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Proceedings of APP 4th Annual National Convention

Theme: 'Industry Participation in Academic Intervention: Need for Overall Upgradation of Pharmacy Profession'

Venue: Invertis Institute of Pharmacy, Invertis University, Bareilly (UP), India

(31st January, 2015)

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4TH ANNUAL NATIONAL CONVENTION

THEME: INDUSTRY PARTICIPATION IN ACADEMIC INTERVENTION: NEED FOR OVERALL UPGRADATION OF PHARMACY PROFESSION

Venue: Invertis Institute of Pharmacy, Invertis University, Bareilly (UP)

(31st January, 2015)

POSTERS

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※※※ **Proceedings of the APP 4th Annual National Convention** ※※※
[31st January, 2015 – Invertis Institute of Pharmacy, Invertis University, Bareilly (UP), India]

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PP-01

IN-VIVO OCULAR TOXICITY AND DEVELOPMENT OF OPHTHALMIC NANOEMULSION FOR TREATMENT OF GLAUCOMA

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Nanoemulsions have practical application in a multitude of commercial areas, such as the chemical, pharmaceutical and cosmetic industries. Current work presented the successful development of an advanced pharmaceutical technology for the treatment of glaucoma. Investigation describes the main steps in the development of nonionic nanoemulsions from formulation to evaluation in clinical trials. A major challenge of the formulation work was the selection of a nonionic surfactant with an acceptable safety profile that would ensure a sufficient ocular surface retention time. The nanoemulsion developed by this phase diagram method was composed of <5.0% castor oil, ≤5.0% surfactants poloxamer/PEG-35/40 castor oil, and < 5.0% c-surfactants formulated in distilled water. The nanoemulsion was stable over the time course of this study. Formulation has a low irritation potential, and when applied to human eye during in vivo studies, the nanoemulsion improved the solubility, stability and reduced the Intra-ocular pressure of patients. The results of irritation potential studies and in vivo assessments indicated that this nanoemulsion has potential to be a useful tool to treat ocular hypertension to the eye. Then, toxicity studies were performed showing that the nonionic nanoemulsions were safe and well tolerated. Even in the absence of an active ingredient, nonionic nanoemulsions were observed in preclinical studies to have an inherent benefit in dryness of eye. Moreover, clinical trials demonstrated the efficacy and safety of nonionic nanoemulsions loaded with prostaglandins in glaucoma patients. Studies are ongoing for evaluating prostaglandins nanoemulsion in glaucoma patients. The culmination of these efforts has been the development of a preservative-free nonionic nanoemulsion indicated for greater potential for glaucoma therapy.

POSTER PRESENTATION

【C1】

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PP-02

ILLEGAL DRUG TRIALS: A CURSE FOR INDIA

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India is one of the hot spots for clinical trials owing to large population and a wide spectrum of diseases. A majority of Indian population fall below the poverty line. As a result, in order to get some money, these poverty driven people fall prey to companies who want to test a new drug. The Confederation of Indian Industry estimates that companies save up to 60 percent by undertaking the different phases of testing a new drug in India as compared to other developed countries. The clinical research market in India grew by 12.1 percent in 2010-11 with revenues of $485 million and is expected reach the one billion dollar mark by 2016. There have been several incidences of illegal drug trials being held all over the country. In almost all the cases there is no genuine informed consent. The label on the medicines often does not specify that it is meant for trial and vulnerable people end up being used as lab rats. In 1999, 25 oral cancer patients were given an experimental drug without their consent in Thiruvananthapuram. In Madhya Pradesh, in 2004, doctors were accused of using the victims of the 1984 Bhopal gas disaster for trials without their consent, 14 people died as a result of these trials. In an Indore-based hospital 32 people died in clinical trials between the 2005 and 2010. Recently in April 2014, 254 Indian women died in a clinical trial for a cervical cancer screening method. Clinical trials have resulted in the death of 3,458 people between the year 2005 and 2012. These data are very shocking.

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【C2】

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PP-03

SIZE LIMITING EFFECT OF ISCHEMIC PRECONDITIONING IN HYPERTROPHIC ISOLATED RAT HEART

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Coronary artery disease is major cause of mortality and morbidity this consequence leading cause of the myocardial infarction. Reperfusion is necessary to restoration of heart physiology while after a prolonged period of ischemia causes the ischemia reperfusion injury (I/R Injury) to myocardium. Cardioprotective effect of ischemic preconditioning was modulated in different pathological conditions such as hyperglycemia, hypercholestremia. Aging also modulate the effect of ischemic preconditioning. Controversy is going on whether ischemic preconditioning has been modulated in hypertrophy or not. Cardioprotective effect of ischemic preconditioning in hypertrophic isolated rat but exact mechanism is not clear.

POSTER PRESENTATION

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PP-04

ABROGATED CARDIOPROTECTIVE EFFECT OF ISCHEMIC POSTCONDITIONING IN DIABETIC RAT HEART

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The aim of the present investigation was to investigate the role of endothelin in abrogated cardioprotective role of ischemic postconditioning in diabetic rat heart. Experimental diabetes was produced in rats by administration of single dose of alloxan (100mg/kg, *i.p*.) for 4 weeks. Isolated heart was mounted on Langendorff's apparatus, and was subjected to 30 min of global ischemia and 120 min of reperfusion. Ischemic postconditioning (IPOC) was given by four cycles of 5 min of ischemia and 5 min of reperfusion with Kreb's-Henseleit solution (K-H). Extent of injury was measured in terms of infarct size by triphenyltetrazolium chloride (TTC) staining and release of Lactate dehydrogenase (LDH) and Creatine kinase-MB (CK-MB) in coronary effluent. The cardiac release of NO was noted by measuring the level of nitrite in coronary effluent. IPOC induced myocardial protection was attenuated in diabetic rat heart, noted in terms of increase in infarct size and increase in the release of LDH and CK-MB. Administration of BQ-123 a selective ET-A receptor antagonist (0.1mg/kg, *i.p*.) for 1 week before the isolation of heart, restore the attenuated cardiprotective effect of IPOC in diabetic rat and increase the release of NO. It may be concluded that attenuation of cardioprotective effect of ischemic postconditioning is due to increase the activity of ET-1 in the diabetic rat heart. Inhibition of ET-A receptor by administration of BQ-123 a selective ET-A receptor antagonist restored the attenuated cardioprotective effect of ischemic postconditioning in diabetic rat heart.

