pharmacoLOGIC

The logic behind using drugs……..

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DEPARTMENT OF PHARMACOLOGY

NEWS LETTER

From the Editor's Desk

Greetings & Best wishes from Pharmacology department. It is a pleasure to present this newsletter. This issue has an article on "Triclosan", a commonly encountered ingredient in many medications. The new drug approach in 2017 would keep us informed about new discoveries/inventions. An article highlighting the contribution of Sir James W Black to the field of medicine is also presented. Some photographs to revive our memories about the Jnana-Vignana Thantragnana Mela – 2017 and the Pharmacology Quiz on Chemotherapy for the undergraduate students held on 12th May 2017. Looking forward for a good reading for all of you…..

NEW DRUG APPROVALS FOR 2017 (FDA)

DR MADHAV K SAVKAR, PROFESSOR

In 2016, FDA approval of novel agents came down to 6 year low. The numbers declined by close to 50%. 2017 may be looking a bit easy. According to the FDA's office of new drugs, 36 new molecular entity NDA's were received by FDA through mid December 2016, already beating the average number of 35 for the past decade. Few to look out for in coming months.

1. **Binimetinib** (MEK 162) for melanoma – MEK inhibitor
2. **Brigatinib** – Non small cell lung cancer – Anaplastic lymphoma kinase positive gene
3. **Durvalumab** – Bladder cancer – inhibits PD-L1
4. **Dupilumab** – Atopic dermatitis – inhibits IL-4, IL-13
5. **Romosozumab** – Osteoporosis – inhibits sclerostin
6. **Ocrelizumab** – Multiple sclerosis – CD 20 positive B cells targeted

Reference: Looking ahead: New Drug Appovals for 2017 – Drugs.com

TRICLOSAN

DR VINAYA M, ASSISTANT PROFESSOR

- Triclosan (TCS) is a synthetic, lipid-soluble, broad-spectrum anti-microbial agent that was first introduced in the health care industry in 1972 and in the tooth-paste in Europe in 1985.
- TCS is regulated by both the FDA and US Environmental Protection Agency (EPA). Within the FDA, TCS is considered an over-the-counter drug for use in hand soaps, toothpaste, deodorants, laundry detergent, fabric softeners, facial tissues, antiseptics for wound care, and medical devices. TCS preparations are also used to control the spread of methicillin-resistant Staphylococcus aureus in clinical settings and in surgical scrubs, preoperative skin preparations, and sutures to prevent bacterial colonization of surgical wounds. TCS is currently registered with the EPA under the Federal Insecticide Fungicide and Rodenticide Act as an anti-microbial agent for the protection of polymers and plastics.
- TCS has been shown to intercalate into bacterial cell membranes and disrupt membrane activities, without causing leakage of intracellular components. In addition, TCS is an inhibitor of the enoyl-reductase of type II fatty acid synthase involved in the bacterial lipid biosynthesis. At low doses, TCS is

bacteriostatic and, at higher doses, it becomes bactericidal. TCS possesses a broad range of antimicrobial activity that encompasses several, types of nonsporulating bacteria and a few fungi, such as *Plasmodium falciparum* and *Toxoplasma gondii*

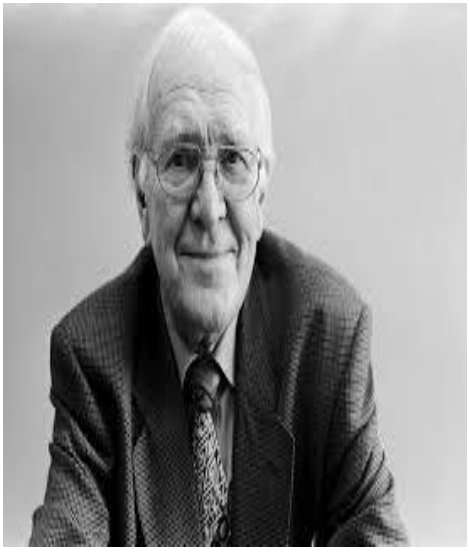
- **Human Exposure to Triclosan**
  Because of its high anti-microbial effectiveness and the ease with which it is processed into solutions and solids, the popularity of TCS has increased continuously over the past 40 years. The production and the widespread use of TCS may result in it being disposed in sewage systems, which ultimately lead to environmental deposition. As a result, TCS is found in drinking water, surface water, waste water, and environmental sediments, as well as in the bile of wild fish, indicating extensive contamination of aquatic ecosystems.
- **Environmental and Human Health Impacts of Triclosan**
  Once in the environment TCS is very good at killing certain types of algae. Since environmental algae are primary producers, decreases in their abundance lead to subsequent decreases in the zooplankton that feed on the algae; in so doing propagate the effects of TCS further up the food web. At very high concentrations, this could have a dramatic effect on the trophic balance of the ecosystems we all depend on.
- TCS has also been shown to bioaccumulate in animals and have serious effects on their hormones during development. It has been shown to get absorbed into the human body through the salivary glands and exits through the urinary tract. In addition, TCS has been shown to be an endocrine disruptor. Some animal studies have shown that TCS alters important hormone levels, which could result in neurotoxicity, decreased thyroid function and the growth of breast cancer cells.
- **Antimicrobial resistance:** Various studies demonstrated the development of microbial resistance following exposure to TCS. In the case of TCS, certain resistant strains of Staphylococcus aureus have already been discovered. This is quite alarming since resistance seems to be due to a single point mutation.
- The ubiquitous use of TCS and its consequent entry into the environment is of concern due to the effects it could produce if no regulations prevent its accumulation during the next decades. It and its derivatives are already present in measurable quantities, which may potentially affect water quality, impact on ecosystem and human health. Contamination of TCS has been detected in different environmental matrices including terrestrial, aquatic and biosolids resulting from

