



**Research Journal of Pharmacology and Pharmacodynamics (RJPPD)**

**ISSN 0975-4407**

**Volume 02, Issue 02, March-April, 2010**

## **CONTENT**

### **REVIEW ARTICLE**

#### **Unique Approaches to Vaccine Development Formulation and Delivery**

*Patil SM, Maske AP, Sapkale GN and Kure AB.....99*

#### **ABSTRACT:**

A Vaccine is a preparation, which is used to stimulate immune system, improves immunity to a particular disease. Vaccine can be prophylactic or therapeutic. Most vaccine registered for use is designed to prevent or control acute human infections. The conventional approaches to vaccine Research and Development are as Isolation and Characterization of disease causing organism, to discover methods to effectively immunize and protect susceptible host and to develop assay to measure immune response and identify immune correlates of protection, Manufacturing and Preclinical development, Clinical and Field testing in humans. New approaches to vaccine development are as use of anti-idiotypic antibody preparation to mimic B-cells epitops, Synthesis of oligo or polypeptides that reflect naturally occurring a sequence of protein of pathogen. rDNA Transfection of cells with inserted DNA/CDNA into genome of other viruses and bacteria. New prophylactic and therapeutic vaccines will prevent and potentially cure disease. New delivery systems for human vaccines are being developed to enhance cellular and Mucosal immunity, as well as ease of use, advances in current vaccines such as conjugated pneumococcal vaccines for adults, nasal spray vaccines for Influenza and adult a cellular pertussis vaccine will provide an efficient way to of longlasting protective immunity. There is as of today no TH1 adjuvant efficient in humans. Such adjuvants are needed to develop powerful therapeutic vaccines against cancer or chronic infectious diseases. New vaccine delivery technology will provide easier delivery routs such as transcutaneous, depot, nasal, and oral delivery without compromising efficacy.

**KEY WORDS:** Vaccines, development, delivery, approaches.

#### **Novel Approaches in Erythropoietin: A Review**

*Angad J Nayak, IS Anand and CN Patel.....103*

#### **ABSTRACT**

Erythropoietin, or EPO, is a glycoprotein hormone that controls erythropoiesis, or red blood cell production. It is a cytokine for erythrocyte (red blood cell) precursors in the bone marrow. Also called hematopoietin or hemopoietin, it is produced by the peritubular capillary endothelial cells in the kidney, and is the hormone that regulates red blood cell production. The existence of a hormone that controls RBC production was first suggested by the experiments of Paul Carnot in 1906, who created anemic rabbits and then transfused their serum into recipient rabbits. EPO is produced by peritubular cells in the adult kidney, and in hepatocytes in the fetus. In adults, a small amount is also produced by the liver. The rate of Epo synthesis and secretion depends on local oxygen concentrations; hypoxia is the main stimulus for Epo production. Although the use of erythropoietin has been studied in critically ill patients, erythropoietin has not been shown to be effective in this setting. In a randomized controlled trial, erythropoietin insignificantly reduced mortality among critically ill patients. In 1983, the gene coding for EPO was identified, leading to its synthesis as epoetin-alfa by American genetic research corporation, Amgen, who patented the drug under the name Epogen. In 1989, another company, Ortho Biotech, a subsidiary of Johnson and Johnson, began marketing the drug under license as Procrit in the US, and Eprex in the rest of the world.

## Bipolar Disorder and Role of Lithium in Its Management: An Overview

Nitin S Chapekar, Sunil R Bavaskar and Fahim J Sayyad.....111

---

### ABSTRACT

Bipolar disorder (BD) is a mental condition that usually involves extreme mood swings in human beings from conditions of excitement and feels happy at one moment to depression the next. It is usually associated with mental mania disorder characterized by great excitement and occasional uncontrolled violent behavior. Depression is characterized by persistent and long-term sadness or despair. Generally mental illnesses are due to result of several factors working together and can be divided into biological and psychological causes in case of BD. Compared to mania phase of persons suffering from BD, the depressive phase is often very severe and development of suicidal tendencies is a major risk factor. In fact, people suffering from BD are more likely to attempt suicide than those suffering from regular depression. Lithium (Li) has been the first choice for years for the treatment of BD and effectiveness is maximized when serum concentrations are maintained at 1.0-1.2 mEq/L. Li has long been used to reduce suicide risks. Recent studies have shown Li may also be effective in treatment against AIDS and cancer. The present review deals with the pathophysiology, types of BD and role of miracle drug Li in its management.

