JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS

JSS Health & Education Newsletter

VOLUME 1 ISSUE 1

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 at the start of activities in Mauritius, registered 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, comprising of some 15,000 sq.mts of built-up area with necessary infrastructure, to improve the quality of post-secondary education in Mauritius. 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 and the BSc (Hons) Cosmetic Science programmes in August 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 precertification.

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 as a post-secondary instiution with degree awarding powers at the start of activities in Mauritius, is the JSS Academy of Higher Education & Research, Mysuru (JSS Aher, Mysuru, India), formerly known as the JSS University. JSSAHER, Mysuru, India is ranked overall in the band of 101-200 globally and ranked 2nd in India by the **THE** Rankings in 2021.

JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS

JSS Health & Education Newsletter

VOLUME I ISSUE 1 JANUARY-APRIL 2021

Inside this Issue

A soft copy of this Newsletter is available under section 'Publications' on our website

MINISTRY OF EDUCATION, TERTIARY EDUCATION, SCIENCE AND TECHNOLOGY

MESSAGE

It is a matter of great satisfaction for me to have this message included in this Newsletter of JSS Academy of Higher Education and Research (JSSAHER). This Academy has indeed started operating only since 2018 but has already well anchored itself within the higher education landscape.

Obviously, it should come as no surprise that the Academy would now seek to reinforce its presence and increase its visibility through this first ever Newsletter!

As it is, a quick browsing of the several articles present therein clearly reveals that it has been well worth the wait. Readers will be pleased to see articles covering subjects related to health care and the pharma sector, scientific articles on diabetes and cancer as well as other related information on drugs, nutraceuticals and cosmeceuticals. Nor has COVID 19 been forgotten.

In short, the articles, contributions coming from different quarters, couldn't be more topical. Indeed, at a time when the world is caught, in varying degrees, in the throes of a pandemic, it is only sound and fitting that the interplay between, and the mutual reinforcement of, Health and Education should be brought to the center of the table.

And JSSAHER, through its several programmes on offer, seeks to fulfil this task to the hilt by demonstrating its capacity to be up to speed with the health realities of our times.

And that is good enough reason for me to thank the JSS for living up to our expectations of it as an institution of higher learning bent on grappling with growth and development issues.

As Minister of Education, I am deeply concerned about the psychological and emotional wellness of our students. We all know that, across the ages, there have always been vectors of change that have brought their fair share of psychological distress such as anxiety, depression and stress. As you may already be aware young learners are another at risk group and the effect of anxiety on their academic trajectories is self-evident, and this is why I think the current and future alumni of JSSAHER have their work all cut out for them. We will always have students facing challenges and stressful environments and they will always need the relevant support from professionals for them to develop the capacity for resilience—resilience that has now become one of the key graduate attributes.

Let me therefore congratulate the JSSAHER as a health-based institution for playing this key role in training and empowering its students and other health care professionals in their several capacities.

I can only encourage the leadership of the Institution to keep up and sustain your several activities for the benefit of science and, ultimately, that of society at large.

Hon. (Mrs) Leela Devi Dookun-Luchoomun, GCSK
Vice Prime Minister

CEO's MESSAGE

I am delighted and feel very proud on the publication of the first issue of JSSAHER Newsletter – Health & Education, by the Faculty of Health Science of the JSS Academy of Higher Education and Research, Mauritius.

I have witnessed the hard work and dedication of my staff and students in the preparation of this newsletter and the planning for more to come. I hereby acknowledge and thank all of them for their unflinching support in this endeavour.

With the Blessings of His Holiness Jagadguru Shri Shivarathri Deshikendra Mahaswamiji, President JSS Mahavidhyapeetha, Mysore, India, under whose aegis JSS Academy of Higher Education and Research, Mauritius operates; we have together been able to set the framework for this publication which is in line with our vision and our mission.

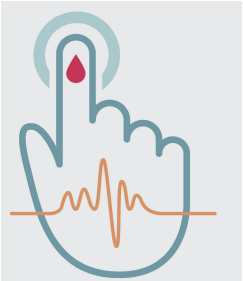
I am sure readers will find the various health care & pharmacy related articles in this newsletter valuable.

I wish you all a pleasant, insightful and good reading.

Dr Praveen MOHADEB
Chief Executive Officer

"MICRONEEDLE ARRAY PATCHES – A CLOSED LOOP ARTIFICIAL PANCREAS DEVICE SYSTEM FOR INSULIN DELIVERY"

THE WAY FORWARD FOR THE MANAGEMENT OF DIABETES



Brief Introduction

Diabetes Mellitus (DM) – a chronic life-threatening disease just like cancer or any other disease whose incidence has become doubled in recent years. In patients associated with diabetic, the use of intensive insulin therapy was found to reduce long term vascular complications and some evidence also highlights the increased risk of both hyperglycemia and hypoglycemia. Islet transplantation has significantly increased over the past decade, yet there are issues of immunosuppressive drugs and the unavailability of adequate pancreatic donors. Nowadays, novel insulin analogues have improved pharmacokinetics profile corresponding to endogenous basal and prandial insulin secretion more strongly. However, despite advances in insulin formulations, external insulin infusion pumps, glucose control still remains a challenge. Patients with diabetes do not achieve their glycemic targets which therefore continue to be a major hurdle for the development of insulin therapy.

Diabetes

Diabetes, which causes uncontrollable increase blood glucose levels; is globally one of the most prevalent chronic disease. Diabetes is a metabolic disorder which either causes permanent lack of insulin production from the pancreas (type 1 diabetes) or a condition where the cells fail to respond to insulin due to dysfunction (type 2 diabetes) which later elevates the blood glucose levels. Insulin is a hormone which is synthesized and secreted from the pancreas to meditate the metabolic reaction involving glucose. In the absence of insulin, the cellular system cannot accurately convert carbohydrates such as sugars, starches, or other foods into energy which is used by the body.

These factors in due course result in many complications, such as cardiovascular disease, chronic renal failure, retinal damage, nerve damage, and microvascular damage. According to the reports given by the World Health Organization (WHO), Around 180 million people globally are affected by diabetes and as estimated, the number will increase over 350 million by the year 2030. In the human body, insulin and glucagon are counter regulatory hormone that plays a vital role in regulating blood glucose levels. Either excess or shortage of glucose in the blood is known as a metabolic disorder.

History reveals that diabetes emerged around 2000 B.C, which was basically discovered by Wells and Lawrence. The discovery of insulin and its functionality was in the year 1921, and continuous glucose monitoring was introduced in 1999. Despite many difficult situations, recent engineering is being focused on many advancements towards individual components that can be combined into closed loop systems that can facilitate a controlled blood glucose levels in a predetermined amount and time under defined conditions without any human input. Diabetic patients are recommended to check their blood glucose levels and take periodic insulin for better management of blood glucose levels. However, patients often do not follow the suggestion as per prescribed as there is a lot of pain, intense stress for repetitive blood collection and insulin shots. These complications lead to various severe diabetic problems like cardiovascular, kidney disease, stroke, blindness and nerve degeneration. In addition, insulin over treatment causes a sudden drop in blood glucose concentration which may cause seizures, unconsciousness and even death. Initiation of continuous glucose monitoring in the early 1960s was hallmark which was led by the first production of hospital based commercial artificial pancreas. Intravenous sensing of glucose and insulin delivery combination was developed in the late 1970s. For many decades, automated closed loop insulin delivery also referred as an "Artificial Pancreas" has been an important difficult goal, also now for researchers in treating diabetes. In the past 10 years, research into an artificial pancreas that is on the closed loop delivery system has gained significant interest and focus has been done on the subcutaneous route for glucose measurement and delivery. This will further help in advancing more towards interstitial glucose monitoring and thereby increasing the use of this combination.

