

IEWSLETTER

Topics.

TIONAL BOARE

- Study Finds High Rates of Cancer Among Men Living with HIV
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- Asthma: Pathophysiology and Current Treatment Options
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Dr. R. Varadarajan Founder President NES-SVB

THE DESK OF THE PRESIDENT.

My Dear Students, Our commitment at Saraswathi Vidya Bhavan's College Of Pharmacy is to provide a safe and intellectually challenging environment that will empower students to become innovative thinkers, creative problem solvers and inspired learners to thrive in the twenty-first century. High standards and benchmark for each student not only in academic performance, but also in curricular activities and responsible citizenship for the foundation of our college. It is with pride that we hold these high standards and ask each of our students to commit to maintaining the extraordinary record of achievement and contribution that has been the legacy of SVBCP students. We have walked an incredible journey of 29 years in the midst of this journey we have earned various honours, awards and accolades. These achievements should empower you all with a stronger resolve to work yet harder until college reckoned as one of the best. I'm very happy that the students have successfully published the new edition of "SVBCP TIMES". Dear students, your enthusiasm and willingness make me really very proud. Wishing you a meaningful, enjoyable and memorable year 2021-22

> Founder President NES-SVB Dr. R. Varadarajan. 🔺



To stand distinguished as a Centre of Excellence that fosters talent, research aptitude, entrepreneurship, human values and holistic development of competent healthcare professionals to fulfill the requirements of the industry.

MISSION

With a view to accomplish our vision, SVBCP aims to Provide state-of-the art infrastructure and a teaching learning environment that is conductive for holistic development. instill the values of discipline, integrity, humanity and professionalism required for healthcare sector.nuture young professional leaders to work towards novel research ideas, innovations and entrepreneurial thinking for benefits community, at the large.



•Study finds high rates of cancer among men living with HIV.

In Case Western Reserve University have found that there are nearly twice as many men with cancer among men living with HIV (MLWH) compared to men who do not have the human immunodeficiency virus. The rates of cancer are even higher in men with symptomatic HIV.

The researchers based their findings on national Medicaid data, which included more than 82,000 MLWH and more than 7 million men without HIV. The highest rates of cancer were for anal cancer in both symptomatic and asymptomatic MLWH. And the highest rates of cancer in MLWH were detected in Hispanic MLWH.

The study, Excess Cancer Prevalence in Men with HIV: A Nationwide Analysis of Medicaid Data, funded by the Case Comprehensive Cancer Center, was published earlier this week, in the online early view edition of Cancer, an American Cancer Society journal. The study was published with an accompanying editorial, An ounce of prevention: Medicaid's role in reducing the burden of cancer in men with HIV.

"Medicaid plays a key role in insuring people with HIV. Our findings highlight the importance of the Medicaid program's efforts to promote healthy behaviors and to promote vaccine against human papillomavirus in children and adolescents, as well as individualized cancer screening."



The authors observed excess cancer prevalence for several cancer types in addition to anal cancer, including lymphoma and rectal cancers. They noted excess cancer prevalence is due in part to premature aging from HIV, as well as the prevalence of other (non-HIV) cancer risk factors, such as smoking and exposure to oncogenic viruses-;including human papillomavirus (the need for continued use of antiretroviral therapies, as well as promoting HPV vaccination, even later in life. It also emphasizes the importance of using these findings to inform policy initiatives, including programs to ensure continuous enrollment in Medicaid, physician reimbursement policies to improve cancer screening, as well as controlling the cost of expensive medications to treat both conditions.)-;known to cause certain cancers.

•Breast Cancer.

Breast cancer (BC) is the most common malignancy in women. It is classified into molecular subtypes according to hormone and growth factor receptor expression. One of the major challenges for its treatment is its heterogeneous nature, which determines the therapeutic. BC is classified into four major molecular subtypes: (i) luminal A (HR+/HER2-); (ii) HER2+; (iii) luminal B (HR+/HER2+); and (iv) triple negative.