WWTPs. TCS has also been found in drinking waters. There are concerns that the widespread use of TCS in various applications might lead to a preferential selection for microbial resistance to antibiotics. Taking into consideration the environmental and health concerns of TCS, more efforts need to be carried out for the understanding of their distribution and fate in various environmental compartments, in particular, wastewater treatment plants and sediments which are the final sinks.

PHARMACOLOGY CONTRIBUTORS CORNER

DR PADMANABHA T S, ASSISTANT PROFESSOR

SIR JAMES W. BLACK BIOGRAPHY.- *Scottish pharmacologist*.



Awards & Achievements:

- He was the recipient of several prestigious awards: **Lasker award** (1976), Artois-Baillet Latour Health Prize (1979), and the Wolf Prize in Medicine (1982), among others.
- He was made a Knight Bachelor in 1981 for services to medical research.
- He was awarded the **1988 Nobel Prize in Medicine** along with Gertrude B. Elion and George H. Hitchings "for their discoveries of important principles for drug treatment."

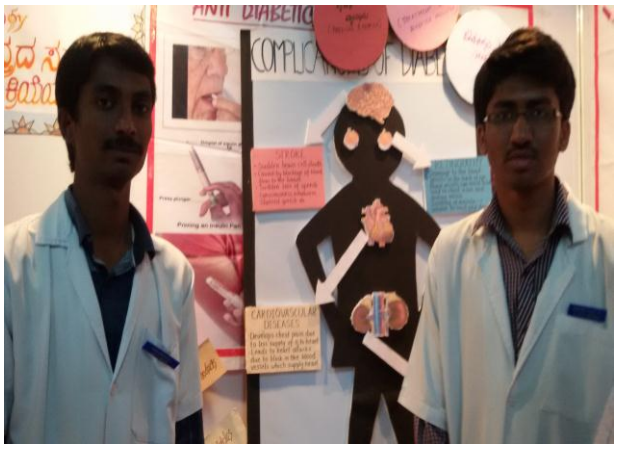
Major works:

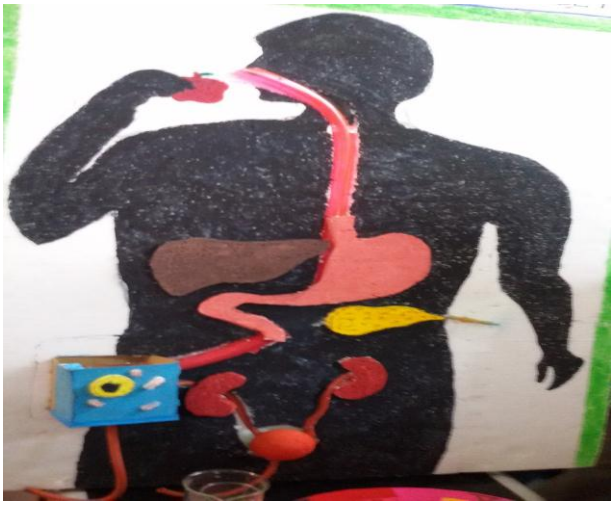
He developed the beta blocker, **propranolol**, which is used for the treatment of heart disease and also developed **cimetidine**, a H2 receptor antagonist, a drug to treat stomach ulcers.

Career:

The son of a mining engineer, he grew up to be a carefree and happy youth with no serious ambitions in life. As a teenager, he was persuaded into sitting for the competitive entrance examination for St Andrews University which he easily cleared, winning the Patrick Hamilton Residential Scholarship. He proceeded to study medicine and graduated with an MB ChB in 1946. However, he had no interest in practicing medicine and was more inclined towards academics and research. After spending a few years in Singapore, he joined the University of Glasgow (Veterinary School) in Scotland where he went on to establish the Physiology Department. Eventually he shifted to research and developed propranolol while working for ICI Pharmaceuticals. Another major drug, cimetidine, was developed during his stint at Smith, Kline and French.