Closed Loop Insulin Delivery System

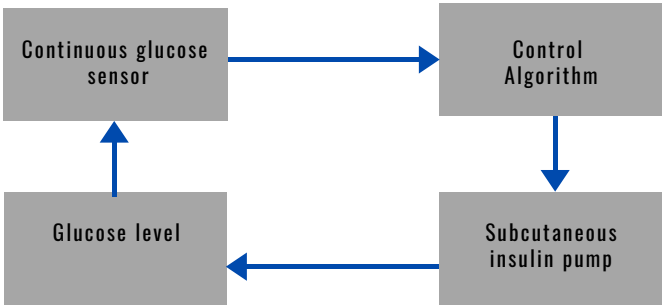
This closed loop delivery system will perhaps occur gradually, which have benefits like glycemic control and thereby temporary shut off of pump to overcome the situation like maintaining glucose levels between the meals and exercise. A plethora of biosensors have been developed which enables in providing diagnostic information regarding a patient's health status. Many different types of sensors have been investigated and a 2010 review by Toghill and Compton gave a great insight into enzymatic and non-enzymatic electrochemical glucose sensing approaches studied over the past decades. Now, Noninvasive spectroscopic method for glucose detection have also been growing in popularity with Raman and Infrared Spectroscopy which are of particular attention. However, the main challenge that still remains is the creation of biosensors for daily use by patients in personalized monitoring format. Recently; several reviews focusing on sensor integration developed into wearable platforms have been published.

Therefore, a novel method which will be pain-free a stress free in monitoring glucose levels and more precise maintaining homeostasis is highly desired in the management of uncontrolled diabetes. This article solely focuses on recent advances towards noninvasive and continuous glucose monitoring devices with a particular focus planned on monitoring glucose concentrations for diabetics.

Body Access Routes

The information flows in a closed-loop system where the continuous glucose sensor sends control algorithm which pumps adequate insulin into the body to maintain the glycemic levels, mentioned in figure 1.

Fig 1: Schematic illustration of the flow of information in a closed- loop system.



Currently there is no artificial pancreas approved and available in the market. The artificial pancreas may contain functionally integrated components that will moreover continuously sense glucose levels, thereby determining appropriate insulin dosage and also delivering insulin in proper time. Several components related to artificial pancreas have been developed which includes, the use of glucose sensor and insulin pump which is linked via wireless communication system for adequate glucose monitoring and parental delivery of insulin in diabetic patients. Currently available intensive therapy has been found to vary in managing glycemic levels by the use of the closed-loop system. This helps in regulation of glucose levels in diabetic patients. In this case, glucose levels are continuously monitored without any requirement of patient's input. Measuring glucose levels were promising with minimum invasive methods for outpatient glucose monitoring. Existing commercially available sensors are directly inserted into the subcutaneous tissues that measures electric current, generated by the oxidation of glucose via the enzyme glucose oxidase. For the development of artificial pancreas; till date different types of the glucose sensor, along with 4 available types of insulin algorithms and insulin delivery system are in the research phase. The ultimate focus is on the development of a combination of better glucose monitoring and insulin delivery technologies by way of an algorithm into an automatic closed-loop system. This development results in the decrease in glycemic variability and less hypoglycemic conditions. Hence, the procedure is painless as compared to needle pricking to monitor glucose levels and deliver insulin for effective management of diabetes.

Artificial Pancreas

An "Artificial pancreas" is a technology which is responsible for stimulating the secretion of insulin in response to elevated glycemic levels. It is a closed-loop system which monitors the glucose levels in blood and triggers the insulin release to regulate and maintain glycemic variability without obstructions. It is considered to be a potential advance system in regulating glycemia and thus improving quality of life. Closed-loop system is a combination of glucose monitoring module and insulin release sensor.

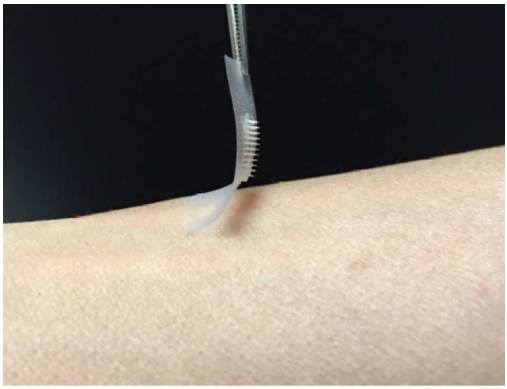
Continuous monitoring of this glycemic level is basically monitored by blood-glucose test and then accordingly adjusting insulin shots can be reduced by the use of artificial pancreas or closed-loop insulin delivery called as "Smart" insulin patch. "Smart" because it releases insulin according to the body's need. This combines the use of glucose sensor which monitors glucose levels and insulin sensor which pumps insulin via the controlled algorithm as per the glucose readings. This system mimics the role of β cells to regulate the blood glucose levels. However, gathering accurate signal feedback of the glucose level and thereby maintain the glycemic variability still remains an important challenge of this device. A chemical approach such as use insulin-loaded matrix in a glucose sensor with a relevant actuator could be beneficial in the closed-loop system for the release of insulin. The changes remain to demonstrate a strategy which could manage both fast response of insulin administration with tremendous biocompatibility.

Microneedle as Artificial Pancreas device system

There are also other modified applications for closed-loop insulin delivery is microneedles via transdermal route is now researched, which have been found to be versatile and researchers are now focusing on development of different microneedles based on metals or polymers comprising of an enzyme such as glucose oxidase (GOx) as sensor along with insulin, which has been believed in passing small amount of insulin through microneedles via auxiliary pumping systems thus maintaining quantitative control and providing continuous delivery. In recent years, skin has become very popular method for monitoring glucose. The Glucowatch was developed as a wearable device was initially brought to mark for noninvasive continuous monitoring glucose to measure glucose levels, but due to its limitation the product was removed from the market in 2008.

The concept of Microneedle was used for the development of a glucose sensing patch, since this approach can offer minimally invasive methods for biosensing. The miniaturized device spans a total area of 6x6mm in which it contains 200 hollow microneedles (300micrometer in length with a 50x50 micrometer lumen). Three screen-printed electrodes were used for quantifying glucose concentrations in the interstitial fluid including a Pt- C working electrode covered with a layer of cross-linked bovine albumin serum and glucose oxidase. The sensing device was attached to the skin by an adhesive layer contouring the perimeter of the sensing pod. Detection was performed upon glucose diffusion into the microneedle array wherein GOx could react to produce hydrogen peroxide. This microneedle patch allows the patch to be in constant contact with the skin, providing permanent access to the interstitial fluid and thus enables this device to operate continuously.

Due to this short length of the microneedle there is precise penetration for interstitial fluid sampling, thus it does not reach the dermis layer. Moreover, as the microneedle penetrate the skin, contamination by sweat is also avoided. Tests have shown that this device can operate successfully for upto 72hrs with only 17mins lag time caused by the passive diffusion of analytes from the blood into the interstitial fluid matrix. Limitation such as clogging, distortion of the shape upon the penetration of the skin can affect the dynamics of the sampling. Though there are shortcomings this novel device holds great potential for noninvasive continuous glucose monitoring. Scientist Zhi and their team further developed the technology by encapsulating the sensors in a thin film which gave the benefits of fast analyte transport through the device. This approach might be designed for pancreatic islet transplants which are known treatment procedure for Type 1 diabetic patients. Microneedles can be safe in maintaining artificial pancreas environment thus increasing the system reliability, decreasing the feeling of pain and also implementing a systematic closed-loop delivery system on insulin. The smart insulin patch could be a game changer could be placed anywhere on the body to detect increase in glucose level (Figure 2).



