Recent Trends in Herbal Medicine – Attributes to Diabetics

U.S.Mahadeva Rao,MSc,PhD,PGDMLT,FICS,
Associate Professor
Faculty of Medicine & Health Sciences
Kampus Kota, Universiti Sultan Zainal Abidin (UniSZA)
20400 Jalan Sultan Mahmud, Kuala Terengganu, Terengganu, Malaysia.

Author email: raousm@unisza.edu.my

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PLENARY LECTURE

Today life science research is marching towards providing insights into the crucial events that are involved in life sustenance. The physiological responses to the outcome of the various anthropogenic activities have started to threaten the life sustainability capacity of earth. Unraveling the secrets of life at molecular level could be achieved through molecular biology techniques.

Molecular biology is the branch of biology that deals with the molecular basis of biological activity. It overlaps with other areas of biology and chemistry, particularly genetics and biochemistry. Molecular biology chiefly concerns itself with understanding the interactions between the various systems of a cell, including the interactions between the different types of DNA, RNA and protein biosynthesis as well as learning how these interactions is regulated.

Understanding the molecular mechanisms of the metabolic defects that produce disease is used to find out more and more treatment procedures that is modified from time to time through various research findings.

Diabetes is a disease that is caused due to the involvement of many defects in major metabolic pathways. Currently the uses of herbal preparations have improved the longevity of the patients and are easy to consume and are made available even for the common man. Preparations made from Ginseng, Gymnema *sylvestre*, Garlic, Fenugreek etc have been proven to be rich sources of antioxidants that prevent damages to cells at molecular level. Study of molecular mechanisms can unravel the secrets behind the cause and also the cure for the disease.

It is clear that not only diabetes, other diseases can also be treated effectively

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If research is done at molecular level and hence molecular medicine is found to play a major role in future medical research. Recent Trends in Herbal Medicine – Attributes to Diabetics.

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Cancer chemoprevention by black tea polyphenols: emerging evidence and molecular targets

Professor Dr. S. Nagini, MSc, PhD.
Department of Biochemistry and Biotechnology, Faculty of Science, Annnamalai University, Annamalainagar-608 002 India.

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PLENARY LECTURE

Research over the past decade has provided convincing evidence to support the premise that phytochemicals from the diet offer protection against cancer risk. A large number of phytochemicals from the diet have been demonstrated to exhibit anticancer activities by interfering with multiple signaling pathways aberrant in cancer. These agents target a plethora of molecular targets and pathways including xenobiotic-metabolizing enzymes, reactive oxygen species, inflammation, cell cycle, apoptosis, invasion, angiogenesis, transcription factors, and protein kinases. In addition, dietary phytochemicals also synergize with conventional chemotherapy and radiotherapy. Thus naturally derived phytochemicals could play an important role in cancer chemoprevention and therapy owing to multitargeted mechanistic action and lack of substantial toxicity. However, more rationally designed novel clinical trials are required to translate the preclinical findings into tangible clinical benefits.

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Intellectual property in biomedicine: from publications to patent applications.

Dr. Kripa V. Jalapathy, MSc, PhD
IPR consultant, Bangalore India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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PLENARY LECTURE

The growth of the biomedical industry in the past 20 years has been phenomenal and continues to hold promise for further advances. Sometimes described as the: new industrial revolution" the rewards from investing in this sector can be immense. With high investments in the research and development of the biotechnological products in medicine, Intellectual Property (IP) protection is critical for the industry. The IP protection mainly patents is the driving force for further innovation, technology enhancement and development of newer products that would impact mankind. Patents also add value to laboratory discoveries, and ensure that new research knowledge realizes its full commercial potential and is made available for public use.

The talk will cover the basics of the patenting, various strategies and the benefits of patenting in the new era. The talk will also touch upon how Intellectual Property Law is an exciting career option for biotechnology students and describe how it is possible to start out working with test tubes and end up in court!

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Herbs: A caravan of medicine.