**KEY WORDS:** Bipolar Disorder, Mania, Lithium.

---

## Stopping of Clopidogrel after Stent Implantation Causes Death/Mi

Jatin Patel, Jigna Shah, IS Anand and CN Patel.....117

---

### ABSTRACT

Clopidogrel is an oral antiplatelet agent (thienopyridine class) to inhibit blood clots in coronary artery disease, peripheral vascular disease, and cerebrovascular disease. Clopidogrel keeps the platelets in your blood from coagulating (clotting) to prevent unwanted blood clots that can occur with certain heart or blood vessel conditions and is used to prevent blood clots after a recent heart attack or stroke, and in people with certain disorders of the heart or blood vessels.

Here from the research article we found a clustering of death and MI events in the initial 90-day period after clopidogrel cessation, compared with subsequent follow-up intervals. Findings were consistent among subgroups of patients who received shorter or longer durations of clopidogrel therapy, patients with or without diabetes, and ACS patients who underwent PCI. The rate of adverse events in the initial 90-day interval after stopping clopidogrel was higher than the rate of adverse events following hospital discharge while patients were still taking clopidogrel. These findings support the hypothesis of a rebound hyperthrombotic period after clopidogrel cessation. They also highlight the need for additional studies to confirm these findings and to gain a deeper understanding of the pathophysiology of this phenomenon as well as allowing identification of strategies to attenuate this effect.

We observed a clustering of adverse events in the initial 90 days after stopping clopidogrel among both medically treated and PCI-treated patients with ACS, supporting the possibility of a clopidogrel rebound effect

**KEY WORDS:** Clopidogrel, MI (myocardial infraction), PCI (percutaneous coronary *intervention* ), ACS (acute coronary syndrome)

---

## A Brief Review on Swine Flu

Aher Vaibhav D, Arjun Patra, Pronobesh Chattopadhyay and Munesh Mani.....126

---

### ABSTRACT:

Swine influenza is caused by those strains of influenza virus that usually infect pigs and are called swine influenza virus (SIV). Swine influenza is known to be caused by influenza A subtypes H1N1, H1N2, H3N1, H3N2, and H2N3. The main route of transmission is through direct contact between infected and uninfected animals. Airborne transmission through the aerosols produced by pigs coughing or sneezing is also an important means of infection. In pigs influenza infection produces fever, lethargy, sneezing, coughing, difficulty breathing

and decreased appetite and in human include fever, cough, sore throat, body aches, headache, chills and fatigue. Risk factors that may contribute to swine-to-human transmission include smoking and not wearing gloves when working with sick animals. The principal method of treatment is vaccination and proper animal management techniques. The modern pork industry also uses antibiotic, which although they have no effect against the influenza virus, do help prevent bacterial pneumonia and other secondary infections in influenza-weakened herds. The U.S. Centers for Disease Control and Prevention recommends the use of Tamiflu (oseltamivir) or Relenza (zanamivir) in human. Vaccines and antivirals will be crucial to the effort, but tracking and communications technologies could also play a key role in monitoring the virus, distributing accurate health information, and quelling outbreaks. Meanwhile, other Internet tools are helping to track the spread of the virus geographically.