Conclusion

This article highlights the benefits of closed-loop system and thereby encourages in developments of an artificial pancreas. The ideal medication would be the biological cure where the β cells, which are damaged could be replaced with healthier one. The innovation of artificial pancreas could bridge the gap until a total cure is obtained. The majority of patients still struggle to achieve the optimal blood glucose levels; even with the sophisticated insulin pumps and continuous glucose monitoring devices. The artificial pancreas may recommend more convenient and superior mode of insulin delivery. An intravascular device that can be implanted and which can sense glucose and deliver insulin to maintain optimum glycemic levels would be a safe, easy, pain-free and reasonable method in the management of diabetes in near future.

Published by: Dr Ashish Wadhwani and Dr Baishali Jana, Pharma Focus Asia Magazine, 2019, Issue 32 P. No. 38 – 42

NUTRACEUTICAL

Nutrition + Pharmaceutical- An emerging era in the health industry

Introduction

Nutraceutical a term coined by Dr Stephen in 1989 is a substance that may be considered a food or part of a food which provides medical or health benefits, encompassing prevention and treatment of disease. Since ancient period the mankind made medicines from the extracts of natural materials and has been used for various purposes.

Nutraceutical a term coined by Dr Stephen in 1989 is a substance that may be considered a food or part of a food which provides medical or health benefits, encompassing prevention and treatment of disease. Since ancient period the mankind made medicines from the extracts of natural materials and has been used for various purposes.

Types and Applications

1. Based on chemical constituents

Nutrients

Substances with established nutritional functions, such as vitamins, minerals, amino acids and fatty acids. Common nutrients and their associated health benefits shown in Health benefit.

Herbals

Herbs or botanical products as concentrates and extracts. Common herbs and their therapeutic relevance are shown.

Dietary Supplement

Dietary supplements are products administered through mouth that contain a dietary ingredient intended to add something to the foods you eat. Examples of dietary supplements are: Black cohosh for menopausal symptoms, ginkgo biloba for memory loss, and glucosamine/chondroitin for arthritis. They also serve specific functions such as sports nutrition, weight-loss supplements and meal replacements. Supplement ingredients may contain vitamins, minerals, herbs or other botanicals, amino acids, enzymes, organ tissues, gland extracts etc.

2. Based on their origin

Traditional Nutraceuticals

Under the category of traditional Nutraceuticals comes food in which no change to the food is made. It is simply natural, whole foods with new information about their potential health qualities. There has been no change to the actual foods, other than the way the consumer perceives them. Many fruits, vegetables, grains, fish, dairy and meat products contain several natural components that deliver benefits beyond basic nutrition, such as lycopene in tomatoes, omega-3 fatty acids in salmon or saponins in soy. Even tea and chocolate have been noted in some studies to contain health-benefiting attributes. Tomatoes and salmon are two types of food that researchers have found to contain benefits beyond basic nutrition – in this case, lycopene and omega-3 fatty acids, respectively.

Nontraditional Nutraceuticals

They are the outcome from agricultural breeding or added nutrients and/or ingredients such as orange juice fortified with calcium, cereals with added vitamins or minerals and flour with added folic acid are nontraditional nutraceutical. Agricultural scientists successfully have come up with the techniques to boost the nutritional content of certain crops. Research currently is being conducted to improve the nutritional quality of many other crops.

3. Based on Diseases

TYPES OF DISEASES NUTRACEUTICALS USED

Cardiovascular diseases

Anti-oxidants, Dietary fibers, Omega-3 poly unsaturated fatty acids, Vitamins, minerals for prevention and treatment of CVD.

Polyphenol (in grape) prevent and control arterial diseases.

Flavonoids (in onion, vegetables, grapes, red wine, apples, and cherries) block the ACE and strengthen the tiny capillaries that carry oxygen and essential nutrients to all cells.

Diabetes

Ethyl esters of n-3 fatty acids may be beneficial in diabetic patients.

Docosahexaenoic acid modulates insulin resistance and is also vital for neurovisual development

Lipoic acid, an antioxidant, for treatment of diabetic neuropathy.

Dietary fibers from psyllium have been used for glucose control in diabetic patients and to reduce lipid levels in hyperlipidemia.

Weight-loss

Herbal stimulants, such as ephedrine, caffeine, ma huang-guarana, chitosan and green tea help in body weight loss.

Buckwheat seed proteins acting similar to natural fibers present in food – 5-hydroxytryptophan and green tea extract may promote weight loss, while the former decreases appetite, the later increases the energy expenditure.

A blend of glucomannan, chitosan, fenugreek, G sylvestre, and vitamin C in the dietary supplement significantly reduced body weight.

Conjugated linoleic acid (CLA), capsaicin, Momordica Charantia (MC) possesses potential anti obese properties.

Cancer
Flavonoids which block the enzymes that produce estrogen reduce of estrogen-induced cancers.
To prevent prostate/breast cancer a broad range of phyto-pharmaceuticals with a claimed hormonal activity, called "phyto-estrogens" is recommended.
Soy foods source of isoflavones, curcumin from curry and soya isoflavones possess cancer chemopreventive properties.
Lycopene concentrates in the skin, testes, adrenal and prostate where it protects against cancer
Saponins (found in peas, soybeans, some herbs, spinach, tomatoes, potatoes, alfalfa and clover) contain antitumor and anti- mutagenic activities.
Curcumin (diferuloylmethane) which is a polyphenol of turmeric possesses anticarcinogenic, antioxidative and anti-inflammatory properties.
Top of Form Beet roots, cucumber fruits, spinach leaves, and turmeric rhizomes, were reported to possess anti-tumor activity.
Gamma linolenic acid (found in green leafy vegetables, nuts, vegetable oils i.e.-evening primrose oil, blackcurrant seed oil, and hemp seed oil, and from spirulina, cyanobacteria) are used for treating problems with inflammation and auto-immune diseases.

Anti-inflammatory activities
Glucosamine and chondroitin sulfate are used against osteoarthritis and regulate gene expression and synthesis of NO and PGE2.
Cat's claw has 17 alkaloids, along with glycosides, tannins, flavonoids, sterol fractions, and other compounds and work as potent anti-inflammatory agent.

Allergy
Quercet (found in Onions, red wine and green tea) reduce the inflammation that results from hay fever, bursitis, gout, arthritis, and asthma.

Alzheimer's disease
β-carotene, curcumin, lutein, lycopene, turmerin etc. may exert positive effects on specific diseases by neutralizing the negative effects oxidative stress mitochondrial dysfunction, and various forms of neural degeneration.

Vision improving agents
Lutein (found in mangoes, corn, sweet potatoes, carrots, squash, tomatoes and dark, leafy greens such as kale, collards and bok choy) also known as helenien is used for the treatment of visual disorders.
Zeaxanthin found in corn, egg yolks and green vegetables and fruits, such as Broccoli, green beans, green peas, Brussel sprouts, cabbage, kale, collard greens, Spinach, lettuce, kiwi and honeydew) used in traditional Chinese Medicine mainly for the treatment of Visual Disorders.