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PP-05

ISOXAZOLE: A PROMISING PHARMACOPHORE

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The synthesis of isoxazole derivatives has attracted considerable attention from organic and medicinal chemists due to their considerable bioactivity. Various biological applications have been reported for isoxazoles such as antitumor, analgesic, antimicrobial and chemotherapy. Isoxazole derivatives have been found to have antiviral properties against herpes type 2 virus. Isoxazole containing penicillin derivatives are found to be antibacterial. These are also used as corrosion inhibitors for fuels and lubricants. Several cyclooxygenase-2 inhibitors containing isoxazoles relieved of acute pain associated with dental surgery and primary dysmenorrheal in rheumatoid arthritis and osteoarthritis. Many nonsteroidal anti-inflammatory drugs (NSAIDs) have main drawback of gastrointestinal and ulcerogenic toxicity. But isoxazole containing NSAIDs cause low ulcerogenic toxicity. Isoxazoles having the N-protected amino acid/peptide group show good potent compounds for the mosquito larvicidal activity. The peptidyl α-ketoisoxazoles/isoxazolones have been tested as potential inhibitors of human prolyl oligopeptidase from *Trypanosoma cruzi*. In the view of the reported biological activities of these compounds, synthesis of such derivatives has attracted much attention in recent years.

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PP-06

ANTIESTROGENS AND CANCER CHEMOTHERAPY

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Antiestrogens have been available since the early 1970s. Antiestrogens have proven to be highly effective in the treatment of hormone-responsive breast cancer. However, resistance to antiestrogen therapy often develops. Recent findings show that antiestrogens, which are known to exert most of their effects through the ER of breast cancer cells, contact a different set of amino acids in the hormone binding domain of the ER than those contacted by estrogen. Antiestrogens which work through somewhat different mechanisms of interaction with the ER should prove useful in treatment of some breast cancers that become resistant to a different category of antiestrogens. As recently described, the ER2, estrogen receptor, exhibited enhanced binding to the estrogen response element on DNA, and partial constitutive (estrogen-independent) ability to activate transcription. In this work we used Antiestrogens include agents such as tamoxifen, toremifene, raloxifene, and fulvestrant. Currently, tamoxifen is the only drug approved for use in breast cancer chemoprevention, and it remains the treatment of choice for most women with hormone receptor positive. Estrogens have previously been extensively used in prostate cancer treatment. Prostate contains estrogen receptor α (ERα) and β (ERβ), which are localized characteristically in stroma and epithelium, respectively. It concerns antiestrogen inhibition of prostate cancer development and a role for estrogens in prostate cancer progression. During the last years, intensive research has been focused on accurate risk estimation for breast cancer development. The aim of these efforts was to focus on “high-risk” group of women for breast cancer development and its treatment.

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PP-07

INDUSTRIAL TRAINING: PLATFORM FOR STUDENTS TO LEARN PHARMACY IN BETTER WAY

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Well groomed personnel is the need of every sector. Pharmacy is most versatile sector having several segments occupied within itself. For pharmacy graduates it is very much important to allocate a right person at right place of his interest to get better outcome in this lifesaving segment of market. While entering to profession, student must possess the necessary knowledge and skills. In line with this, the Industrial Training component of the undergraduate program constitutes a vital component in the drive to strengthen the key competencies required to improve the graduates' ability to work. Another exposure of this platform could be to instill the good qualities of integrity, responsibility and self confidence as well as all ethical values and good working practices within the student. It also helped out the students to know about the safety practices and regulations inside the industry and to instill the spirit of teamwork and good relationship between students and employees. Industrial training is best platform for students to see the several segments of industry before entering to job like QA, QC, Production or R&D which can help out them to study future scope for deciding his career. The present article is holding the different views about applications of industrial training in curriculum of pharmacy as well as challenges associated with such training program.

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PP-08

MERGING THE GAP BETWEEN ACADEMICS AND PHARMACEUTICAL INDUSTRIES

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In today's life, applicability is being the need of society. In last couple of years, same thing is observed in the area of pharma recruitment also, recruiters are ignoring freshers because of their inadequacy in terms of applicability. The root cause of this scenario insists us to focus on the gap between the need of pharma industry and training allotted to the students through their curriculum.
Our education system is developing scientist who can work well in formulation, pharmaceutical, preclinical or analytical research but they are lacking in the shop floor working like documentation or working style in QA, QC, production, packing departments, which are considered as right working places for Pharma graduates. Hence to overcome the setback in profession, it is the need of the day to increase the interaction of students with industries, to modify curriculum of graduations in terms to develop better employes in market rather than all scientists, to promote the vocational subjects or coerces which will train students in field of QA, QC, RA, IPR, CR and Pharmacovigelence.

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PP-09

FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY SYSTEMS OF NICORANDIL

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In the present study, attempts were made to prepare and evaluate the matrix type transdermal patch of Nicorandil, an antianginal and antihypertensive drug using different ratios of polymer concentration of Eudragit RS100, Eudragit RL100, and Ethyl cellulose by the solvent evaporation technique by using 30% *w/w* of di-butyl phthalate to the polymer weight, incorporated as plasticizer. In preformulation studies, solubility, partition coefficient, melting point and drug-polymer compatibility were determined to assess its application for transdermal delivery. The transdermal patches were prepared and evaluated for appearance, weight uniformity, thickness, thermal analysis (DSC), XRD analysis, FTIR, scanning electron microscopy, water vapor transmission, tensile strength, swelling index, drug content uniformity, in vitro permeation study through rat skin, skin irritation and stability studies. All the patches were thin, smooth, flexible, elastic and transparent/translucent, uniformity in drug content; weight and thickness were observed with their low SD values. The XRD analysis confirmed the amorphous dispersion of the drug. SEM analysis showed surface morphology. The prepared patches were permeable to water vapors. In vitro drug permeation through rat skin was performed using Keshary-Chein diffusion cells. The film prepared with formulation UD11 showed maximum permeation at the end of 24 h. It showed that drug release followed zero order and the mechanism of release is diffusion from the polymer. All the systems were found to be stable with respect to drug content as well as physical changes at 400C and 75% RH.