1)LUMINAL BC(HR+BC)

HR+ BC, endocrine therapy is used for treatment, which works by blocking the effects of hormone or lowering the hormone level.Currently drugs include (i)tamoxifen, a prodrug that blocks estrogen uptake by the ER; (ii) aromatase inhibitors (letrozole, anastrozole, and exemestane), which suppress the conversion of androgens to estrogens, thus resulting in estrogen depletion; (iii) luteinizing hormone- releasing hormone analogs (goserelin and leuprolide), which suppress the production of hormone from the ovary;& (iv) fulvestrant (a selective ER degrader) which is suitable for BC patients refractory to previous hormonal therapy. Sequential administration of endocrine treatments are recommended for rapid response or evidence of clinical resistance, when chemotherapy will be indicated).



<u>2)HER 2 +BC.</u>

For HER2+ BC, several molecular targeted agents have been approved used alone or in combination with standard chemotherapy. They include (i) trastuzumab (anti-HER2 monoclonal antibody); (ii) pertuzumab (iii) ado-trastuzumab emtansine, an antibodycytotoxic agent conjugate consisting of trastuzmab linked with a small-molecule microtubule inhibitor (emtansine); and (iv) lapatinib, a dual tyrosine kinase inhibitor (TKI) that interrupts both HER2 and epidermal growth factor receptor (EGFR) pathways. (v) early-stage HER2-positive BC, neoadjuvant treatment with a combination of chemotherapy and anti-HER2 targeted therapy is currently the standard regimen. This is followed by surgery, radiotherapy, and another 12-month HER2-targeted therapy.

3) Triple Negative Breast Cancer.

Current Treatment Regimens. Triple negative breast cancer is more aggressive and difficult to treat than HR+ and HER2+ BC. For TNBC, standard chemotherapy remains the mainstay of treatment. TNBC is the BC subtype with the most complete response to chemotherapy (22%). However, their recurrence and metastasis rates are higher than those carrying non-TNBC tumors. The median OS for patients with metastatic TNBC is about 9–12 months with conventional cytotoxic agents. The lack of ER, PR, and HER2 expression precludes the use of targeted therapies in advanced TNBC, and the only approved systemic treatment option is chemotherapy [usually taxanes, anthracycline, and platinum drugs (68)] with or without bevacizumab [a recombinant humanized monoclonal antibody against vascular endothelial growth factor.

•Fucoxanthin - Marine Algae Drug with Benefits

Fucoxanthin, belongs to the xanthophyll class of carotenoids representing 10% of total carotenoids in nature. It is a natural antioxidant pigment of marine algae, including brown macro algae and diatoms. Fucoxanthin is abundant in brown seaweeds that are consumed as dietary supplements and traditional or herbal medicines worldwide.

***PHARMACOLOGICAL PROPERTIES AND USES.**

- Antioxidant Property :- Marine carotenoid Fucoxanthin has been reported as the most promising antioxidant metabolite with potent resistance against oxidative stress in vitro and in vivo, with an increased level of radical scavenging activity and iron-chelating activity and decreased reducing power in the in vitro cell assay.
- Anti-inflammatory Property :- In the LPS-generated inflammation I, Fucoxanthin treatment played the role as an antidepressant in MDD (major depressive disorder) via the attenuation the secretion of Neuro-inflammatory Factors (Cox2 & iNOS).
- Anti-cancer & Anti-tumor activity :- Fucoxanthin showed anticancer activity in human breast cancer by decreasing nuclear factors Kappa B, VEGF Receptors. It has also found to suppress the cell proliferation and colony formation in cervical cancer cells.
- Anti-Obesity Potentials :- Fucoxanthin has modulatory effects on gut microbiota to provide anti-obesity effect.
- Antidiabetic Activity :- Fucoxanthin after high glucose and lipid peroxidation stress, protected against inflammatory responses, maintained the integrity of the blood-retinal barrier by reducing cell damage i.e. apoptosis.
- Cardioprotective Activity :- Fucoxanthin improved the ventricular rhythm and muscular function. The study was performed with both low molecular weight fucoidan (LMWF) and high stability fucoxanthin, alone and in combination. It significantly reduced AST, LDH, and creatine kinase-MB (CKMB).