Conclusion

The global market for nutraceutical is huge i.e., approximately USD 117 billion. Frequency of nutraceuticals use is 50%–70% in developed countries' population and this number are increasing by the age. Ladies use more nutraceuticals than men. The principal reasons for the growth of the nutraceutical market worldwide are the current population and the health trends. This trend is driven by several factors, mainly due to the current consumer perceptions: the first and dominant being 'Natural is good', and other secondary, such as the increasing cost of many pharmaceuticals and their negative secondary effects, the insistent marketing campaign, the increasing perception of the need of a healthy diet and its importance in the health and homeostasis organism conditions. However, the central point is that nutraceuticals, botanicals and other herbal remedies, including the entry of new functional foods, are important because of their acceptance as the novel and modern forms to benefit of natural substances. Due to the rapid expansion in this area, the development of several aspects is considered as it could influence the future of the market of these products negatively: an imbalance existing between the increasing number of claims and products on the one hand, the development of policies to regulate their application and safety on the other, rapid and valuable controls to check the composition, including the plant extracts or adulteration to improve efficacy, like the presence of synthetic drugs. It is interesting to see that, from the negative factors reported by the market analysts, a change in consumers preferences is absent. The functional properties of many plant extracts, in particular, are being investigated for potential use as novel nutraceuticals and functional foods. Although the availability of scientific data is rapidly improving, the central aspect concerns the validation of these products. The first step of this crucial aspect is the security of the composition, obtained by the useful and adapted analytical approach. On the other hand, in the first instance, security is assured by the millenary use as food of the great majority of these plants. The importance and the novelty of functional food are inherent in the possibility to renew the secure use of plants to maintain healthiness of man in novel forms of use adapted to modern times.

References:
P. Dudeja, R.K. Gupta, in Food Safety in the 21st Century, 2017
https://www.jbclinpharm.org/articles/an-overview-of-nutraceuticals-current-scenario.html
Stauffer JE. Nutraceuticals. Cereals Food World. 1999; 44(2): 115–116.
Kessler RC, Davis RB, Foster DF, et al. Long-Term Trends in the Use of Complementary and Alternative Medical Therapies in the United States. Ann Intern Med. 2001; 135(4): 344–351.
www.medicinalfoodnews.com/vol01/issue2/japan.Functional foods in Japan, Medical Food News, May 1997 No.6

Gathered by: Mrs Medha Gujadhur

COVID-19 VACCINE (CHADOX1-S [RECOMBINANT])

The Oxford–AstraZeneca COVID-19 vaccine, codenamed AZD1222, is a COVID-19 vaccine developed by Oxford University and AstraZeneca given by intramuscular injection, using as a vector the modified chimpanzee adenovirus ChAdOx1. The AZD1222 vaccine is a replication-deficient simian adenovirus vector, containing the full-length codon-optimized coding sequence of SARS-CoV-2 spike protein along with a tissue plasminogen activator (tPA) leader sequence.

The research is being done by the Oxford University's Jenner Institute and Oxford Vaccine Group with the collaboration of the Italian manufacturer Advent Srl located in Pomezia, which produced the first batch of the COVID-19 vaccine for clinical testing. Also, AstraZeneca and Serum Institute of India (SII) reached a licensing agreement to supply 1 billion doses, trademarked as Covishield vaccine to middle- and low- income countries.

One dose (0.5 ml) contains: COVID-19 Vaccine (ChAdOx1-S* recombinant) 5 × 10^10 viral particles (vp) (*Recombinant:replication-deficient chimpanzee adenovirus vector encoding the SARS CoV 2 Spike (S) glycoprotein). It is produced in genetically modified human embryonic kidney (HEK) 293 cells. The solution is colourless to slightly brown, clear to slightly opaque and particle free with a pH of 6.6. The vial containing unit dose of vaccine must be used within 6 months of manufacture. The unopened vial can be stored in a refrigerator at 2 to 8°C and the opened vial can be used at room temperature (from 2 to 25 °C) within the first 6 hours.

Mechanism of action

The COVID-19 Vaccine AstraZeneca vaccination course consists of two separate doses of 0.5 ml each. The second dose should be administered between 4 and 12 weeks after the first. The individuals who receive a first dose of vaccine must complete the vaccination course. The vaccine is for intramuscular (IM) injection only, preferably in the deltoid muscle.

COVID-19 Vaccine AstraZeneca is a monovalent vaccine composed of a single recombinant, replication-deficient chimpanzee adenovirus (ChAdOx1) vector encoding the S glycoprotein of SARS CoV 2. Following administration, the S glycoprotein of SARS CoV 2 is expressed locally, stimulating neutralising antibody and cellular immune responses in the human body. The SARS-CoV-2 spike protein present on the surface of the modified virus is needed to enter the body's cells. The spike S1 protein is an external protein that enables the SARS-type coronavirus to enter cells through the enzymatic domain of ACE2. Upon intrusion, the vaccine delivers the SARS-CoV-2 gene into cells in the body. The cells will use this gene to continuously produce the spike protein. The person's immune system will then recognize this protein as foreign and produce antibodies and activate T cells (white blood cells) to attack it. If, later on, the person comes into contact with SARS-CoV-2 virus, their immune system will recognize it and be ready to defend the body against it. The adenovirus in the vaccine cannot reproduce and does not cause disease.

Clinical Trials and Results

4 clinical trials were conducted in the United Kingdom, Brazil and South Africa which concluded that COVID-19 Vaccine AstraZeneca was safe and effective at preventing COVID-19 in people from 18 years of age. There were around 24,000 people altogether in these trials, half of which received the actual vaccine and the other half were given a control injection, either a dummy injection or another non-COVID vaccine. People did not know if they had been given the test vaccine or the control injection. The 4 studies were as follows: COV001, in healthy adults 18 to 55 years of age in the UK; COV002, in adults ⩾18 years of age (including the elderly) in the UK; COV003, in adults ⩾18 years of age (including the elderly) in Brazil; COV005, in adults aged 18 to 65 years of age in South Africa. The studies excluded participants with history of anaphylaxis or angioedema; participants with severe and/or uncontrolled cardiovascular, gastrointestinal, liver, renal, endocrine/metabolic disease, and neurological illnesses; as well as those with immunosuppression. In studies COV001 and COV002, licensed seasonal influenza and pneumococcal vaccinations were permitted (at least 7 days before or after their study vaccine).

Studies COV002, COV003 and COV005 were used for statistical calculations. In the pooled analysis for efficacy, the participants received two doses of COVID-19 Vaccine AstraZeneca or control (meningococcal vaccine or saline). Because of logistical constraints, the interval between dose 1 and dose 2 ranged from 4 to 26 weeks.

Studies	N⁰ of participants	Efficacy after	
		1st dose	2nd dose
COV002	12,390	76%	82%
COV003	10,300	59%	63%
COV005	2,070	86%	92%

Based on the pre-defined criteria for interim efficacy analysis, Baseline demographics were well balanced across COVID-19 Vaccine AstraZeneca and control treatment groups (pooled data from COV002 and COV003). A total of 2,070 (35.6%) participants had at least one pre-existing comorbidity (defined as a BMI ⩾30 kg/m2, cardiovascular disorder, respiratory disease or diabetes). The median follow-up time post-dose 1 and post-dose 2 was 132 days and 63 days, respectively.

Grouped by	% of participants
Age – 18 to 64 years old	94.1%
Age – >65 years old	5.9%
Sex – Female	60.7%
Sex – Male	39.3%
Race – White	82.8%
Race – Asian	4.6%
Race – Black	4.4%

The majority of adverse reactions was mild to moderate in severity and usually resolved within a few days of vaccination. By day 7 the incidence of subjects with at least one local or systemic reaction was 4% and 13% respectively. When compared with the first dose, adverse reactions reported after the second dose was milder and reported less frequently. Adverse reactions were generally milder and reported less frequently in older adults (⩾65 years old).If required, analgesic and/or anti-pyretic medicinal products (e.g. paracetamol-containing products) may be used to provide symptomatic relief from post-vaccination adverse reactions.