---

### **Toxicogenomics: A Review**

*Patel VD, Patel MB, Anand IS, Patel CN Bhatt PA.....131*

---

#### **ABSTRACT:**

Toxicogenomics is a rapidly developing discipline that promises to aid scientists in understanding the molecular and cellular effects of chemicals in biological systems. This field encompasses global assessment of biological effects using technologies such as DNA microarrays or high throughput NMR and protein expression analysis.<sup>1</sup>

Toxicogenomics is the evolving science which measures the global gene expression changes in biological samples exposed to toxic agents and investigates the complex interaction between the genetic variability and environmental exposures on toxicological effects. DNA microarrays have become most popular and important method to measure the expression of mRNA level offering great potential for environmental or toxicological studies. Gene expression changes can possibly provide more sensitive, immediate, comprehensive marker of toxicity than typical toxicological endpoints such as morphological changes, carcinogenicity, and reproductive toxicity. In this regard, toxicogenomics includes genomic-scale mRNA expression (transcriptomics), cell and tissue-wide protein expression (proteomics), metabolite profiling (metabonomics), and bioinformatics. These studies can be grouped as “-omics” study, which could be applied to various kinds of samples and species.

**KEY WORDS:** toxicogenomics, microarray, proteomics

---

### **Novel Approaches for Diabetes Mellitus: A Review**

*SM Bhanushali, KM Modh, IS Anand, CN Patel and JB Dave.....141*

---

#### **ABSTRACT:**

Diabetes mellitus is a major and growing public health problem of the developed country. Diabetes mellitus is also associated with disease like hypertension, chronic heart disease, blindness etc.. Now days drug that are available in the market are just to control the diabetes. There are several novel approaches which might cure the diabetes. Defective glucose-stimulated insulin secretion by pancreatic islet  $\beta$  cells could be cured with recombinant glucagon-like peptide 1 (GLP-1) or agonists of the GLP-1 receptor. Alternatively, decrease in GLP-1 clearance can be achieved with inhibition of Dipeptidylpeptidase IV (DP-IV) to reduce insulin resistance, enhanced insulin action. The role of peroxisome proliferator activated receptors (PPAR  $\gamma$ ) in the regulation of lipid metabolism, insulin and triglycerides leads to the rationale design of several PPAR agonists. Gene therapy also generates greater hope for possible cure of diabetes. Sodium-Glucose Co-Transporter Inhibitor is also one of the novel target for lowering plasma glucose and improving insulin resistance by increasing renal glucose excretion. Under diabetic conditions, induced oxidative stress also activates the JNK pathway, which is involved in deterioration of pancreatic  $\beta$ -cell function found in diabetes. Treatment with antioxidants and/or suppression of the JNK pathway protect  $\beta$ -cells from some of the toxic effects of hyperglycemia could be the one of novel target therapy of diabetes mellitus.

**KEY WORDS:** Diabetes Mellitus, Incretin, DPP-IV Inhibitor, Gene therapy, Novel approach

---

## Sleep, Health and Immunocompetence: A Review

*NKD Devi, C Srilatha, N Vinisha, BS Mrudula and BR Madhavi.....148*

---

### ABSTRACT:

Despite a century of study, we have a very little understanding of why we sleep? And it is most surprising to know that we spend nearly one third of our lives in sleep. Scientists found out another important function for sleep. It actually prepares our emotional brain for next day social and emotional interactions.

Sleep and Immune system are very much related to each other. Generally we feel sleepier when we are suffering from infection and it is believed that sleep deprivation can prone us to more infections. The sleep deprivation causes a lot of irregularities in the levels of cytokines as well as hormones. Are sleep and immune system really related? This is the point to be discussed in this review. To understand this relation a basic study on sleep and immune system components is necessary.