JNANA VIGNANA THANTRAGNANA MELA





Department of Pharmacology actively participated in Jnana Vignana thantragnana mela held on February 20th and 21st 2017 on **"DIABETES MELLITUS – ETIOPATHOGENESIS, RISK FACTORS, TOXICITY AND ITS MANAGEMENT"**

PHARMACOLOGY QUIZ - CHEMOTHERAPY ON 12TH MAY 2017

Department of Pharmacology organized Chemotherapy Quiz –where in the participants were 6th term and above. Preliminary round was conducted on April 7th 2017. Top 8 candidates were selected and made into 4 teams of two participants each. Final round was conducted on 12th May 2017 in lecture hall. Finalists of the Quiz competition were

1st prize - **Miss Ameya Elizabeth Benedict** & **Mr Keerthi Prakash K. P** (Prize money 1500/-)

2nd prize – **Mr Darshan N** & **Mr Sanjay Sunil** (Prize money 1000/-)

3rd prize was shared between two other teams

- **Mr Yashas P** & **Miss Stuti Mukherjee** and
- **Miss Sayanwita M** & **Miss Diksha Kumari**

ACADEMIC SESSION

LIST OF PUBLICATIONS:

ORIGINAL RESEARCH ARTICLE

- **Rajashekar YR**, Shobha SN. Variable potentiation of analgesic anti-inflammatory activity of diclofenac by two medicinal plants rubia cordifolia and cassia fistula in wistar albino rats. Int J Basic Clin Pharmacol 2017;6:746-9.
- **Rajashekar YR**, Shobha SN. An experimental evaluation of gastro protective activity of paracetamol on ulcerogenicity of some NSAIDs in albino rats. Int J Basic Clin Pharmacol 2017;6:774-8.
- **Rajashekar YR,** Narasimhamurthy KM. A comparative evaluation of analgesic and anti-inflammatory activities of two medicinal plants rubia cordifolia and cassia fistula in wistar albino rats. Int J Basic Clin Pharmacol 2017;6:802-6.
- **Rajashekar YR**, Shobha SN. An experimental evaluation of anti-inflammatory activities of some combined NSAID preparations in albino rats. Int J Basic Clin Pharmacol 2017;6:837- 41
- **Vinaya M**, Kudagi BL, Kamdod MA, Swamy M. Bronchodilator activity of Ocimum sanctum Linn. (tulsi) in mild and moderate asthmatic patients in comparison with salbutamol: a singleblind cross-over study. Int J Basic Clin Pharmacol 2017;6:511-7.
- **Manu G, Padmanabha ST, Chandrakantha T, Ravishankar M**. Evaluation of anticonvulsant activity of ethanolic extract of leaves of Ocimum sanctum (tulsi) in albino rats. Natl J Physiol Pharm Pharmacol 2017; 7(7):762-765.
- **Manu G, Padmanabha ST, Chandrakantha T, Ravishankar M**. Evaluation of antianxiety activity of ethanolic extract of leaves of Ocimum sanctum (tulsi) in albino mice. Natl J Physiol Pharm Pharmacol 2017;7(8)
- **Shivaraju PT, Manu G, Vinaya M, Savkar MK**. Evaluating the effectiveness of pre- and post-test model of learning in a medical school. Natl J Physiol Pharm Pharmacol 2017;7(9)

CASE REPORTS

- **Rajegowda YR**, Nanjappa NB, Muthahanumaiah NK. Anti-rabies vaccination induced hepatotoxicity - a case report. Int J Basic Clin Pharmacol 2016;5:2280-2

ONGOING PROJECTS

- Prescription audit of an outpatient department in a rural tertiary care hospital in South India: An observational study.
- Evaluation of analgesic activities of Pepper longum (Hippali) and Liquorice (Athimadhura) in Wistar albino rats.
- Awareness among undergraduate medical students with regard to hypertensive facts.
- Awareness about Diabetes Mellitus related facts among undergraduate medical students.
- Comparative analysis of lipid profile between controlled and uncontrolled Type – 2 Diabetic subjects – A prospective study at a rural tertiary care centre.
- Awareness of drug disposal methods for unused and expired medication among medical students at B G Nagar.

WORKSHOP ATTENDED

- Dr Madhav K Savkar participated in the research methodology workshop conducted by RGUHS on 21st March 2017.
- Dr Rajashekar Y R and Dr Padmanabha T S participated in "**Revised basic workshop in medical education technologies**" organized by MEU AIMS under the guidance of St John's Medical college from 8th to 10th May 2017.

LECTURE DELIVERED

- Dr Madhav K Savkar, Professor, delivered lecture on Rational Drug Therapy for Interns at Internship orientation programme organized by MEU AIMS on 22nd March 2017.