N.K. Udaya Prakash,M.Sc., M.Phil., Ph.D., LQAC (USA)., CIPR (WIPO – Geneva)., F.B.F.I., F.M.S.I.,
President – Biologists Forum of India.
Associate Professor, Research and Development, Veltech Dr. RR Dr. SR Technical University, Avadi, Chennai, India.
Email: nkudayaprakash@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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PLENARY LECTURE

Herbs are used in traditional medicine or as folklore medicine because of the use of plant by them or as plant extracts. The usage of herbs in the field of medicine can also be termed as botanical medicine, herbal medicine, and phototherapy. Plants developed their disease defense mechanism through the synthesis of chemical compounds which defend them against pests, insects, pathogens and predators. These compounds are wisely utilized by the mankind for their beneficial use in the form of Herbal Medicine. Such secondary metabolites, with varied structure are aromatic, or with bitter taste etc.

The usage of herbs and spices in culinary items has provided us the base to treat on the herbs as medicine. The usage is a response to the threat of food-borne pathogens. A clue can be obtained why the vegetables are less spiced than the meat because they are more resistant to spoilage. Learning of herbs used in medicine starts from observing the animal behavior, A research from Wesleyan University, Ohio has found that few birds select plant materials for nesting as rich in antimicrobial agents which in turn protect their young from harmful infections. Similarly following sick animals foraging on plants rich in secondary metabolites like tannins and alkaloids provide us the indication that they may be of medical importance.

Sumerians are the pioneers in usage of herbs as their medicine, evidence available through written records, the study of herbs dates back over 5,000 years. Garlic, Opium, Castor oil, Coriander and other herbs are used in Ancient Egyptian Medicine. In India, evidence on usage of Turmeric in Ayurvedic medicine was possibly as early as 1900 BC. Many other herbs used in the system of medicine were described by ancient Indian herbalists, Charaka and Sushruta during the 1st millennium BC. The Sushruta Samhita attributed to Sushruta in 6th century BC describes about 700 medicinal plants.

Herbs in the field of medicine are used by number of traditional system of medicine, i.e. Greek and Romans, Siddha and Ayurvedha in various Asian countries, Chinese herbal medicine, Traditional African

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medicine, Unani – Tibb medicine, Shamanic herbal medicine in South America and Native American medicine. In addition to the use in the developing world, herbal medicine is used in industrialized nations by practitioners of alternative medicine and naturopathy. However, I differ in using the term Alternative medicine by Indians for Herbal medicine as herbal medicine is pioneer for current field of medicine. And our culture possesses it for longer period of time.

In Tamil Nadu, Tamils have their own medicinal system now popularly called the Siddha medicinal system. The Siddha system is in the language of Tamil which contains roughly 300,000 verses covering diverse aspects of medicine such as anatomy, sex, herbal, mineral and metallic compositions to cure many diseases that are relevant even today. Ayurveda and its medicines are mostly taken from Siddha and other local traditions.

Herbal therapy, or use of natural products other than vitamins and minerals, was most commonly used as Complementary and Alternative Medicine (18.9 %) - National center for complementary and alternative medicine (NCCAM) (2004) survey by western countries. The World Health Organization (WHO) estimates that 80 percent of the world's population presently uses herbal medicine for some aspect of primary health care. Pharmaceuticals are prohibitively expensive for most of the world's population in comparison with herbal medicines which can be grown from seed or gathered from nature for little or no cost.

To provide an example of plant derived drug, the active ingredient in willow bark, once prescribed by Hippocrates, is salicin when it was isolated from a plant known as meadowsweet. The word aspirin comes from an abbreviation of meadowsweet's generic name Spiraea, with an additional "A" at the beginning to acknowledge acetylation, and "in" at the end for easier pronunciation. "Aspirin" was originally a brand name, and is still a protected trademark in some countries. This medication was patented by Bayer AG.

Among the 120 active compounds currently isolated from the higher plants and widely used in modern medicine today, 80 percent show a positive correlation between their modern therapeutic use and the traditional use of the plants from which they are derived. At least 7,000 medical compounds in the modern pharmacopoeia are derived from plants. Many of the Pharmaceutical compounds currently available have a long history of use in herbal remedies, including Opium, Quinone etc.