**KEY WORDS:** NREM sleep and REM sleep, Immune system, IL-1 $\beta$ , TNF.

---

## A Review on Novel Strategies for Pharmacotherapy of Depression

*Manan A Patel , Chetan M Patel, Dipen B Patel, IS Anand and CN Patel.....153*

---

### ABSTRACT:

Major depressive disorder is a mental disorder characterized by an all-encompassing low mood accompanied by low self-esteem, and loss of interest or pleasure in normally enjoyable activities. Prevalence rate of major depression is markedly rising all over the world. Pathophysiology of depression is mainly focus on the three major monoamine systems—serotonin (5-hydroxytryptamine, 5HT), nor epinephrine (NE), and dopamine (DA). The emerging new tools of molecular neurobiology and functional brain imaging have provided additional support for the involvement of these three systems. Popular conventional drugs for pharmacotherapy of Depression are Tricyclic anti-depressants, Monoamine oxidase inhibitors and Selective Serotonin Re-uptake inhibitors. Major drawbacks of these drugs include suicide tendency and discontinuation syndrome and there is need of time to focus research at minimising side effects. In last two decades, many new drugs became available in market for pharmacotherapy of depression including novel Selective Serotonin Norepinephrine re-uptake inhibitors and still reserves bright scope in research of anti-depressant. On the other hand, a number of alternative therapeutic strategies are now emerging, as exemplified by the first Substance P receptor antagonist, MK-0869, and several Corticotrophin-releasing factor antagonists now entering clinical trials. Preclinical models predict that some of these new drugs may have a faster onset of action and improved efficacy. It is clear to note that the next generation of drugs will need to tackle some of the unresolved problems of antidepressant therapy such as suicide tendency.

**KEY WORDS:** SSRIs, Drawbacks of antidepressants, advantages of SNRIs, Novel research in antidepressants.

---

## Gastroesophageal Reflux Disease: Pathophysiology and Treatments Available

*Pankaj Rakha, Raj Kumar, Supriya, Nidhi, Manju Nagpal and Gitika Arora.....160*

---

### ABSTRACT:

Gastroesophageal reflux disease (GERD) is primarily a motility disorder. Escape of gastric contents into the esophagus occurs as a consequence of an incompetent gastroesophageal barrier. This barrier is weakened in the presence of an abnormally functioning Lower Esophageal Sphincter (LES). This review is focused on the epidemiology, pathophysiology and treatments of gastro-oesophageal reflux disease.

**KEY WORDS:** Reflux, proton pump inhibitors, H<sub>2</sub> receptor antagonists, radiofrequency.

---

## Hepatitis-B: A Review

*Arti Mohan .....165*

## **RESEARCH ARTICLE**

### **Healing Potential of *Trichosanthes dioica* Roxb on Burn Wounds**

*Yogesh Shivhare, Priya Singh and UK Patil.....168*

---

#### **ABSTRACT**

*Trichosanthes dioica* Roxb is a well-known plant in the traditional medicine. Based on its traditional use, methanolic extract of the plant was selected for assessment of healing potential in the form of simple ointment using full thickness burn wound model in rats. The effect produced by the extract ointment showed significant healing when compared with the control and standard groups. All parameters such as wound contraction, epithelialization period, hydroxyproline content, and histopathological studies were observed significant ( $P < 0.01$ ) in comparison to control group.

**KEY WORDS:** *T. dioica*, Burn wound, Hydroxyproline

---

### **Therapeutic Uses and Pharmacological Action of *Trigonella foenum-Graecum* Linn**

*Ajay Kr Meena, Brijendra Singh, Uttam Singh, Ajay Kr. Yadav, Amit Nagariya and Kiran Sharma.....172*

---

#### **ABSTRACT**

The medicinal plants are widely used by the traditional medical practitioners for curing various diseases in their day to day practice. Since ancient times, plants have been an exemplary source of medicine. Ayurveda and other Indian literature mention the use of plants in treatment of various human ailments. The leaves and seeds of *Trigonella foenum-graecum* Linn or fenugreek (known as Methi in Hindi), a small herb seen throughout India, have been recommended for the treatment of carminative, diuretics, small-pox, dysentery and also useful in the making of tonic. In folk medicine, *Trigonella foenum-graecum* has been used in the treatment of boils, cellulitis, and tuberculosis. The *Trigonella foenum-graecum* Linn. has also been suggested to possess Cholesterol-lowering effects, Glucose-lowering effects, Anti-inflammatory effects, Antioxidant effects and Antitumor actions.