Adverse reactions	Frequency
injection site tenderness	>60%
injection site pain, headache, fatigue	>50%
myalgia, malaise	>40%
pyrexia, chills	>30%
arthralgia, nausea	>20%

Approval

On 30 December 2020, the vaccine was approved for use in the UK's vaccination programme, and the first vaccination was administered on 4 January 2021. More than 50 countries have already approved the AstraZeneca vaccine to some extent. The World Health Organization (WHO) on Monday (Feb 15) listed AstraZeneca and Oxford University's COVID-19 vaccine for emergency use, widening access to the relatively inexpensive shot in the developing world. The vaccines are currently being mass-produced by AstraZeneca-SKBio (Republic of Korea) and the Serum Institute of India. One of the noticeable differences in the Oxford-AstraZeneca vaccine is its price.

Vaccination in Mauritius

The Serum Institute of India Ltd.'s Covishield vaccines, which are being produced under license from AstraZeneca Plc, are a donation from the Indian government to Mauritius. 100,000 vaccines are being donated and will be used to inoculate 50,000 front liners as part of a plan the government says will contribute to a revival of crucial industries. It is a crucial step for the country as it moves to revive its hard-hit tourism sector. The Health Ministry said the campaign would initially target staff treating patients with Covid-19, and workers meeting passengers at the airport. The Health Minister said that the country plans to vaccinate 60 percent of its population in 2021 in the hope of kick-starting economic activity and its tourism sector. Mauritius with 1.3 millions has officially recorded 1,322 cases with 17 deaths since the beginning of the pandemic from 3 January 2020 to 26 May 2021

References:

https://www.gov.uk/government/publications/regulatory-approval-of-covid-19-vaccine-astrazeneca/information-for-healthcare-professionals-on-covid-19-vaccine-astrazeneca
https://www.astrazeneca.com/media-centre/press-releases/2021/covid-19-vaccine-astrazeneca-confirms-protection-against-severe-disease-hospitalisation-and-death-in-the-primary-analysis-of-phase-iii-trials.html

Compiled By: Chetramsingh Chummun

BREAST CANCER

What you should know

Introduction

For the past two decades breast cancer has been the most common cancer affecting the Mauritian population. It is definitely on the rise with more cases being detected every year. Nearly 600 new cases are diagnosed each year.
Breast cancer is a type of cancer in which the cells in the breast begin to grow abnormally. The cells usually form a tumor and are often detected on an x-ray but can also be felt as a lump. Although breast cancer occurs primarily in women, men also can be affected.

Types of Breast Cancer

Ductal carcinoma in situ (DCIS) is the presence of abnormal cells inside a milk duct in the breast. DCIS is noninvasive, which means that it does not spread out from the milk duct and has a low risk of becoming invasive. DCIS is usually diagnosed during a mammogram or while investigating a lump in the breast.

Inflammatory breast cancer is a rare type of breast cancer that develops rapidly, making the affected breast red, swollen and tender. It occurs when cancer cells block the lymphatic vessels in skin covering the breast, causing the characteristic red, swollen appearance of the breast. It is considered as a locally advanced cancer, which means that it has spread form its original point to nearby tissue or lymph nodes.

Invasive lobular carcinoma is a type of breast cancer that begins in the milk-producing glands (lobules) of the breast. Invasive cancer means the cancer cells have broken out of the lobule and can spread to the lymph nodes and other areas of the body.

Paget's disease of the breast is a rare form of breast cancer. Paget's disease of the breast starts on the nipple and extends to the dark circle of skin (areola) around the nipple. It occurs most often in women aged over 50 years old. Most women with Paget's disease of the breast have underlying ductal breast cancer, either in situ or, less commonly, invasive breast cancer.

Signs and Symptoms of Breast Cancer

- A breast lump or thickening that feels different
- Change in the size, shape and appearance of the breast
- A newly inverted nipple
- Redness of the skin over your breast
- Tenderness, pain or aching of the breast

It is important to note that most breast lumps are benign and not malignant. They are not life threatening, but some types of benign breast lumps can increase a woman's risk of getting breast cancer. Any breast lump or change needs to be checked by a health care professional to determine if it is benign or malignant and if it might affect your future cancer risk.

Risk Factors for Breast Cancer

- Gender– women are most likely to suffer from breast cancer than men.
- Increasing age –the risk of breast cancer increases as you age.
- A personal history of breast conditions–if you've had a breast biopsy that found lobular carcinoma in situ (LCIS) or atypical hyperplasia of the breast, you have an increased risk of breast cancer.
- A personal history of breast cancer– If you've had breast cancer in one breast, you have an increased risk of developing cancer in the other breast.
- A family history of breast cancer – if your mother, sister or daughter was diagnosed with breast cancer, particularly at a young age, your risk of breast cancer is increased.
- Inherited genes that increase cancer risk– Certain gene mutations that increase the risk of breast cancer can be passed from parents to children. The most well-known gene mutations are referred to as BRCA1 and BRCA2. These genes can greatly increase the risk of breast cancer and other cancers, but they don't make cancer inevitable.
- Radiation exposure– If you received radiation treatments to your chest as a child or young adult, your risk of breast cancer is increased.
- Obesity– Being obese increases your risk of breast cancer.
- Beginning your period at a younger age– Beginning your period before age 12 increases your risk of breast cancer.
- Beginning menopause at an older age– If you began menopause at an older age, you're more likely to develop breast cancer.
- Having your first child at an older age – Women who give birth to their first child after age 30 may have an increased risk of breast cancer.
- Having never been pregnant– Women who have never been pregnant have a greater risk of breast cancer than do women who have had one or more pregnancies.
- Breast Feeding– Breastfeeding can lower breast cancer risk, especially if a woman breastfeeds her children for longer than 1 year.
- Postmenopausal hormone therapy– Women who take hormone therapy medications that combine estrogen and progesterone to treat the signs and symptoms of menopause have an increased risk of breast cancer. The risk of breast cancer decreases when women stop taking these medications.
- Drinking alcohol– increases the risk of breast cancer.

How can Breast Cancer be diagnosed?

Breast self-examination is a simple, painless procedure that women can carry out by themselves at home, to detect any changes occurring in their breast. It has been proven to be an effective early detection technique for breast cancer. Breast self-examination should be performed every month as from the age of puberty.
The best time to do a monthly self-breast exam is about 3 to 5 days after your period starts and should be done preferably at the same time every month as your breasts are not as tender or lumpy at this time in your monthly cycle.

If you have gone through menopause, do your exam on the same day every month.
→ How to proceed for the breast self-examination?
Begin by lying on your back. It is easier to examine all breast tissue if you are lying down.
- Place your right hand behind your head. With the middle fingers of your left hand, gently yet firmly press down using small motions to examine the entire right breast.
- Next, sit or stand. Feel your armpit, because breast tissue goes into that area.
- Gently squeeze the nipple, checking for discharge. Repeat the process on the left breast.

Next, stand in front of a mirror with your arms by your side.
- Look at your breasts directly and in the mirror. Look for changes in skin texture, such as dimpling, puckering, indentations, or skin that looks like an orange peel.
- Also note the shape and outline of each breast.
- Check to see if the nipple turns inward.

Do the same with your arms raised above your head.

The goal is get used to the feel of your breasts. This will help you to find anything new or different. If you do, call your health care provider right away.

Mammogram- A mammogram is an X-ray of the breast. Mammograms are commonly used to screen for breast cancer. If an abnormality is detected on a screening mammogram, your doctor may recommend a diagnostic mammogram to further evaluate that abnormality.
Breast ultrasound- Ultrasound uses sound waves to produce images of structures deep within the body. Ultrasound may be used to determine whether a new breast lump is a solid mass or a fluid-filled cyst.
Biopsy- A biopsy is the only definitive way to make a diagnosis of breast cancer. During a biopsy, the doctor uses a specialized needle device guided by X-ray or another imaging test to extract a core of tissue from the suspicious area. Often, a small metal marker is left at the site within the breast so the area can be easily identified on future imaging tests.
Breast magnetic resonance imaging (MRI)- An MRI machine uses a magnet and radio waves to create pictures of the interior of your breast. Before a breast MRI, you receive an injection of dye. Unlike other types of imaging tests, an MRI doesn't use radiation to create the images.