•ASTHAMA TREATMENT OPTIONS.

BRONCHODILATORS.

blood, liver, and kidney.

Inhaled selective b2-agonists remain the mainstay in acute asthma treatment. The inhaled b2 medications have rapid onset and have been shown to be more effective and have fewer adverse effects than their oral, parenteral, or nonselective counterparts [9-14]. Children will respond better to aggressive high-dose therapy than adults. The use of levalbuterol, the pharmacologically active R-isomer of albuterol, in the management of acute asthma in children remains controversial. The S-isomer is believed to be responsible for decreased pulmonary function especially with chronic use.



SUPPLEMENTARY THERAPIES.

Recent studies have shown that nebulized magnesium can provide benefit when given with traditional bronchodilator and steroid therapy [69], although doses that have been used range widely. Heliox, a helium-oxygen mixture, has a lower gas density than air or oxygen. This leads to decreased airway flow resistance that may allow for increased b2-agonist deposition [72,73]. Heliox may also make for better respirable particle size [74]. The role of heliox in acute asthma care remains controversial. Ketamine is a dissociative anesthetic that improves pulmonary compliance and decreases airway resistance in moderate to severe bronchospasm. Theophylline with its narrow therapeutic profile and associated adverse effects is no longer considered firstline therapy for an acute asthma attack. Noninvasive positive pressure ventilation (bilevel positive airway pressure and continuous positive airway pressure) has been shown to be of benefit in children with moderate hypoxia as an alternative to intubation.

•DASIGLUCAGON: A novel glucagon analog for the treatment of hypoglycemia.

Mechanism of Action: It is a glucagon receptor agonist, and has a similar action to glucagon, i.e. it increases the blood glucose level by activating the hepatic glucagon receptors, resulting in the stimulation of stored glycogen breakdown (glycogenolysis), releasing the glucose from the liver. Hence, adequate hepatic glycogen storage is crucial for the anti-hypoglycemic action of Dasiglucagon.

Pharmacokinetics: It has a dose-dependent and rapid increase in plasma How to inject Step 1 concentration, it gets rapidly absorbed via subcutaneous route with the Rem the gray cap maximum plasma concentration reaching approximately by 35 mins and has from needle end a t1/2 of 30 mins which is significantly greater than the marketed glucagon which is just 6-7 minutes. The recommended dosage is 0.6 mg for both adults and children, subcutaneously. Its metabolic event is similar to that of the human glucagon, i.e. elimination by proteolytic degradation pathways in the



Pull the gray cap straight off. Push ZEGAL OGUE straight down on skin until the yellow needle guard is fully pressed down. You may be



Click

the first click.





Step 3

Keep holding ZEGALOGUE de nt to 10 nds During this time the m dicine wind will turn red and you may hear a second click

Check that the medicine window is red, which means that the full dose has been given.

The yellow needle guard will cover the needle and lock, preventing an accidental needle stick

by lifting it straight up

Drug-drug Interactions: Administration of β -blockers with Dasiglucagon can $\frac{Do not put your hand}{or finders anywhere}$ lead to an increase in blood pressure and heart rate. Indomethacin, guard. Touching the belonging to the class of NSAIDs may reduce the anti-hypoglycaemic activity yellow needle guard of Dasiglucagon. Dasiglucagon may synergize the anticoagulant activity of acciding ental needle stick warfarin.

Adverse Effects: It is generally well-tolerated among Type-1 diabetic patients however the side effects are quite similar to that of the marketed glucagon, i.e. Nause, vomiting, headache, and pain at the site of injection. Other less common side effects include bradycardia, hypertension, hypotension, orthostatic intolerance, palpitations, and presyncope.