**KEY WORDS:** Medicinal plants, *Trigonella foenum graecum* Linn., Antioxidant, Ayurveda

---

### **Impact of Active Management of Labor as Per Parity**

*A. K. Bansal, Prabha Chauhan and V. K. S. Chauhan.....176*

---

#### **ABSTRACT:**

Active Management of labor have accelerated the labor both in primi and multi gravidae cases which is a boom to a lady in labor, it was also noticed that amniotomy and pitocin drip was more effective in multi gravidae than in primi cases. Active management has helped in acceleration of labour by 77.59 % and 77.78 % in primi and multigravidae respectively.

**KEY WORDS:** Boom, Primigravidae and Multipara.

---

### **Local Anaesthetic Activity of *Calotropis gigantea* Latex in Frog and Guinea Pig**

*KK Rajasekhar, V Shankarananth, M Rajagowtham, B Gowtham Kumar, B Thejnyan and M Pavankumar.....178*

---

#### **ABSTRACT:**

This work evaluated the local anaesthetic activity of milky latex obtained from *Calotropis gigantea* using three different experimental models in frog and Guinea pig. The latex at dilution 1:10 showed the anaesthetic activity compared to the standard drug xylocaine (0.2%). The methods used are nerve block or lumbar plexus anaesthesia and muscle twitch in frog, infiltration anaesthesia in Guinea pig. It was concluded that latex of *Calotropis gigantea* (1:10 dilution ) exhibited significant local anaesthetic activity.

**KEY WORDS:** *Calotropis gigantea*, milky latex, local anaesthetic activity, nerve block method, muscle twitch method and infiltration method .

---

## Comparison of Nutritional Status of Pre-Schooling Children as Per Sex

Rathi HB, Bansal AK and Chauhan P.....181

---

### ABSTRACT:

On analysis of the collected data it has been found that 17 percent female child were in normal grade in comparison to their 15 percent male counter parts. Similarly in grade -1, there were 34 percent females in comparison to 33.3 percent males. As far as severely malnourished concerned again percentage of males were higher in comparison to female children.

**KEY WORDS:** Severely malnourished, Sex.

---

## Phytochemicals and Pharmacological Activities of *Moringa oleifera* Lam.

Qureshi Md. Shamim, Patel Jitendra, Venkateshwar Reddy A, Syed Safiullah and P Mohapatra.....183

---

### ABSTRACT:

A wide range of chemicals compound have been isolated from *Moringa oleifera* and used extensively for treatment of several diseases like hepatic disorder, bacterial infection, cancer, and hyperalgesia. This article includes the detailed exploration of phytochemicals and pharmacological aspect of *Moringa oleifera*.

**KEY WORDS:** Folk medicine, *Moringa oleifera*, Anticancer activity, Analgesic activity.

---

## A Comparative Randomized Study of Guggulu and Atorvastatin Hypercholesterolemia Patients

Ch. Nagabhushanam, P Ramesh babu, NK Durga Devi, A Vasu and G Devala Rao.....187

---

### ABSTRACT:

Obesity is an important health hazard a known risk factor for several diseases like coronary heart disease (CHD), angina pectoris hypertension, cardiac failure etc... Recent investigations and national cholesterol education program, adult treatment panel-III (NCEP, ATP-III) guidelines stating that the LDL-cholesterol is the primary target of treatment in clinical lipid management. In this manuscript to evaluate the safety and efficacy of Guggul and Atorvastatin after excluding patients with exclusion criteria, thirty adult patients were allotted to study the medication. Randomly atorvastatin (20mg) was allotted to fifteen patients and guggulu (250mg) for fifteen patients for six weeks were allotted, before and after the treatment lipoprotein profile estimation was done. Weekly once checked for side effects. Out of thirty patients only twenty five were available for efficacy analysis (14 in guggulu group and 11 in atorvastatin group) the rest were dropouts. There is a satisfactory 7 significant reduction in LDL-cholesterol from the basic line value in atorvastatin group (29.5%) in comparison with guggul group (7%). HDL- cholesterol levels were raised in Atorvastatin group (4%) but there is no change in guggul group etc. By these results we can conclude that Atorvastatin is superior to guggul in lowering LDL-cholesterol and raising HDL-cholesterol.