Treatment

The doctor determines your breast cancer treatment options based on the type of breast cancer, its stage and grade, size, and whether the cancer cells are sensitive to hormones. The doctor will also consider your overall health and your own preferences.

Breast Cancer Surgery

Operations used to treat breast cancer include:

- Removing the breast cancer (lumpectomy). During a lumpectomy, which may be referred to as breast-conserving surgery or wide local excision, the surgeon removes the tumor and a small margin of surrounding healthy tissue.
- Removing the entire breast (mastectomy). A mastectomy is an operation to remove all of your breast tissue. Most mastectomy procedures remove all of the breast tissue — the lobules, ducts, fatty tissue and some skin, including the nipple and areola (total or simple mastectomy).
- Removing a limited number of lymph nodes (sentinel node biopsy). To determine whether cancer has spread to your lymph nodes, your surgeon will discuss with you the role of removing the lymph nodes that are the first to receive the lymph drainage from your tumor.
- Removing several lymph nodes (axillary lymph node dissection). If cancer is found in the sentinel lymph nodes, your surgeon will discuss with you the role of removing additional lymph nodes in your armpit.
- Removing both breasts. Some women with cancer in one breast may choose to have their other (healthy) breast removed (contralateral prophylactic mastectomy) if they have a very increased risk of cancer in the other breast because of a genetic predisposition or strong family history.

Radiation Therapy

Radiation therapy uses high-powered beams of energy, such as X-rays and protons, to kill cancer cells. Radiation therapy is typically done using a large machine that aims the energy beams at your body (external beam radiation). But radiation can also be done by placing radioactive material inside your body (brachytherapy).

Chemotherapy

Chemotherapy uses drugs to destroy fast-growing cells, such as cancer cells. If your cancer has a high risk of returning or spreading to another part of your body, your doctor may recommend chemotherapy after surgery to decrease the chance that the cancer will recur.

Hormone Therapy

Hormone therapy, more properly termed hormone-blocking therapy, is used to treat breast cancers that are sensitive to hormones. Treatments that can be used in hormone therapy include:

- Medications that block hormones from attaching to cancer cells (selective estrogen receptor modulators)
- Medications that stop the body from making estrogen after menopause (aromatase inhibitors)
- Surgery or medications to stop hormone production in the ovaries

Targeted Therapy Drug

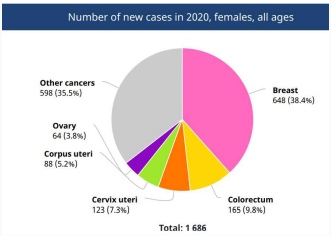
Targeted drug treatments attack specific abnormalities within cancer cells. As an example, several targeted therapy drugs focus on a protein that some breast cancer cells overproduce called human epidermal growth factor receptor 2 (HER2). The protein helps breast cancer cells grow and survive. By targeting cells that make too much HER2, the drugs can damage cancer cells while sparing healthy cells.

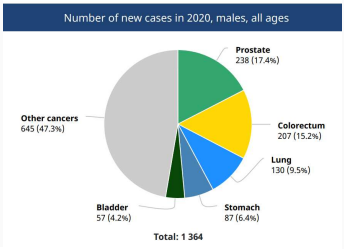
Immunotherapy

Immunotherapy uses your immune system to fight cancer. Your body's disease-fighting immune system may not attack your cancer because the cancer cells produce proteins that blind the immune system cells. Immunotherapy works by interfering with that process.

Statistics

Mauritius is among few African countries that has the basic infrastructure and facilities for therapy of cancer such as surgery, chemotherapy and radiotherapy. A new state-of-the-art specialised cancer care hospital equipped with upgraded modern equipment and evidenced-based specialized medical service will soon be operationalised in Vacoas to provide appropriate treatment to all cancer patients.





Summary statistic 2020

	Males	Females	Both sexes
Population	627 480	644 287	1 271 767
Number of new cancer cases	1 364	1 686	3 050
Age-standardized incidence rate (World)	150.0	166.3	155.0
Risk of developing cancer before the age of 75 years (%)	14.6	16.7	15.6
Number of cancer deaths	742	762	1 504
Age-standardized mortality rate (World)	79.7	68.2	72.4
Risk of dying from cancer before the age of 75 years (%)	8.2	7.3	7.7
5-year prevalent cases	3 271	4 812	8 083
Top 5 most frequent cancers excluding non-melanoma skin cancer (ranked by cases)	Prostate Colorectum Lung Stomach Bladder	Breast Colorectum Cervix uteri Corpus uteri Ovary	Breast Colorectum Prostate Lung Stomach

References:

https://medlineplus.gov/ency/article/001993.htm#:~:text=With%20the%20middle%20fingers%20of,the%20nipple%2C%20checking%20for%20discharge.
https://www.mayoclinic.org/diseases-conditions/breast-cancer/symptoms-causes
https://www.mayoclinic.org/diseases-conditions/breast-cancer/diagnosis-treatment/drc-20352475
https://gco.iarc.fr/today/data/factsheets/populations/480-mauritius-fact-sheets.pdf

Composed By: Zina Elaheebucus

COSMETIC SCIENCE

Cosmetic science is the application or use of pharmaceutical chemistry methods or procedures in the development of cosmetics. Today much can be done with sophisticated cosmetics to enhance the appearance of an individual. Cosmetics contribute not only to the appearance but also to health in the fullest sense of skin, psychological and social wholesomeness. The importance of beauty in human affairs has long appreciated by artists and helps in career development and ultimate achievement. Cosmetic science deals with the effects that raw materials (colorants, moisturizers, antibacterial agents and preservatives) and mixtures have on different parts of the human body such as nails, hair, skin, lips, eyes and mouth. The main ingredients in cosmetics are water, emulsifier, preservative, thickener, emollient, color, fragrance and pH stabilizers. The cosmetics industry is one of the most proliferated industries across the globe. The importance of cosmetics has increased as many people want to look young and attractive. Cosmetics are mostly available in the form of creams, lipsticks, perfumes, foundations, nail polishes, hair sprays, hand sanitizer and perfumes. There are also a large variety of baby care products in the market which helps to protect the baby's skin.

Throughout history till the modern times different forms of cosmetics and toiletries have been used by both men and women to improve health, scent and appearance. The world's first cosmetics were made by Egyptians. Egypt was very popular for their beauty and has introduced cosmetics in the world. Egyptians used elements like the lead ore and copper to make cosmetics which now is used to hide wrinkles and pores. Beauty products were used to separate the wealthy from the poor Hygiene products such as, soaps, fragrances, and body oils were not only there to make people seem better, but were there to protect them as well. Henna was used as lipsticks and nail polish. Nail polish was invented 5,000 years ago in China.

In ancient times, people created mascara using many different recipes, like for example grinded dust, semiprecious stones, coal and Kohl which were harmful ingredients. Nowadays mascara is being made using water, waxes, thickeners and pigment. Makeup has played and been a very important part of humankind for hundreds of years.

Many products like soaps, shampoo, and toothpaste are an essential part of basic hygiene. Other products, such as sun care creams help to protect from sun damage and rash lotions, play an important role in skin protection and health. Even make-up products like mascara and foundations contribute to society by raising the confidence and improving well-being of the wearers. Antiperspirants and deodorants help in reducing perspiration and body odors.