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PP-10

ANALGESIC AND ANTI-INFLAMMATORY ACTIVITY AND HPTLC ANALYSIS OF *CUSCUTA REFLEXA* EXTRACTS

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The objective of the present study was to carry out HPTLC analysis and investigation of analgesic and anti-inflammatory activities of *Cuscuta reflexa* extracts. Petroleum ether extract, methanol extract, and aqueous extracts of *Cuscuta reflexa* (PECR, MECR, and AECR respectively) at three dose levels of 50, 200 &300 mg/kg body weight of an animal by oral route were used for biological activities. The analgesic activity was determined using hot plate analgesia; acetic acid induced writhing response and formalin test. The anti-inflammatory activity was determined using models like-carrageenan, serotonin and histamine-induced paw edema models along with cotton pellet induced granuloma. Various tests include ulcerogenicity test; acetic acid induced vascular permeability test, and leukocyte migration test using a single dose of 300 mg/kg orally. The HPTLC analysis showed presence of quercetin in MECR and AECR (0.121 & 0.071 mg% respectively). PECR, MECR and AECR (200 and 300 mg/kg p.o.) significantly ($P < 0.05$) increased latency against thermal stimulus, decreased the acetic acid-induced writhing responses and licking times of the second phase in the formalin test. Moreover, MECR and AECR (200 and 300 mg/kg p.o.) exhibited significant ($P<0.01$) antiinflammatory effect against carrageenan and mediator-induced paw edema.

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PP-11

IN-VITRO ANTIOXIDANT ACTIVITY OF *HYDNOCARPUS LAURIFOLIA* SEEDS

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Free radicals are toxic byproducts of natural cell metabolism and are responsible for causing a wide number of health problems. Anti-oxidants prevent the human system by neutralizing the free radicals interactively and synergistically. Anti-oxidant activity of chloroform and ethyl acetate extracts of Hydnocarpus laurifolia was studied for its free radical scavenging property on different invitro models *e.g.* 1, 1-diphenyl-2-picryl hydrazyl (DPPH) method and reducing power method. The extracts showed good dose dependent free radical scavenging property in both the models. IC_{50} values for chloroform and ethylacetate extract were found to be 44.02 and 41.03 g/ml in DPPH method. In reducing power method, ethyl acetate extract showed more reducing power as compared to chloroform extract. Ascorbic acid was used as a standard. It is concluded that the ethyl acetate extract of *Hydnocarpus laurifolia* showed more anti-oxidant activity when compared to chloroform extract.

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PP-12

FORMULATION AND *IN-VITRO* EVALUATION OF GASTRORETENTIVE DRUG DELIVERY SYSTEM FOR TENOFOVIR

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Floating matrix tablets of tenofovir were developed to prolong gastric residence time and increase its bioavailability. In the present investigation it was thought worthwhile to develop a gastric floating drug delivery system of tenofovir to improve the efficacy of dosage form. Tenofovir is a potent antiviral drug with low toxicity used in treatment of HIV. It has maximum absorption in stomach and upper part of small intestine. Due to low gastric retention time, the bioavailability of drug is low as large portion of drug misses the absorption window. The tablets were prepared by direct compression technique, using polymers such as Hydroxypropyl methyl cellulose (HPMC, Methocel K100M), Carbopol and Sodium alginate alone or in combination. Sodium bicarbonate and citric acid were incorporated as a gas-generating agent. The effects of sodium bicarbonate and citric acid on drug release profile and floating properties were investigated. All the tablets passed the compendial tests and other tests like weight variation, drug content, hardness, friability. The floating time was found to be more than 12 hrs. All the tablets showed the floating lag time of less than 10 min. The dissolution study was carried out in 0.1 N HCl using USP type II apparatus.

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PP-13

DIABETIC NEPHROPATHY: PATHOGENETIC MECHANISMS OF KIDNEY DISEASE PROGRESSION

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Diabetic nephropathy develops in 30 to 40% of patients of diabetes and is the leading cause of end stage renal disease. Diabetic nephropathy develops in the presence of hyperglycemia. Several factors are involved in the pathogenesis of the disease. Hyperglycemia induces renal damage directly or through hemodynamic modifications. Diabetic nephropathy is characterized by excessive deposition of extracellular matrix (ECM), thickening of glomerular and tubular basement membranes and there is an increased amount of mesangial matrix, which ultimately progress to glomerulosclerosis and tubulo-interstitial fibrosis. It is thus concludedthat all the cellular elements of kidney, i.e., glomerular endothelia, mesangial cells, podocytes, and tubular epithelia are targets of hyperglycemic injury. High glucose activates various pathways via similar mechanisms in different cell types of the kidney. There is an excessive channeling of glucose intermediaries into various metabolic pathways with generation of advanced glycosylation end products (AGEs) and diacylglycerol synthesis which is responsible for hemodynamic alterations such as glomerular hyperfiltration, shear stress, and microalbuminuria, activation of protein kinase C (PKC), increased expression of transforming growth factor-beta1 (TGF-β1) which upregulates GLUT-1, which induces an increased intracellular glucose transport and D-glucose uptake and causes augmented extracellular matrix protein deposition (collagen types I, IV, V, and VI; fibronectin, and laminin) at the glomerular level thus inducing mesangial expansion and glomerular basement membrane thickening, GTP-binding proteins, and generation of reactive oxygen species (ROS).

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PP-14

THE ROLE OF ENTREPRENEURIAL ACTIVITIES AND INDUSTRIAL PARTICIPATION IN DEVELOPMENT OF ACADEMIC PHARMACEUTICAL SCIENCE RESEARCH

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The discipline of entrepreneurship generally studies the why, when and how of opportunity creation, recognition and utilization for providing goods and services through the creation of new firms (start-ups) and within existing firms for both profit and non-profit purposes. It has been recognized that the non-profit and for-profit combination research model can accelerate the commercialization of pharmaceutical products, and therefore more efficiently improve human health. Entrepreneurial activities in the academic pharmaceutical science setting are traditionally defined as intellectual property created in the institutional lab and either outlicensed to another company for development, or developed in the respective lab/start-up company of the principal investigator. The outlicensing scenario can work well for many academics, because they can then often be involved in the development process of the intellectual property by being an advisor to the licensing company, or by being a member of the board of directors or scientific advisory board. Slowly the academic healthcare enterprises has to learn how to be more capital efficient, but still continue to be a leader in patient care, education and research. Ways of dealing with the unique challenges and barriers to entrepreneurial activities in the medical center setting should be developed so that the medical center mission can be maintained in the presence of new and competitive nature of healthcare.