Four approaches to the use of plants as medicine include: (a) the magical eyes to identify the herb in a way that is hidden from the average person, and the herbs are said to affect the spirit or soul of the person. (b) The energetic, i.e. Herbs are regarded as having actions in terms of their energies and affecting the energies of the body. The practitioner may have extensive training, and ideally be sensitive to energy, but need not have supernatural powers. (c) The functional dynamic, Herbs have a functional action, which is not necessarily linked to a physical compound, although often to a physiological function

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and (d) The chemical, assumed that the specific combination of secondary metabolites in the plant are responsible for the activity claimed or demonstrated, a concept called synergy.

In specific cases the claims of synergy and multifunctionality have to be supported by science. The search for drugs and dietary supplements derived from plants has accelerated in recent years and the role of Non-medicos becomes prominent. To identify the specific compounds or secondary metabolites and to study anti-oxidant nature of the herb, the role of Biochemist is significant, To identify antibacterial potency of the herb, the role of Microbiologist become significant, To identify antifungal ability, the role of Mycologist become significant, To know the larvicidal potency of the herb, the role of zoologist become significant, To know the role of pesticidal activity, the role of Entomologist become significant, and so on. However, not the least, major contribution need to come from the Botanist for proper identification of the herb. Thus, the culmination of scientist working together in various fields provides greater growth in achieving herbs to be used in Medicine. In fact, according to the World Health Organization, approximately 25% of modern drugs used in the United States have been derived from plants. In 2001, researchers identified 122 compounds used in mainstream medicine which were derived from "ethnomedical" plant sources; 80% of these compounds were used in the same or related manner as the traditional ethnomedical use. In a 2010 survey of 1000 plants, 356 had clinical trials published evaluating their "pharmacological activities and therapeutic applications" while 12% of the plants, although available in the Western market, had "no substantial studies" of their properties. Thus, the role of the scientist becomes necessary to scientifically support the system of herbal medicine.

It is noticed that, more than 24,600 articles were published on the article containing PHYTOTHERAPY as a keyword in PUBMED search.

In our laboratory, the work related to identification of common herbs are carried out and the work has been extended towards studying antibacterial efficacy of Indian spices (Sampathkumar et al., 2008), Members of Myrtaceae (Bhuvaneswari et al., 2010); comparative analysis on antibacterial property among common weeds (Udayaprakash et al., 2011), antibacterial potency of common weeds of Northern districts of Tamil Nadu (Udayaprakash et al., 2012), Phytochemical studies on common weeds of Northern districts of Tamil Nadu (Udayaprakash et al., 2011), Larvicidal effect of common weeds of Tamil Nadu (Udayaprakash and Bhuvaneswari, 2011), Bioefficacy of Carica papaya (Vaishnavi and Udayaprakash, 2011), Dodonaea viscosa (Udayaprakash et al., 2012), Antifungal activities of common weeds (Unpublished data), Pesticidal property of common weeds (Unpublished data) and antioxidant properties of common weeds (Unpublished data) were carried out. Currently, the same on the common weeds of Tanjore district of Tamil Nadu is conducted.

Knowing the importance of herbs in medicine, State funded universities like University of East London, Middlesex University, Central Lancashire, Westminster University, University of Lincoln and Napier University are offering B.Sc., in herbal medicine in UK.

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Botanical Gardens Conservation International (2008) warned that, "cures for things such as cancer and HIV may become 'extinct before they are ever found'." They identified 400 medicinal plants at risk of extinction from over-collection and deforestation, threatening the discovery of future cures for disease. Yew (the bark is used for the cancer drug Taxol and Paclitaxel), Hoodia (potential source of drug for weight loss); Magnolia trees (medicine to fight cancer and heart disease) are becoming extinct to name the few. . Their report said that "five billion people still rely on traditional plant-based medicine as their primary form of health care.

SO LET US KNOW OUR ROLE IN SAVING OUR HERBS TO SERVE OUR INDIAN SYSTEM OF MEDICINE

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Diabout study- A new method of diabetes treatment.

Dr. P.Ranjith Rao, M.B.B.S., D.C.H.

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PLENARY LECTURE

Aim: To correct the abnormal insulin response and to normalize elevated blood glucose level of diabetes by using Diabout- An ayurvedic medicine and to ensure sustained normoglycaemia.