Moreover soaps help in cleansing the skin and kills bacteria. The most common cosmetic is the hair care products which help to treat scalp condition, hair can be cleaned with shampoo conditioned and treated to enhance its appearance. Many young men turn to oils and gels to maintain and style their hair. Products like hair gels, oils, and lotions have been introduced in the market to help protect hair fall and dandruff. The dental care products have advanced and are more effective to clean and reduce odor of the mouth. They exist as toothpaste and mouthwash. Skin Fragrance can be used to elicit strong positive emotion. Furthermore skin condition can be improved by application of preventative and treatment cosmetics. This includes moisturization, tone, wrinkle and blemish reduction associated with skin ageing. More recently anti –ageing creams have been manufactured which can retain younger looking skin for many years. The best cleansing agents are cleansing cream, soap and water. Thus, cosmetics have been and always will be an integral part of human society.

More recently researchers have shown that make ups help in protection from harmful rays of lights. Many beauty products manufacturers have utilized the needs of people to protect themselves and the skin from the rays of the sun. This is a great achievement because earlier makeup and sun protection could not blend together. Moreover, Phillip Artemi, a doctor with the Australasian College of Dermatologists presented a paper on the potential skin benefits of "cosmeceuticals", the colored cosmetics in your beauty bag from lipstick to liner and

Cream blush, to powdered bronzer. "We now know that it isn't just solar radiation such as UVB and UVA that is bad for the skin," he said and according to the Sydney Morning Herald. "The sun also emits infrared radiation and visible light, which can lead to damage resulting in dull skin, wrinkles and unsightly pigmentation. According to Phillip Artemi, skin is considered as the second best defense against those environmental aging effects. Artemi further added that "We now advise that functional colored cosmetics should be added to the long-standing advice in order to further reduce the risk of skin cancer and premature aging as well as protecting against the increasing danger of air pollution."

Aside from the fact that many makeup formulas now contain good ingredients like SPF, vitamins and retinol boosters, which is used to fight off the skin-damaging effects of the sun and pollution. "Pigments and other light reflecting ingredients in makeup can act similarly to physical blockers and afford some protection for the skin," Sejal Shah, M.D. a board-certified dermatologist in New York City tells Allure. The idea is particularly useful when it comes to eye makeup. Since we tend to avoid that delicate skin around the eye when applying sunscreen,

Layering on extra shadow and light-reflecting highlighters can help. In other words, your best skin strategy for fighting aging and sun damage is to enlist your full beauty arsenal, including cosmetics and traditional sunscreens." That's true only if you don't follow a strict cleansing routine" says Shah. "If you aren't experiencing any negative effects like acne or irritation, it's probably okay to wear your makeup daily. However, it is extremely important to make sure you are properly cleansing and thoroughly removing it nightly," she says.

"Some people benefit from a break for a day or two because it allows them to remove any makeup residue that has been left on the skin."Many large cosmetic companies have introduced natural and organic cosmetic as they have a lower environmental impact than using synthetic ingredients hence helps in reducing air pollution. The Importance of Cosmetics Today help to enhance our appearance and make us feel more confident. With more cosmetics on the market today than ever before, it becomes obvious to us that they play a great role in our everyday life.

REFERENCES

- https://thebeautybite.com/the-importance-of-cosmetics-today.html
- https://ascc.com.au/the-benefits-of-cosmeticstoiletries/

Compiled By: Khatoon Jafferally

INNOVATIVE TREATMENT USING TILAPIA SKIN AS A XENOGRAFT FOR PARTIAL THICKNESS BURNS AFTER A GUNPOWDER EXPLOSION

INTRODUCTION

An estimated 180 000 deaths every year are caused by burns – the vast majority occur in low- and middle-income countries. Non-fatal burn injuries are a leading cause of morbidity.
Burns are one of the most common household injuries, especially among children. Burns are characterized by severe skin damage that causes the affected skin cells to die.
Most people can recover from burns without serious health consequences, depending on the cause and degree of injury. More serious burns require immediate emergency medical care to prevent complications and death.
There are three primary types of burns: first-, second-, and third-degree. Each degree is based on the severity of damage to the skin, with first-degree being the most minor and third-degree being the most severe. Damage includes:
• first-degree burns: red, non-blistered skin
• second-degree burns: blisters and some thickening of the skin
• third-degree burns: widespread thickness with a white, leathery appearance

Nile Tilapia Fish Skin (NTFS) has been suggested as an option of biological material for the management of burns. The Colony Forming Units found in samples of NTFS before the process of chemical sterilization indicated the presence of normal, non-infectious microbiota . NTFS also presented a large composition of type I collagen, morphology similar to human skin and high resistance and tensile extension at the break. Despite these characteristics and their enormous significance and potential, no description is present so far in any medical literature of NTFS use in treatment of human burns.

CASE REPORT
A 23-year-old male patient, with no comorbidities, arrived at a burn treatment centre in Fortaleza, Brazil after a thermal injury caused by contact with flames from a gunpowder explosion. Superficial partial thickness burns (SPTB) were present in right upper limb and deep partial thickness burns (DPTB) were present in left upper limb, face and anterior and posterior thorax. Involvement of 16% of total body surface area was calculated with the Lund and Browder chart. After admission as inpatient, he was resuscitated with intravenous fluids using the Parkland formula and remained hemodynamically stable. Local Institutional Review Board approval and written permission from the patient were obtained, in accordance with the Declaration of Helsinki. No conflicts of interest are present.

Superficial partial thickness burn in the right upper limb, after cleaning of the lesion.

Deep partial thickness burn in the left upper limb, after cleaning of the lesion.

NTFS was subjected to a rigorous process of chemical sterilization, glycerolization and irradiation, followed by microbiological tests for bacteria and fungi, before storage in refrigerated sterile packaging. Prior to its use in the patient, the skin was washed in sterile 0.9% saline for 5 minutes, with this process being repeated three times in a row

The patient was submitted to anaesthesia and analgesia with 150 mg of ketamine, 10 mg of midazolam and 200 mg of tramadol. After cleaning the lesion with tap water and 2% chlorhexidine gluconate and removing necrotic and fibrinous tissue, the biomaterial was applied to the upper limbs of the patient. Coverage of at least 1 cm of healthy skin in the borders of the wound and superposition of at least 1 cm between NTFS pieces are needed, both to ensure that eventual movement in the first days of treatment will not lead to uncovering of any area of the burn. Due to the still experimental nature of the treatment with NTFS, the researchers decided to apply silver sulfadiazine cream 1%, still used as standard treatment by almost all Brazilian burn centers, to the rest of the burned areas. Finally, firm coverage of the wounds with gauze and bandage was performed.

Process of removing necrotic and fibrinous tissue from the lesion, an essential step to allow maximal contact between NTFS and the wound bed.

Appearance of the left upper limb after NTFS application.

Daily collection of blood samples was performed and no significant alterations were found. Also, vital signs and clinical status of the patient remained stable. Gauze and bandage of upper limbs were cut off every 72 hours for the first week of treatment to evaluate for NTFS adherence. The biomaterial showed good adherence to the wound bed with no need of dressing changes.

Appearance of the dressing on the sixth day of treatment. Good adherence of NTFS to the wound bed was detected.

On the 12th day of treatment, NTFS had a dried and hardened appearance and started to slough off from the patient's right upper limb. Thus, the researchers decided to remove NTFS in the area. The patient's limb was placed under a shower and the wound was soaked with water. The hydration process led to weakening, breaking and slippage of the NTFS, with exposure of the underlying healed skin. On the 17th day of treatment, a similar process was performed, allowing NTFS removal from the left upper limb. No side effects were noted.

Appearance of the right upper limb lesion after removal of NTFS, with a total of 12 days required for complete reepithelialization of the SPTB.

Appearance of the left upper limb lesion after removal of NTFS, with a total of 17 days required for complete reepithelialization of the DPTB.