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PP-15

SPECTROPHOTOMETRIC DETERMINATION OF ISONIAZID IN PURE FORM AND PHARMACEUTICAL FORMULATION USING VANILLIN

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Tuberculosis cases have significantly increased within the past decade, especially among AIDS patients, hence the importance of isoniazid, a first line anti-tubercular agent. This has prompted many investigators to develope methods for the rapid determination of isoniazid in pure form as well as in pharmaceutical formulations. A method is described for the determination of isoniazid, in pure form and in pharmaceutical formulations. The method is based on the coupling of isoniazid and vanillin in an ethanolic hydrochloric acid medium and the spectrophotometric determination at the absorption maximum (405 nm). A yellow coloured hydrazone was formed. Beer's law was obeyed in the concentration range of 1-12 g/ml at 405 nm. The proposed method was applied in the analysis of commercially purchased brands of isoniazid tablets and showed good accuracy and precision. Excipients used in the pharmaceutical formulation showed no interference in the analysis. The method offers the advantages of rapidity, simplicity and sensitivity and low cost and can be easily applied to resource-poor settings without the need for expensive instrumentation and reagents.

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PP-16

ANTI-EOSINOPHILIC ACTIVITY OF ETHANOLIC EXTRACT OF *CLITORIA TERNATEA* FLOWERS

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The value of mankind is inextricably linked with the well being through natural resources specially the plants around him. These Plant materials have been extensively used in the indigenous system of medicine which is mention in the Ayurveda and other Indian literature. Aparajita is one of the herbs mentioned in all ancient scriptures of Ayurveda. Its botanical name is *Clitoria ternatea* and belongs to family 'Fabaceae'. *Clitoria ternatea* has been widely screened for its various pharmacological activities. The powdered mass of flowers was subjected to hot continuous extraction using soxhlet apparatus for exhaustively extraction. After completion of process, solvent was drawn out ant concentrated under reduced pressure using distillation assembly. The concentrated extracts were subjected to various qualitative tests to detect presence or absence of common phytoconstituents. The study was carried out on Swiss albino mice (25-35 g) of either sex. Mice were divided into four common groups (n=6 in each group). The test groups were challenged with alcoholic extract of *C. ternatea* flowers at two doses, 200 and 400 mg/kg body weight, *i.p.* whereas standard group was treated with dexamethasone (50 mg/kg body weight *i.p.*). Pasteurized and cooled goat milk, (4 ml/kg body weight, *s.c.*) was injected to all the groups, 30 minutes after the treatments. Blood samples were collected from each mouse from the retro-orbital plexus, under light ether anesthesia, before the treatment and 24 hours after milk injection. Total leukocyte and eosinophile count was done for each group before and after induction. Control group showed the maximum increase in the leucocytes (4699.60±109.34) and eosinophils (131.5±2.14) counts after the 24 h of milk injection. The ethanolic extract flower showed significant reduction in leukocytes and eosinophils count induced by pasteurized goat milk. Further studies are required towards isolation of active constituents responsible for the activity.

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PP-17

FORMULATION AND EVALUATION OF GLIMEPRIDE MICROSPHERES BY COMPLEX COACERVATION METHOD

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Microspheres of glimepiride for oral drug delivery were prepared by complex coacervation method using polyelectrolyte charge interaction. Glimepiride is an effective antidiabetic agent; however it suffers from short biological half life. Therefore it was selected as a model drug. The prepared microsphere were evaluated for physic-chemical studies like drug polymer interaction through FT-IR analysis, surface morphology by Scanning electron microscopy (SEM), Percent drug entrapment, production yield, in-vitro drug release characteristics and release kinetic. The results of FT-IR studies showed that there was no drug polymer interaction found. The SEM studies confirmed that with increase of polymer concentration, the microspheres became smooth without surface roughness, and in-vitro drug release studies showed that the drug release followed diffusion mechanism for formulations F5, F6 and F7 and for the formulation F8, F9 and F10 followed non-fickian mechanism. Moreover, all the formulations exhibited high percentage yield as well as high percent drug entrapment. This method proves to be beneficial in designing control release formulations of Glimepiride chitosan-gelatin B complex Coacervation method, using polyelectrolyte charge interaction.

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PP-18

HERBAL INTERVENTIONS FOR OBESITY MANAGEMENT

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In recent years since 1980, the ratio of obesity has been doubled. It has become a major health problem worldwide affecting people of all ages, sex and races. Obesity presents a major health hazard of 21st century. It has been a major risk factor for many chronic diseases including diabetes mellitus, cardiovascular diseases, hypertension, joint problem and even cancer. Obesity results from a chronic imbalance between energy intake and energy expenditure leading to storage of excess energy as fat, primarily in adipose tissue. The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and those expended. The body needs a certain amount of energy, or calories, from food to sustain basic life functions. In this modern era, there is need to create more awareness for the usage of more herbal drugs for treatment and management of obesity along with balanced diet and physical exercise.

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PP-19

EXPLORATION FOR ACTIVE ANTIMICROBIAL PROTEIN FROM STING RAY FISH

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Marine organisms represent a valuable source of new compounds. The biodiversity of the marine environment and the associated chemicaldiversity constitute a practically unlimited resource of new active substances in the field of the development of bioactive products. Protein rich consumable marine fish named sting ray fish (Thirukaimeen) was collected from the sea shore of Kanyakumari. Tissue and skin were separated in the intention to identify antimicrobial proteins for the study. Tissue and skin were extracted by acetic acid and it was partially purified using ammonium sulphate precipitation method. Antimicrobial activity was done and maximum zone of inhibition was observed in *Staphylococcus* sp. with tissue extract and maximum zone of inhibition was observed in *K. pneumonia* with skin extract by agar well diffusion method.The crude protein was quantified with 2 mg/ml for tissue extract and 1.26 mg/ml for skin extract. The FTIR analysis also revealed the presence of secondary amines in the crude extracts of tissue and skin. Therefore in the future study MIC and MBC will be done for finding the inhibitory concentration level and SDS PAGE will be performed for finding the molecular weight of the protein. The active fractions will be identified possibly and the structural and functional characterization of active fraction will be done for both the extracts.

