most common allergenic foods include cow's milk, hen's eggs, peanuts, tree nuts, soy, wheat, shellfish and fish. More recently, in Europe, this list has expanded to encompass 14 allergenic categories, including gluten-containing cereals, crustaceans, eggs, fish, peanuts, tree nuts, soybeans, milk, celery, mustard, sesame, lupin and sulfur dioxide [1–3]. However, the association between allergies and specific food items can vary over time and across geographical regions. Factors influencing this variation include shifting dietary preferences, the introduction of novel foods, changes in food preparation methods and the age at which individuals are introduced to certain foods in their diet [4].

 DOI: 10.1201/9781003433781-18

BIOSCIENCES BIOTECHNOLOGY RESEARCH ASIA, September 2024. Vol. 21(3), p. 877-892

A Step Towards Combating Antimicrobial Resistance: Global Prescriptive and Programmes – A Review

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http://dx.doi.org/10.13005/bbra/3271

(Received: 30 April 2024; accepted: 25 September 2024)

Antimicrobial resistance is one of the pandemic concerns that lead to morbidity and mortality. The unregulated use of antibiotics results in strains and genes which are resistant to antibiotics. In general, mutations resulting in antimicrobial resistance alter the antibiotic action via one of the mechanisms: modifications of the antimicrobial target; a decrease in the drug uptake; activation of efflux mechanisms to extrude the harmful molecule, or; global changes in important metabolic pathways via modulation of regulatory networks. Furthermore, a shortage of financing, as well as tight rules governing the production and marketing of new pharmaceutical treatments, contribute to an increase in antimicrobial resistance. Specialized organizations concerned with worldwide public health, such as the United Nations (UN) and the World Health Organization (WHO), have identified antibiotic resistance as an issue that necessitates globally coordinated efforts and the utmost care. The WHO has founded many national and international surveillance programmes across various countries. Some of the Indian government's programs are the Red Line Initiative, Chennai Declaration, Antimicrobial Stewardship Program, National AMR Containment Program, National Health Policy, National Action Plan on NAP-AMR antimicrobial resistance, etc. These monitoring programmes' findings clearly indicate that sensible antibiotic usage, appropriate antibiotic knowledge, awareness and the development of novel medications will all aid us in combating the antimicrobial resistance issue. This review article discusses worldwide programmes and activities to combat developing and growing antimicrobial resistance that are being implemented by various Indian states and in Mauritius.

Keywords: Antibiotics; Antimicrobial resistance; Microorganisms; Policies; Programmes.

Antimicrobial resistance (AMR) has emerged as one of this century's major health problems and has elevated the need to prevent and treat infections caused by virus, bacteria, fungi and parasites. One of the reasons being, those organisms are no longer susceptible to the medicines used to treat them. Most cases involving bacterial infections established antimicrobial

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Journal of Molecular Structure

Available online 1 December 2024, 140946

In Press, Journal Pre-proof What's this?

Extraction, Isolation, Structural Analysis, PPAR-γ Binding Studies & Transactivation, Glucose Uptake, Lipid Lowering Activity and *In Silico* Studies of Pterocarposide, Sabioside and Pterostilbene

Aishwarya Susil [1], Haritha Harindranath [1], Rajeshwari S [2], Mahendran Sekar [3], Ashish Wadhwani [4], Saleem Javid [5], B. R. Prashantha Kumar [1]

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Highlights

- Extraction and isolation of three phytoconstituents, namely, Pterocarposide, Sabioside and Pterostilbene from the traditional medicinal plant, Pterocarpus marsupium.
- Structural elucidation was done by spectroscopic techniques (IR, NMR, LCMS-MS).
- Molecular docking studies was done to predict the interaction of isolated phytoconstituents with the active site of protein (PPAR-γ).
- ADMET (Absorption, Distribution, Metabolism, Excretion, Toxicity) profilingwas done in silico.
- In vitro evaluation of isolated compounds for antidiabetic activity using various assays.

PATIENT INFORMATION LEAFLETS

Stroke.

What is a stroke?

⇒ A stroke, sometimes known as a 'brain attack', occurs when blood flow to an area of the brain is cut off. The brain cells become deprive of oxygen and start to die. If a stroke is not caught early, it can lead to permanent brain damage or death.

⇒ A stroke is the brain'sequivalent of a heart attack.

⇒ Strokes are ranked second among the top causes of death.

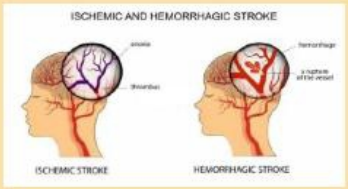
Disclaimer:
The information provided in this leaflet is intended for educational purposes only. Always seek the advice of your physician, pharmacist or healthcare provider with any question you may have regarding your medical condition.

Types of strokes:

There exist 2 types of strokes:

⇒ **Ischemic stroke:** this occurs when a clot blocks blood flow to an area of the brain.

⇒ **Haemorrhagic stroke:** this occurs when bleeding starts inside or around the brain tissues.