Conclusion:

This article focusses on the use of Tilapia skin as a xenograft in the treatment of burns. The use of tilapia skin to help burn victims heal more quickly is gaining popularity among doctors especially in Brazil. The skin of this abundant fish is a low-cost and effective form of treatment that seems to be a great alternative to more traditional methods. It is a game changer since it contains factors that facilitate the skin's natural wound healing response, making tilapia skin attractive to patients and doctors.

Reference:
https://www.who.int/news-room/fact-sheets/detail/burns
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6565829/
https://www.healthline.com/health/burns

Edited by: Misbah Dhuny

WORLD PHARMACISTS DAY 25 SEPTEMBER

The pharmacist day is observed worldwide on the 25th of September. This day is celebrated to create awareness about the role of a pharmacist in improving health. The day was an initiative of the International Pharmaceutical Federation (FIP) along with the council of this organization.

For the year 2020, the theme was "Transforming Global Health". The theme is an opportunity to communicate how pharmacists are transforming health through a variety of health services in their communities, including advising on healthy living, vaccinating to prevent disease, and ensuring that medicines are taken correctly, thereby managing diseases well and improving quality of life. The purpose of the day is to draw attention to pharmacies and the positive benefits they offer when it comes to health and FIP encourages all its members to participate to make the event a success.

At the JSS Academy of Higher Education and Research Mauritius, the pharmacist day was celebrated alongside the Anna Medical College, where around 20 members were invited– staff and students included. Furthermore, there was a talk on dementia, whereby the doctor present elaborated on the causes and treatment of the disease.

Additionally, a small activity was carried out among the students where the blood pressure was recorded using both the sphygmomanometer and the digital blood pressure monitor.

A TRIP TO PAMPLEMOUSSES GARDEN

Mauritius

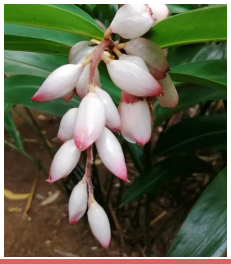
Sept,26,2020

First unit in Remedial biology is Evolution, Diversity and Plant Morphology. To make it an interesting topic we choose to change our classroom from a room to Nature. Living in paradise we couldn't think of a better place than the "Royal Botanic Pamplemousse garden "also known as "Sir Seewosagar Ramgoolam Botanic Garden "which is the oldest garden in the southern hemisphere. This Garden was first constructed by Pierre Poivre in 1770. It covers an area of 37 hectares. (91 acres) Our trip proved to be very fruitful and we were amazed by beautiful pond of giant water lilies, a garden dedicated to spices, medicinal plants from all around the world, an ebony forest, around 85 varieties of palm trees imported from Europe, Africa, India and many other countries.

One of the best outcomes was understanding nomenclature was very easy after the visit as each of the plant, trees were well labelled with their generic and species name with a little history about them. Concept of classification and evolution was also much clearer.

Weather was beautiful and as it was our first trip outside the college so it also helped us in socializing and knowing each other well. Our trip definitely made us realize that

"You can't teach Biology with a bottle containing dead animals and organism"



RECENTLY APPROVED DRUGS

S.N	Drug	Indication	Date of Approval
1	**Verquvo (vericiguat) Tablets**	In adults with symptomatic chronic HF and ejection fraction less than 45%	19/01/2021
2	**Cabenuva (cabotegravir and rilpivine) Extended-Release Injection Suspension**	HIV-1 infection in adults	21/01/2021
3	**Lupkynis (voclosporin) Capsules**	Treatment of adult patients with active lupus nephritis (LN)	22/01/2021
4	**Posimir (bupivacaine) Solution for Infiltration Use**	For post-surgical pain reduction following arthroscopic subacromial decompression shoulder surgery	01/02/2021
5	**Tepmetko (tepotinib) Tablets**	For treatment of patients with metastatic non-small cell lung cancer	03/02/2021
6	**Ukoniq (umbralisib) Tablets**	For the treatment of marginal zone lymphoma (MZL) and follicular lymphoma (FL)	05/02/2021
7	**Breyanzi (lisocabtagenemaraleucel) Suspension for Intravenous Infusion**	For the treatment of adult patients with relapsed or refractory large B-cell lymphoma (LBCL)	05/02/2021
8	**Evkeeza (evinacumab-dgnb) Injection**	For the treatment of adult and paediatric patients, aged 12 years and older, with homozygous familial hypercholesterolemia (HoFH)	11/02/2021
9	**Cosela (trilaciclib) for Injection**	Used in patients with small cell lung cancer (SCLC) who are receiving chemotherapy	12/02/2021
10	**Amondys 45 (casimersen)**	For the treatment of patients with Duchenne muscular dystrophy (DMD) who have genetic mutations that are amenable to skipping exon 45 of the Duchenne gene	25/02/2021

S.N	Drug	Indication	Date of Approval
11	**Azstarys (Dexmethylphenidate and serdexmethylphenidate) Capsules**	For the treatment of attention deficit hyperactivity disorder (ADHD) in patients 6 years of age and older	02/03/2021
12	**Ponvory (ponesimod) Tablets**	In for the treatment of adults with relapsing forms of multiple sclerosis (MS)	18/03/2021
13	**Zegalogue (dasiglucagon) Injection**	For the treatment of severe hypoglycemia in diabetes patients aged 6 years and older	22/03/2021
14	**Roszet (Ezetimibe and rosuvastatin) Tablets**	To reduce low-density lipoprotein cholesterol (LDL-C) in primary non-familial hyperlipidemia and homozygous familial hypercholesterolemia (HoFH)	23/03/2021
15	**Qelbree (Viloxazine hydrochloride) Extended-Release Capsules**	For the treatment of attention deficit hyperactivity disorder (ADHD) in pediatric patients 6 to 17 years of age	02/04/2021
16	**Nextstellis (drospirenone and estetrol) Tablets**	For use by females of reproductive potential to prevent pregnancy	15/04/2021
17	**Zynlonta (loncastuximab tesirine-lpyl) Injection**	For the treatment of adult patients with relapsed or refractory large B-cell lymphoma	23/04/2021
18	**Kloxxado (Naloxone hydrochloride) Nasal Spray**	For the emergency treatment of known or suspected opioid overdose, as manifested by respiratory and/or central nervous system depression, for adult and pediatric patients	30/04/2021
19	**Camcevi (leuprolide mesylate) Injection**	For the treatment of adult patients with advanced prostate cancer	26/05/2021
20	**Myfembree (relugolix, estradiol and norethindrone acetate) Tablets**	For the management of heavy menstrual bleeding associated with uterine leiomyomas (fibroids) in premenopausal women	26/05/2021

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.

Janet P. Eagle
Executive Director

Director, International Services




Class Rooms

JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS





Campus Buildings

JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS





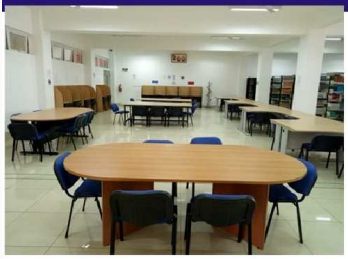
JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS

Laboratories

JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS








Library

JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS

We acknowledge Biswal Trading Ltd
for generous sponsorship

BISWAL TRADING LTD

Montée "S", Petite Riviere - P.O.BOX 787, Bell Village
Tel: 233-5166, 233-5013, 233-1072 – Fax: 233-0689
E-Mail: biswal@intnet.mu
BRN No. C07008251

For Clarifications/feedback, write
To:
The Chief Editor
JSS Health &Education Newsletter

Prepared and Circulated by:
Faculty of Health Sciences, School of Pharmacy
JSS Academy of Higher Education and Research, Mauritius
Droopnath Ramphul St., Vacoas
Phone: +230 4016415
Website: http:// jssaher.edu.mu
Email: info@jssaher.edu.mu