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PP-20

IN SILICO STRUCTURAL AND FUNCTIONAL CHARACTERISATION OF PEPTIDE ISOLATE FROM MARINE INVERTEBRATE *DONAX CUNEATUS*

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The crude and active fraction of peptides isolated froma marine edible bivalve *Donaxcuneatus* collected from the southern coastal area of Tamil Nadu was observed to have potent antimicrobial property. The activity was proved practically with antimicrobial assay technique in our previous studies. The *in silico* approach of structural and functional characterisation of the pure isolate identified by bioassay guided fractionation was carried out in the work discussed below. The structural characterisation of the isolated pure fraction was started with sequence determination using MASCOT search from MALDI mass value. The secondary structure of the pure peptide was identified by using PHYRE software. The elucidated structure was validated with Ramachandran plot and the physicochemical property of identified sequence like charge, ratio of hydrophobicity, percentage of each amino acid was evaluated with the help of AMP predictor. The functional characterisation *i.e.* the analysis of antimicrobial regions of the identified sequence was determined with the help of AMPA prediction software. The secondary structure determined was identified to be a valid structure with active antimicrobial domains with high score index. Hence the isolate was found to be very active in the *in silico* evaluation. Thus, the peptide isolate identified from the marine source was found to be active in the *in vitro* and *in silico* evaluations and hence leave a great hope of developing it into a promising pharmaceutical agent in future.

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PP-21

DEVELOPMENT, CHARACTERIZATION AND COMPARISION OF ZIDOVUDINE LOADED ERYTHROCYTES FOR ANTI-RETRO VIRAL THERAPY

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The cell based delivery systems are the closest ones to the ideal drug delivery systems.Blood substances have further advantage of rapid and widespread distribution. Various cellular carriers proposed are lymphocytes granulocytes platelets leucocytes, hepatocytes, fibroblasts and erythrocytes. They can be used to provide slow release ofentrapped drugs in the circulatory system, to deliver drugs to a specific site in the body. Erythrocytes have been extensively studied for their potential carrier capabilities. Drug loaded carrier erythrocytes are prepared by collecting blood samples, separating erythrocytes from plasma, entrapping drug in the erythrocytes, and resealing the loaded cells. The process is based on the response of these cells under osmotic conditions. Zidovudine is a potent inhibitor of HIV replication, acting as a chain-terminator of viral DNA during reverse transcription. It improves immunologic function, partially reverses the HIV-induced neurological dysfunction, and improves certain other clinical abnormalities associated with AIDS. The study involved the usage of cross linking agent glutaraldehyde, lyophilization, and incorporation of ferro fluids for the formulation of resealed erythrocytes. The procedure considered for the formulation is hypotonic hemolysis technique as this method led to high entrapment efficiency. The formulated resealed erythrocytes were evaluated for its morphology through scanning electron microscopy shows slight change in their shapes in form of spherostomatocytes (uniconcave) existing withspherocytes, drug assay showed that the drug content in gluteraldehyde treated resealed erythrocytes was nearly 30% higher than that of the plain resealed erythrocytes, fragility studies proved that the fragility of resealed erythrocytes was good at 0.3% showed 69% drug release and *in vitro* drug release was also high in gluteraldehyde treated resealed erythrocytes and all the values were found to be within the prescribed limits.

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PP-22

IN-VITRO ACETYLCHOLINESTERASE INHIBITORY ACTIVITY AND APPRAISAL OF SCOPOLAMINE-INDUCED ANTIAMNESIC EFFECT IN MICE OF *COMMIPHORA PUBESCENS*

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Alzheimer's disease is the most prevalent neurodegenerative disease of the brain which is characterized by a loss of basal forebrain neurons and reduced cortical and hippocampal levels of acetylcholine. The inhibition of acetycholinesterasewhich is responsible for the breakdown of Acetylcholine was previously reported as the most clinically proven pathway to relieve cognitive and behavioral symptoms of Alzheimer's disease. In the current work, the *in-vitro* and *in-vivo* studies were carried to investigate the acetylcholinesterase inhibitory activity of *Commiphora pubescens* (Burseraceae) from Tamil Nadu. Ellman's colorimetric method and TLC bio-autography method were used to quantify the acetylcholinesterase inhibitory activity of the extract using human recombinant acetylcholinesterase. Anti-AChE activity was more pronounced in the ethanolic plant extract at the concentration of 2.5 mg/ml (62.09±6.23%) and TLC bioautography revealed active spots at R_f value of 0.84. The active spots appeared as white spots on yellow background. Scopolamine-induced anti-amnesic activity was determined in mice by Y maze Task. When studied for their effect on memory at fixed dose of 50 mg/kg of plant extract showed lower spontaneous alteration (%) when compared to control. This is the first report providing evidence for the AChE inhibitory and memory enhancing effect of ethanolic of *Commiphora pubescens* in scopolamine-induced amnesia in mice. *Commiphora pubescens* deserves auxiliary investigation in order to elucidate its active components. The further research on *Commiphora pubescens* is in progress.

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PP-23

IN-VITRO AND *IN-VIVO* EVALUATION OF RESEALED ERYTHROCYTE LOADED WITH ANTINEOPLASTIC AGENT

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Erythrocyte-encapsulated antineoplastic drug have the potential to provide an effective therapy when compared to given alone.The advantages over the administration of methotrexate include a lower systemic dose, decreased toxicity, a sustained delivery of the drug with increased efficacy. In this study, the encapsulation of methotrexate by human carrier erythrocytes prepared using a preswell dilution method was best suited. The *in-vitro* characterization of resealed erythrocytes like drug assay, osmotic fragility, osmotic shock, drug compatibility parameters of methotrexate loaded carrier erythrocytes were measured. The efficiency of methotrexate entrapment by carrier erythrocytes was dependent on the initial dialysis concentration of the drug, also on the addition of cross linking agent gluteraldehyde to the resealed erythrocytes.Zeta potential study showed there is no change in chemical constituents of the drug. Methotrexate demonstrated a sustained release from loaded erythrocytes over a 42-h period, *in-vivo* study also to be done for resealed erythrocyte which suggests a potential and safe use of the erythrocyte as a slow sustained-release system for antineoplastic drugs.