Uses: Approved for severe hypoglycaemia associated with diabetes mellitus and a rare genetic disorder, Congenital Hyperinsulinism, which is a persistent case of hypoglycaemia in newborn babies to children.

•New epigenetic biomarkers found that potentially predict preterm birth.

A signature found in the cheek cells of mothers and fathers of preterm infants may help develop a test to determine whether a pregnancy may end too early. Such a test could help prevent premature births and the many resulting health impacts on infants by alerting medical providers to the need for early intervention measures. In a proof of concept study, researchers documented more than 100 epigenetic biomarkers in mothers of preterm babies that were distinct from mothers of babies carried to term. Fathers had fewer biomarkers but enough to indicate a likely paternal role in preterm birth. They also found that the preterm female babies carried more than 100 of these biomarkers, indicating the propensity to have a preterm baby may be passed down



•Anti-tumor drug promotes weight loss in mice.

An anti-tumor drug promotes weight loss in mice at low doses by activating a natural hunger-suppressing pathway, according to a new study. The results provide a promising new avenue for development of anti-obesity treatments. Growth differentiation factor 15 (GDF15) is a hormone that circulates in response to a wide variety of stimuli, including stress. Previous work has shown that elevation of GDF15 leads to a drop in body weight, while suppression of it leads to obesity.To search for drugs that could increase GDF15 production, the authors turned to the "Connectivity Map," a database of gene expression profiles of human cells in response to drug exposure. They found that cells exposed to a drug called camptothecin increased their expression of GDF15. Camptothecin is derived from the Asian tree Camptotheca acuminata, and is a known inhibitor of a DNA repair enzyme (hence its use as an anti-tumor drug).



•Red Blood Cell Membrane-Camouflaged PLGA Nanoparticles loaded with Basic Fibroblast Growth Factor for Attenuating Sepsis-Induced Cardiac Injury.

Cardiac injury is recognized as a major contributor to septic shock and a major component of the multiple organ dysfunction associated with sepsis. Emerging evidence show that regulation of the intramyocardial oxidative stress and inflammatory response have a promising prospect. Basic fibroblast growth factor (bFGF) exhibits anti-inflammatory and antioxidant properties. In this study, red blood cell membrane-camouflaged (lactide-co-glycolide) poly nanoparticles were synthesized to deliver bFGF (bFGF-RBC/NP) for sepsis-induced cardiac injury. The in vitro experiments revealed that bFGF-RBC/NP could protect cardiomyocytes from oxidative and inflammatory damage. In addition, the antioxidant and anti-inflammatory properties of bFGF-RBC/NP against cardiac injury were validated by data from an in vivo experiment. Collectively, our study used bFGF for the treatment of sepsis-induced cardiac injury and confirmed that bFGF-RBC/NP has therapeutic benefits in the treatment of myocardial dysfunction. This study provides a novel strategy for preventing and treating cardiac injury in sepsis.



- Janhavi Janardan Lihe won 2nd prize in NATIONAL LEVEL E POSTER PRESENTATION competition on ARTIFICIAL INTELLIGENCE IN
- HEALTHCARE.
 SAPNA VISHWAKRMA won 3rd prize in FLIP A CLIP competition organised by IPA.
- Aditi Arun Mhatre won 2nd prize in SPILL THE PILLS competition and 1st prize in MIND MAPS
- Divya Nayak won 2nd prize in illo-quotes organized by IPA.



Dr.R. VARADARAJAN. Founder president,NES-SVB.



OUR SUPPORT PILLARS.

ACHIEVEMENTS.

Dr.BALASUBRAMANIAN V. Director,SVB-NES.



Dr.(Mrs) MONITA GIDE. I/C principal, SVBCP.

We the students of SVBCP are greatful to the Founder President, Director NES-SVB and the Principal of our college for giving us this opportunity to create newsletter and propagate the innovative ideas that develop in the field of Pharmacy.

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