**KEY WORDS:** Atorvastatin, Guggul, LDL-cholesterol, HDL-cholesterol, triglycerides, patients.

---

## Hepatoprotective Activity of Aqueous and Alcoholic Extracts from Corm's of *Amorphophallus paeoniifolius* against Carbon tetrachloride Induced Hepatotoxicity in Albino Rats

K Kathiresan, S Tom, VV Venkatachalam and H Penchalaiah.....190

---

### ABSTRACT:

In the present study, the pre-treatment of rats with *Amorphophallus paeoniifolius*. Alcoholic and aqueous extracts protected the animals against CCl<sub>4</sub> induced hepatotoxicity. The treatment significantly reduced the serum GOT, GPT, ALP, oxidation of GSH, GST levels and liver weight. The hepatoprotective nature of aqueous and alcoholic extracts of this plant against CCl<sub>4</sub> induced hepatic oxidative stress may be attributed to the presence of phenolic compounds. Further this was evidenced by free radical scavenging activity, reduced lipid peroxidation, reduced glutathione (GSH) radical scavenging activity and nitric oxide scavenging activity by both extracts of *Amorphophallus paeoniifolius*. The present study reveals that *Amorphophallus paeoniifolius* possesses a hepatoprotective action.

**KEYWORDS:** *Amorphophallus paeoniifolius*, Aqueous and Alcoholic extracts, hepatoprotective, hepatotoxicity.

---

### Evaluation of Anti-inflammatory Activity of leaf extract of *Morinda citrifolia* L. (Noni)

Khuntia Tapas Kumar, Panda D. S. , Khuntia S.....194

---

#### ABSTRACT:

*Morinda citrifolia* L. (Noni) (Rubiaceae) has been used in folk remedies by Polynesians, Indians for over 2000 years, and is reported to have a broad range of therapeutic effects, including antibacterial, antiviral, antifungal, antitumor, analgesic, hypotensive, and immune enhancing effects. Petroleum ether extract of leaves of *Morinda citrifolia* L. (Noni) was studied for its *in-vivo* anti-inflammatory potential using carageenan induced rat paw edema and cotton pellet induced granuloma methods. The results of the study indicate that the petroleum ether extract possess significant anti-inflammatory activity at doses 150mg/kg and 300mg/kg.

**KEYWORDS:** Immune enhancing, antiviral, antifungal, antitumor, granuloma

---

### Potential of Local Anesthetic Activity of *Calotropis gigantea* Latex with Epinephrine and pH In Guinea Pig

K. K. Rajasekhar, V. Shankarananth, C. Sreelakshmi, A. Sushmitha, S. Ch. Moulali and V. Swetha Reddy.

.....197

---

#### ABSTRACT:

The present work describes the potentiation of local anesthetic activity exhibited by milky latex obtained from *Calotropis gigantea*, with epinephrine and pH. The milky latex at a dilution of 1:10, exhibited significant local anesthetic activity. Both epinephrine (5µg/ml) and pH of 7.2 prolonged the duration of local anesthetic activity. The method used is infiltration anesthesia in Guinea pig. In conclusion, the duration of the effect produced by combination of *Calotropis gigantea* latex and epinephrine was longer than the combination of latex and pH as well as latex alone.

**KEYWORDS:** *Calotropis gigantea*, Milky latex, Epinephrine, pH and Infiltration anesthesia

---

### ADMINISTRATIVE, EDITORIAL, ADVERTISING AND SUBSCRIPTION OFFICE

A and V Publication, E-282 'Saikripa' Sector-4, Pt. Deendayal Upadhyay Nagar, Raipur 492010. (CG)  
India

Phone No. +919406051618. E. mail: editor.rjppd@gmail.com; Website: www.anvpublication.org