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PP-24

NANOCRYSTAL TECHNOLOGY: A USEFUL TOOL FOR DRUG DELIVERY

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With the advent of combinatorial chemistry and high throughput screening, large number of drugs have been discovered which have a better efficiency but their clinical application is restricted due to poor water solubility. Nearly 40% of the drugs in the pipeline and around 60% of compounds coming directly from synthesis have poor solubility. Thus, poor water solubility has become a major challenge for the formulation of these compounds as it is generally associated with poor bioavailability. In this context, nanotechnology has been improving and has a variety of applications in the field of drug delivery. Among various nanostructures, nanocrystals have the potential to overcome this issue; as change of materials into the nanodimension dramatically changes its physical properties. Drug nanocrystals are crystals with a size in the nanometer range (mean diameter < 1000 nm). Nanocrystal dispersions comprise water, active drug substance and a stabilizer. They are physically stable due to the presence of stabilizers that prevent reagragregation of the active drug substance. The presentation addresses different advantages of nanocrystals alongwith techniques used to prepare nanocrystal formulations of a drug powder such as homogenization, coprecipitation, spray drying and milling including overview of marketed products.

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PP-25

ANTIBACTERIAL ACTIVITIES OF DIFFERENT MEDICINAL PLANTS AGAINST DENTAL PATHOGENS

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Dental caries and periodontal diseases continue to be a worldwide health concern.The dental caries pathogens mainly include *Lactobacillus casai, Micrococcus albus*, *Proteus vulgaris, Pseudomonas aerogenosa* and *Staphylococcus aureus*. A wide range of medicinal plants represent a rich source of antimicrobial agents and parts of these plants are used for extract as raw drugs. According to WHO, medicinal plants played an important role in the health care of about 80% of the world population in developing countries. In the present work, leaf extracts of *Azadirachta indica, Citrus limonum, Delbergiasissoo, Mangifera indica, Nerium oleander*, *Nicotiana tabacum,* root extract of *Curcuma longa* and bark extract of *Cinnamoum tamala were* prepared using the solvents like methanol, ethanol, acetone,chloroform and water and these extracts with or without antibiotics in a concentration dependent manner were screened for their antibacterial activity against *L. casai, P. vulgaris*and *S. aureus*by using disc diffusion method.Moreover, we investigated the synergistic effects of plants extracts with or without antibiotics in cow urine (CU) in association against dental pathogens. In this study, we found that themethanolic extract of *N. oleander* and chloroform extract of *A.indica* have maximum zone of inhibition (ZOI) against *L.casai* (17mm), water extract of *N. tabacum* and methanolic extract of *C. tamala* have maximum ZOI against *P. vulgaris* (15 mm) and methanolic extract of *C. tamala* has maximum ZOI against *S. aureus* (14 mm).This effect increases very significantly when used with CU (P=<0.01) has been found to maximum bacterial inhibition effect than used with DMSO as solvent. It was concluded that crude plants extract along with cow urine must be administrated to persons with the above mentioned bacterial infection to eradicate the infection, meanwhile, a further research will be needed to isolate the active components from cow urine which have antimicrobial activities along with their mode of action at molecular level.

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PP-26

MAJOR PROTEIN VIRULENCE FACTORS OF *LEISHMANIA* SPECIES

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Leishmaniasis is an infectious disease caused by the intracellular protozoan parasite of the genus *Leishmania* that belong to the family Trypanosomatidae. This disease is of great medical and veterinary public health significance because it occurs in several mammal species. In humans, the infection is caused by different species of the parasite that manifests into three types: cutaneous, mucocutaneous, and visceral leishmaniasis, which is also known as kala-azar. According to the World Health Organisation, it is considered as the second most life threating parasitic disease after malaria in humans. It is estimated that around 12 million people are infected worldwide and that a further 350 million are at risk of contracting this disease, with around two million new infections occurring annually. Virulence factors (VFs) of the parasite enable a host to replicate and disseminate within a host in part by subverting or eluding the host defenses. With the advancement in proteomics technology, by these approaches numerous VFs of *Leishmania* spp. have been identified and found to play an important role in the development of leishmaniasis. Here, we discuss the major protein VFs of *Leishmania* species such as cysteine peptidases, serine proteinases, mitogen activated protein kinase, amastigote-specific phosphoprotein, superoxide dismutase, kinetoplastid membrane protein 11, trypanothione reductase, heat shock protein 100, secreted acid phosphatases, and metalloprotease gp63.

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PP-27

GREEN SOURCES FOR THE SYNTHESIS OF METAL NANOPARTICLES AND ITS BIOMEDICAL APPLICATIONS

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The synthesis of metal nanoparticles (MNPs) and their characterization is an emerging branch of nanotechnology, due to its wide applications in the field of Physics, Chemistry, Biology and Medicine. Number of chemical and physical procedures can be used for the synthesis of MNPs. However, these methods are extremely expensive, high energy consumption and also involve the use of toxic chemicals, which may pose potential environmental and biological risks. Thus, there is an essential need to develop an alternative material which might be cost-effective, energy efficient and eco-friendly in nature for the synthesis of MNPs. In recent years, several approaches have been adopted using biological sources such as algae, bacteria, fungi, viruses and plants or plant extract for the synthesis of nanoparticles such as silver, gold, copper, platinum, palladium and lead. These entities can transform inorganic metal ions into MNPs via the reductive capacities of the amines, amides, proteins, pigments, alkaloids, carbonyl groups, terpenoids, phenolics, flavonones and other agents present in them. In this paper, we provides an account of the biological sources for MNPs synthesis, as well as their most promising role in biomedical sciences such as antibacterial, antifungal, antiviral, anti-parasitic and anti-cancerous activities.

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PP-28

COMPLICATIONS OF THALASSEMIA

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Thalassemia is a group of inherited autosomal recessive hereditary anemiatic disorders which can be fatal if proper treatment is not received. It is characterised by partial or no production of alpha or beta globin chains which form part of the structure of the haemoglobin in the red blood cells. The incidence is quite high mainly in multi-ethnic populations but determining the prevalence is often difficult due to the widespread heterogeneity of the population and timing of exposure to chelation therapy.Many complications arises in thalassemia patients such as stunted growth, pubertal development, abnormal gonadal functions, impaired thyroid, parathyroid and adrenal functions, diabetes, heart disease (heart failure and arrhythmias), chronic liver hepatitis, which can evolve in cirrhosis and, rarely, in hepatocellular carcinoma, osteoporosis, thrombophilia and pseudoxanthomaelasticum. The incidence of complications is decreasing in early detection and institution of appropriate transfusion regimen, iron chelation therapy, treatment of complications are the keys steps in managing this disease. In this paper, we summarize the literature in relation to the various complications encountered in thalassaemia.