Prevention:

⇒ Exercise regularly.
⇒ Stop smoking.
⇒ Manage your diabetes.
⇒ Regulate blood pressure.
⇒ Keep a healthy weight.

How to recognise a stroke?

knowing the signs of a stroke can help save lives. The signs to look for are:

B - balance; loss of balance/ dizziness
E- eyes; blurred vision.

F- face; 1 side of the face is drooping.
A-arms; arm/leg weakness.
S- speech; speech difficulty.
T- time; time to call an ambulance.

Treatment & recovery:

Immediate treatment may help minimise the long term effects of the stroke and improve recovery outcomes. Rehabilitation is the most common method used. These activities include:

- Cognitive & speech therapy
- Physical therapy
- Occupational therapy
- Mobility training.

Did you know?

Up to 80% of stroke can be prevented by adopting a **healthy lifestyle** and working with your **healthcare provider**

In case of emergency dial **114** and help save lives.

By: **Bheenick Gitikha. Year 2, 2nd semester Bpharm student.**

RHEUMATOID ARTHRITIS

WHAT IS RHEUMATOID ARTHRITIS?

- Rheumatoid arthritis is a long-term condition that can cause pain, swelling and stiffness in your joints.
- Rheumatoid arthritis is an autoimmune condition. This means that the immune system mistakenly attacks healthy tissues in your body, rather than germs or viruses. If untreated, this can damage your joints, cartilage, and nearby bones.

WHAT CAUSES RHEUMATOID ARTHRITIS?

- Age: Rheumatoid arthritis can affect you at any age, but most people are diagnosed between the ages of 40 and 60.
- Sex: Rheumatoid arthritis is two to three times more common among women than men.
- Weight: If you're overweight, you have a greater chance of developing rheumatoid arthritis than if you're a healthy weight.

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SYMPTOMS

The main symptoms of rheumatoid arthritis are:
- joint pain
- joint swelling, warmth and redness
- stiffness, especially first thing in the morning or after sitting still for a long time

Rheumatoid arthritis can affect any joint in the body, although the small joints in the hands and feet are often the first to be affected.

As well as joint problems, you may experience other symptoms, such as:
- tiredness and lack of energy
- not feeling hungry
- weight loss
- a high temperature, or a fever
- sweating
- dry eyes – as a result of swelling
- chest pain – as a result of swelling

STAGES OF RHEUMATOID ARTHRITIS

EARLY INTERMEDIATE LATE

ANASHEED DOMUN, IV SEMESTER/II YEAR, BPHARM

WHAT ARE THE COMMON WAYS TO TREAT RHEUMATOID ARTHRITIS?

- Non surgical treatments

If you start treatment within the first two years of having symptoms, you lower your risk of serious joint damage.
A doctor may recommend the following actions:
- stay active
- eat healthy diet
- avoid nicotine
- take medication
- sleep and relax

- Surgical treatment

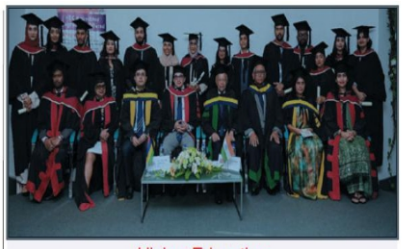
Surgery may be recommend if rheumatoid arthritis has caused moderate to severe joint damage that affect day to day living.
- joint replacement
- synovectomy- joint membrane removal (synovium) surgery
- arthrodesis- two or more bones in a joint are fused to become one larger bone.

DID YOU KNOW?

❖ In 2020, an estimated **17·6 million** people had rheumatoid arthritis worldwide

THIS PIL IS AN EDUCATIONAL TOOL FOR MODULE COMMUNITY PHARMACY AND FOR SOLE OWNER JSSAHERM

Admission Open for January/February 2025



Higher Education

JSS Academy, Mauritius hosts its 1st Convocation Ceremony

The JSS Academy of Higher Education and Research, Mauritius (JSSAHERM) celebrated last month a significant milestone with its first-ever Convocation Ceremony at the MITD Lecture Theatre, in Phoenix. The event marked the culmination of years of hard work and academic achievements for the institution's pioneering batch of students, signifying the end of one academic chapter and the exciting beginning of another.

The ceremony was graced by the presence of Mr Eddy Boissézon, Vice President of the Republic, who served as the Chief Guest. Other distinguished figures present at the event included Prof Praveen Mohadeb, the CEO and Vice Chancellor of JSSAHERM, along with members of the Board of Management, Academic Council, and various faculty heads and members.

The graduates, representing the faculties of Health Sciences, Life Sciences, and Management Studies, were conferred degrees in various programs. These included Bachelor of Pharmacy (B.Pharm), Masters of Business Administration (Hospital Administration), Masters of Science in Microbiology, Bachelor of Science (Hons) in Cosmetic Sciences, and Bachelor of Science (Hons) in Environmental Sciences. In total, 16 students received their degrees, with 14 earning distinction certificates and two receiving merit awards. Among the graduates, Haajra Bibi Umaira Oodally was honoured with the Academic Excellence Award for her outstanding academic performance throughout her studies.