Method:Allopathy and Ayurveda followed by Ayurvedha only.
Ingredients: Phyllanthus Emblica, Salacia Reticulata, Curcuma Loaga, Leacpa Sundra, Andropogus Muricatus,Dried Ginger,Glycorrhiza Glabra,Cyclea Burmani , Spondias Mangifera, Phaseolus Mungo
Site of Action: Intestine and Beta cells of Islets of Langerhans.
Dosage: Five to Six grams daily along with 60ml of boiled water, after breakfast.
Duration of treatment: Two years to Six years.
Duration of the study: The study was conducted since 2003.

Method of study: Serial Glucose Tolerance Test in human , conducted every six months showed an improved insulin response, by correcting the abnormal Glucose tolerance test. In animals, Mice, Regeneration of Islet cells and an increase in insulin level is seen.

Mode of intake of the drug: Diabout one teaspoon in half a glass of hot water was taken twice daily after breakfast and after dinner and used in conjuction with oral hypoglycemic agents. When fasting glucose level falls below 100mg%, the oral hypoglycemic agents is reduced by half a tablet every 15 days till the patient is only on diabout, that is when the glucose level falls below 80mg%

Special tests conducted: When Diabout was subjected to chemical analysis and to heavy metal tests , negative results were obtained.

Advantages of Diabout therapy: Prevention of end organ damage, Low level of morbidity. Low cost of treatment.

Summary: Diabout therapy is the ideal therapy for most backward and poor communities as it prevents complications and End organ damage.

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Biochemical, hematological and histological effect of malaysian buah naga fruit extract on hepatoprotective activity in paracetamol–induced experimental albino rats.

Haque M, Mahadeva Rao US.
UniSZA, Malaysia.
Corresponding author email: mainulhaque@unisza.edu.my

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ABSTRACT

Preliminary studies on the effects of dietary supplementation with Buah naga or Red pitaya fruit on some biochemical, and haematological parameters and histological examinations of liver, were investigated in albino rats in which liver damage was induced by paracetamol (PAM). Thirty six rats were divided into six groups (including hepatotoxic and non – hepatotoxic), and were fed with 5 and 10% Buah naga fruit extract supplemented diet. Weight changes and parameters including alanine transaminase(ALT), aspartate transaminase(AST), total protein, glucose, total triglyceride(TG), total cholesterol, reduced glutathione(GSH), lipid peroxidation(LPO), packed cell volume(PCV), total and differential leucocyte count were determined using standard methods. The consumption of a Buah naga supplemented diet change the weight of the animals as well as alteration in the levels of glucose, protein, ALT and AST in the hepatotoxic groups towards normalcy. The GSH level was significantly increased ($p<0.05$) while TG was reduced in hepatotoxic group fed extract supplemented diet. Glucose was significantly reduced to near normal ($p<0.05$) in the two treated groups. Similar results were observed in cholesterol and LPO status. WBC, Hb and PCV were significantly reduced in hepatotoxic groups and refurbished in treated animals. The hepatotoxic control had significant reduction in neutrophil count and recuperated to near normal in treated rats. Histological Studies: The necrotic effects of paracetamol seen in the abnormal histological changes are gradually regenerated to its native architecture in the hepatotoxic treated groups. Thus the present study conjectured that Buah naga consumption prevent or treat the PAM induced hepatotoxicity and associated other deleterious effects.

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Moringa as water purifier.

Tejaswini K, Kruthika K.
Prathyusha Institute of Technology and Management, Poonamallee, Trivellore District, India.
Corresponding author email: krish10kruthi@yahoo.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry , Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

An indigenous water treatment method uses Moringa seeds in the form of a water-soluble extract in suspension, resulting in an effective natural clarification agent for highly turbid and untreated pathogenic surface water. Efficient reduction (80.0% to 99.5%) of high turbidity produces an aesthetically clear supernatant, concurrently accompanied by 90.00% to 99.99% bacterial reduction. Application of this low-cost treatment with Moringa is recommended for simplified, point-of-use, cheap and easy method for developing countries, especially at household level.

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Antioxidant and free radical scavenging activity of methanolic extract of eupatorium triplinerve vahl.