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PP-29

V-ATPASE: STRUCTURE, FUNCTION AND REGULATION

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The vacuolarATPases (V-ATPases) are large multi-subunit and ATP-driven proton pumps that are required for acidification ofintracellular compartments such as endosomes, lysosomes, phagosomes and elements of the Golgi apparatus etc. and also for transportation of proton across the plasma membrane.The V-ATPases arecomposed of a peripheral catalytic domain (V1) responsible forATP hydrolysis and a hydrophobic integral domain (V0) responsible for proton transport. V1 contains eight subunits (A–H) while V0 contains six subunits (a, c, c′, c″,d and e).The main function of V-ATPases includes intracellular membrane traffic, prohormone processing, neurotransmitter and ATP uptake, degradation of macromolecules in secretory and digestive compartments. V-ATPases are also important in some physiologicalprocesses such as urinary acidification,bone resorption, pH homeostasis, sperm maturation and tumour cell invasion as well as in human diseases,including osteoporosis, renal tubular acidosis and tumour metastasis.V-ATPases also allow the entry of certain viruses and toxins into the intracellular space via the binding of these pathogens to the endosomal membrane as in the case of HIV, the V-ATPase H subunit and the HIV-1 Nef proteinassociated to facilitate endocytosis of Nef and/ or alterations in the acidification of the endosomal pathway by this protein.V-ATPaseactivity is regulated by three different mechanisms, which control pump density, association/dissociation of the V1 and V0 domains, and secretory activity. In this article we review structure, important function and regulationof the V-ATPases.

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PP-30

TEM8: *IN-SILICO* ANALYSIS TO PREDICT PHYSIOLOGICAL FUNCTION OF THIS GENE

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Targeting endothelial cells that line tumor blood vessels is a promising new strategy for the treatment of cancer. Tumor endothelial marker 8 (TEM8) is induced in tumor associated vasculature and acts as a receptor for Protective Antigen (PA) (the cell-binding component of the anthrax toxin determinant for toxin entrance into cells.Here we have tried to predict tem8 functional role in cell physiology by in-silico approach. Firstly we have searched regulatory factors of tem8 eg transcription factors and cpg Iceland in 10 kb of upstream regions. Secondly, we searched homology of tem8 gene with other genes. Finally we searched other protein/s associated with functional tem8 protein. The above promoter and interaction analysis of TEM8 shows that it is regulated by those factors which having oncogene promoter. So, it may predict that TEM8 may work as oncoprotein. TEM8 promotor having GATA sites which promote cell growth it means TEM8 is involve in cell growrh and differentiation. Analysis of full length functional protein-protein interaction with TEM8 shows that most of the associated protein is tumor suppressor gene (BCL2, BRCA1, LRP6). According to transcription factor analysis TEM8 protein may work as oncogene. Protein-protein interaction shows that in normal tissue these tumor suppressor genes inhibit its oncogenecity. In tumor when these genes become non functional then TEM8 act as oncoprotein.

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PP-31

SEASONAL VARIATION IN THE INCIDENCE OF GALLBLADDER CARCINOMA: REPORT FROM AN ENDEMIC REGION IN NORTHERN INDIA

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Investigating effect of seasonal variation, by determining data from hospital registry and ascertaining factors which affect the pathogenesis of GBC.In this study we have included 221 patients, clinically and histopathologically diagnosed. Interview with GBC and GSD patients about their clinical history, socioeconomic background, food habit and level of participation in festivals provided the necessary data for this study. Seasonal variation may affect GBC and GSD incidence by various ways. Winter season was the highest [42.9%] recorded time for GBC patients followed by rainy [32.5%] and summer [24.4%] season [p<0.002]. This study suggests that there are seasonal biases in the incidence of GBCs. The reason for these disparities includes the environmental, hormonal, and socio-cultural activities of the patients which may influence directly or indirectly tumor aggregation.

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ARTIFICIAL NEURAL NETWORK

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In machine learning and related fields, artificial neural networks (ANNs) are computational models inspired by an animal's central nervous systems (in particular the brain), and are used to estimate or approximate functions that can depend on a large number of inputs and are generally unknown. Artificial neural networks are generally presented as systems of interconnected "neurons" which can compute values from inputs, and are capable of machine learning as well as pattern recognition thanks to their adaptive nature. For example, a neural network for handwriting recognition is defined by a set of input neurons which may be activated by the pixels of an input image. After being weighted and transformed by a function (determined by the network's designer), the activations of these neurons are then passed on to other neurons. This process is repeated until finally, an output neuron is activated. This determines which character was read. Like other machine learning methods - systems that learn from data - neural networks have been used to solve a wide variety of tasks that are hard to solve using ordinary rule-based programming, including computer vision and speech recognition.

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DETECTION OF ADULTERATION IN MILK AND ITS EFFECT ON HUMAN HEALTH

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Milk is commonly consumed by people of all age groups. Also, India is the largest producer and consumer of milk. According to a recent report, India is likely to produce 140.6 million tonnes of milk in 2014 and the demand is set to rise to 150 million tonnes of milk. To meet the growing demand, milk and its products have been adulterated to decrease the quality and increase the quantity for economic value. The common adulterants found in milk are urea, formalin, glucose/sugar, caustic soda, refined vegetable oil (cheap cooking oil), and common detergent or shampoo. These not only reduce the nutritious value of the milk but also pose risk to health. The supply of milk is predominantly from the local suppliers which many a times gets delivered to the consumers without pasteurisation. Hence, great care should be taken in the production and distribution process as water activity, moderate pH and ambient temperature is sufficient for the microbial activity in milk. Adulteration in milk increases the risk of diseases like kidney diseases, gastro diseases, heart diseases, etc. For the detection of adulteration in milk we use simple and rapid laboratory chemical methods.