In his address, Prof Mohadeb congratulated the graduates on their success and emphasized that the institution was proud to have equipped them with not only academic knowledge but also industry and practice-ready skills. He noted that the graduates were prepared to step into their respective professional fields with the right expertise and confidence.

JSSAHERM, established in 2018, is a relatively young but rapidly growing institution. It holds degree-awarding powers and is an approved and registered institution with the Higher Education Commission of Mauritius. The first batch of students was enrolled in 2020, and since then, the academy has expanded its offerings. Today, JSSAHERM offers a range of 15 academic programs, including undergraduate, postgraduate, and doctoral degrees. All of its programs are accredited by the HEC, ensuring that they meet the highest academic standards.

Notably, JSSAHERM's Bachelor of Pharmacy (B.Pharm) and Doctor of Pharmacy (Pharm D) programs are accredited by the Accreditation Council for Pharmacy Education (ACPE) of the United States, placing the institution's curriculum on a par with international educational standards and reinforcing its commitment to global quality.

With a strong foundation and a focus on excellence, JSSAHERM is poised to continue its journey as a leading institution in higher education.

Première promotion de diplômés pour la JSS Academy

16 étudiants de la JSS Academy of Higher Education and Research Mauritius (JSSAHERM) ont obtenu leur diplôme lors de la première cérémonie de remise de diplômes. Quatorze d'entre eux ont obtenu la mention «Distinction» et deux la mention «Mérite». Le prix d'excellence académique a été décerné à Oodally Haajra Bibi Umaira pour ses performances exceptionnelles.

La cérémonie a également mis à l'honneur les réalisations individuelles des diplômés à travers la remise officielle de diplômes.

Les diplômes ont été remis à des étudiants des Facultés des Sciences de la Santé, des Sciences de la Vie et des Études de Gestion. Les programmes couvraient des spécialisations variées, notamment :

- Bachelor of Pharmacy
- Master of Business Administration (Administration Hospitalière)
- Master of Science (Microbiologie)
- BSc (Hons) en Sciences Cosmétiques
- BSc (Hons) en Sciences Environnementales

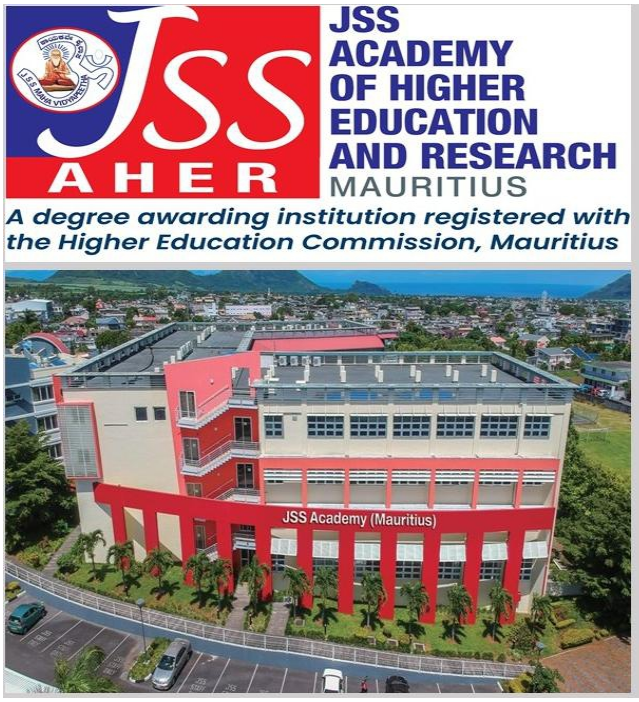
Depuis sa création en 2018, la JSSAHERM s'est imposée comme un acteur clé de l'enseignement supérieur à Maurice. Enregistrée auprès de la Higher Education Commission, elle propose 15 programmes allant du premier cycle au doctorat. Les formations Bachelor of Pharmacy et Doctor of Pharmacy sont accréditées par le Council for Pharmacy Education des États-Unis, attestant d'une qualité académique conforme aux standards internationaux.

La JSSAHERM félicite ses diplômés pour leur réussite et les considère prêts à relever les défis du monde professionnel. Avec une offre académique diversifiée et des ambitions internationales, l'institution continue de contribuer au développement de l'enseignement supérieur mauricien.

Première cérémonie de remise de diplômes de la JSS Academy of Higher Education and Research.

La cérémonie de remise des diplômes a eu lieu le 19 octobre 2024 au MITD Lecture Theatre, Phoenix.

Son Excellence M. Marie Cyril Eddy Boissézon, vice-Président de la République de Maurice, était l'invité d'honneur de la cérémonie.



For Clarifications/Feedback, Write

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JSS Health & Education Newsletter

Prepared and Circulated by:

School of Pharmacy

Faculty of Health Sciences

JSS Academy of Higher Education and Research, Mauritius

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