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PP-34

EBOLLA VIRUS AND ITS PATHOGENICITY: A PARAMEDIC DISASTER

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Ebola Virus Disease (EVD) or Ebola hemorrhagic fever (EHF), or simply Ebola is a disease in humans and other primates caused by an Ebola virus. EVD is caused by an RNA virus in the filovirus family. Ebola virions are filamentous particles that may appear in the shape of coiled toroid or branched ebola virions contain linear non segmented, single-strand, non-infectious RNA genomes of negative polarity that possesses inverse-complementary 3' and 5' termini, do not possess a 5' cap, are not polyadenylated, and are not covalently linked to a protein. Ebolavirus genomes are approximately 19 kilobase pairs long and contain seven genes in the order 3'-UTR-*NPVP35-VP40-GP-VP30-VP24-L*-5'-UTR. The ebolavirus life cycle begins with virion attachment to specific cell-surface receptors, followed by fusion of the virion envelope with cellular membranes and the concomitant release of the virus nucleocapsid into the cytosol. Newly synthesized structural proteins and genomes self-assemble and accumulate near the inside of the cell membrane. Virions bud off from the cell, gaining their envelopes from the cellular membrane they bud from. The mature progeny particles then infect other cells to repeat the cycle.There is no specific treatment available for Ebola, although research is underway. Nevertheless, sick people should seek medical care promptly as early supportive treatment improves the chance of survival. These measures may include: intravenous fluids (IV fluids) supplemental oxygen blood transfusions antibiotics, if the person develops a bacterial infection along with their Ebola virus infection (Ebola itself cannot be treated with antibiotics because antibiotics do not work on viruses.) There is no proven cure for Ebola at this time. Herbs, nano silver, bathing in salt water (or drinking it), and other 'treatments' are not effective. The World Health Organization warns that practices and products rumored to prevent or cure Ebola can be dangerous. In this poster we tried to focus on the pathogenicity that ebolla prevails, beside that we also tried to emphasis on how to save human being with current remedies available.

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A SYNERGISTIC APPROACH: A POSSIBILITY TO GENERATE ELECTRIC CURRENT BY MICROBIAL FUEL CELL

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The need for alternate eco-friendly fuel is increasing rapidly with the depletion of non-renewable energy resources. Microbial fuelcells (MFCs) represent a new form of renewable energy .The electric current is the flow of electric charges via conductor. Electricity is an important source of energy in the modern times.Mainly electricity is used for lightening and heating purposes, and also used to run the various types of machines. The usefulness and exclusive architecture of this device has received wide attention recently of engineers and researchers of various disciplines.Various fossil fuels such as coal, fuel oil and natural gas are used to provide energy in factories and thermal power plants. The major parts of electricity are produced by burning fossil fuels. And these fossil fuels are non-renewable sources of energy and are present in limited amount in the earth, that is once exhausted, they will not be available to us again. This will create an energy crisis. In order to avoid runing out of fossil fuels and face an energy criis, we should explore alternative sources of energy which do not depend on the fuels dug out from the earth. To preserve the fossil fuels the several alternative sources are used to generate electricity such as- hydroelectric power plant, wind generator, solar cell etc. but there are several limitations of these alternative sources, we cannot generate electricity throughout the year by these sources. Hence the electricity was also produced by the help of such microbes- *Geobacter sulfurreduens* produces current densities in microbial fuel cells that are among the highest known pure culture.

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NATURAL GUMS AS RESERVOIR FOR A SUSTAINED DELIVERY OF LOSARTAN POTASSIUM BY HYDRODYNAMICALLY BALANCED SYSTEM

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The objective of the present study was to develop a Hydro-dynamically Balanced System (HBS) of Losartan Potassium (LP) as a single unit floating capsule using natural gums and polysaccharides [Low Molecular Weight Chitosan (LMWC), Xanthan Gum (XG), Sodium Alginate(SA)] alone or in combination. The effect of hydrophobic polymer like Ethyl Cellulose (EC) was also investigated on the drug release. They were prepared by physical blending of LP and the combination of hydrophilic and hydrophobic polymers in varying ratios. The formulation was optimized on the basis of *in vitro* buoyancy and *in vitro* release in simulated gastric fluid (pH 1.2). All these formulated HBS capsules containing LP were floated more than 8 hours with no floating lag time, except formulations containing LMWC and also showed sustained *in vitro* drug release in simulated fed state gastric fluid over 12 hours. By fitting the data into zero order, first order and Higuchi model it was concluded that the release followed zero order release kinetics for formulations F1, F2, F3, F7, F5 and F6, as the correlation coefficient (R^2 value) was higher for zero order release, F4 followed first order drug release, and F8, F9 followed Korsmeyer-Peppas model whereas, drug release from formulation F10, F11, F12 followed higuchi model. Our findings suggest that natural gums can be used efficiently used as drug carrier for sustained delivery of LP from Hydro-dynamically balanced capsules.

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SIGNIFICANCE OF GASTRO RETENTIVE DELIVERY SYSTEMS

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A traditional oral sustained release (SR) formulation may not be useful to obtain optimized oral bioavailability because of different pharmacokinetic and pharmacodynamic properties of individual drugs as well as different patient physiology. The traditional SR route has several physiological problems including unpredictable gastric emptying rate, brief intestinal transit time and existence of an absorption window in the upper small intestine for several drugs. These difficulties have prompted researchers to design a gastro retentive delivery system (GRDS) which can stay in the stomach for the prolonged and predictable period. There are several gastro retentive approaches like swelling device, floating systems, bioadhesive systems, high density systems and magnetic system have been developed. GRDS depends on many factors such as density, size of dosages form, fasting and fed condition, nature of meal taken, sleep, posture etc. Prolonging the gastric retention of a delivery system will be beneficial for achieving better therapeutic effect of drugs that are absorbed from proximal part of gastro-intestine tract (GIT).

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XENOTRANSPLANTATION: PROSPECTS FOR THE FUTURE

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Xenotransplantation (Cross Species Transplantation) has become a miracle world, with a desperate hope to solve the organ shortage and to expand transplantation into an unlimited space in order to make it available for every sick patient in need. Major immunologic barriers that are associated with xenotransplantation includes - Hyperacute Rejection, Acute Humoral Xeno Graft Rejection, Acute Cellular Rejection, Xenozoonosis.The Antibody- mediated hyperacute rejection is due to the presence of disaccharide antigen (galactosyl-1,3agalactose) which is not present on human cells, so the preexisting antibodies cause pig cell lysis. The absence of human regulators of complement activity on pig cells including human Decay-Accelerating Factor (DAF) and human Membrane Cofactor Protein (MCP) intensifies the complement cell lysis. The development of genetically engineered pigs (a1,3-galactosyltransferase gene- knock out (GTKO) pigs and the production of transgenic pigs that express the protein DAF helps to dampen cell lysis and complement reaction. The potential for the development of xenozoonosis in the recipient of a pig graft can be eliminated by strict regulation and screening. In the foreseeable future, clinical xenotransplantation may achieve its targeted goal of extended graft survival. As was the case during the early years of allotransplantation, clinical xenotransplantation must persevere under the consideration of and often in spite of scrutiny by its most demanding critics.

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