Bhaskar A[1], Samant LR[1], Selvamangai G[2] .
[1]Dept of Biochemistry, Centre for Research and Development, PRIST University, Thanjavur, India.
[2] Department of Biotechnology, Alpha Arts and Science College, Chennai, India
Corresponding author email: samantlalit@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Plants synthesise and preserve a variety of biochemical products, many of which are extractable and used as chemical feed stocks or as raw material for various scientific investigations and industrial utilization. Many of the industrially and commercially used pharmaceuticals are products of secondary metabolism in microbial or plant systems. Eupatorium triplinerve Vahl. is an erect annual herb, grows up to 90 cm in height. Leaves simple, opposite, lanceolate, acuminate, glabrous, subsessile; flowers light blue, tubular coryms; fruits 5 sided truncated. The plant shows various medicinal properties against diseases viz. hemorrhage, hemoptysis, menorrhagia, wounds, edema, ulcers, stomatitis, cardiac debility, skin diseases, poison bites, cough, asthma, bronchitis and general debility etc. An attempt has been made to explore the free radical scavenging property of the leaf extract of the plant and isolate a novel compound responsible for it. The methanol extract of the Eupatorium triplinerve Vahl was assessed for antioxidant activity using a series of well-established assays such as In vitro DPPH radical scavenging activity, NO and the H2O2 scavenging and FRAP. The phytochemical analysis with different extraction solvents viz. methanol, petroleum ether and water produce significant findings. The total phenolic and flavonoid contents were estimated. The various antioxidant activities were compared with standard antioxidants such as BHT, Ascorbic acid. Since the ROS are the serious threat and produces ailments such as cancer; further studies are going on to observe cytotoxicity of the plant extract on the cancer line cell. The antioxidant property of the extract of E. triplinerve as observed in the present study might be useful for the development of newer and more potent antioxidants. The present abstract of E. triplinerve Vahl is an attempt to provide a direction for further research.

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Hepatoprotective activity of cassia auriculata (linn.).

Sheeba Malar AS[1], Revathi K[1], Anandhi D[2].

[1]Department of Zoology, Ethiraj College for Women, Chennai, India.

[2]Department of Biochemistry, DG Vaishnav College**,** Chennai, India.

Corresponding author email: **sivaanandhi11@yahoo.com**

From International Conference on Biosciences- Trends in Molecular Medicine.

Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Alcohol toxicity is one of the world's major health problems. Significant numbers of people are affected due to severe fatal diseases caused by alcohol consumption. Herbal medicines are traditionally used to help alcoholism and other addictions. Various species of Cassia are rich in anthroquinones and bioflavonoids which are hypocholesterolemic and hypolipidemic agents that maintain a balanced cholesterol ratio. A number of hepatotoxic agents cause accumulation of fatty acids deposits predominantly triglycerides in the liver. In the present study the accumulation of triglycerides in ethanol treated rat liver. It may be an imbalance between the rate of synthesis and the rate of release of triglycerides by the parenchyma cells of hepatocytes into the systemic circulation. Considering the enzyme alterations, the levels of cholesterol ester hydrolase, cholesterol ester synthase, Lecithin cholesterol acyltransferase and Lipoprotein lipase were found to be significantly increased in liver of rats treated with ethanol. Cholesterol esters have been reported to influence membrane permeability. Oral administration of Chrysophanol significantly altered the levels of cholesterol ester hydrolase, cholesterol ester synthase, and lecithin cholesterol acyltransferase and lipoprotein lipase near to control. The present investigation emphasizes the usefulness of C.auriculata in traditional medicine as a hepatoprotective activity Chrysophanol against ethanol induced hepatotoxicity.

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Anemia in four years old children of kattankulathur area.

Sudhagandhi B.
Department of Biochemistry, SRM Medical college Hospital and Research centre, SRM University, India.
Corresponding author email: sudhagandhi79@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Anemia is a serious concern for young children because it can result in impaired cognitive performance, behavioral and motor development, co-ordination, language development as well as increased morbidity from infectious disease.The aim of this study was to assess the prevalence of anemia and its relation to variables such as age, gender, weight, height, mother's education, total family numbers, Birth order, number of children in the family and socio economic factor in toddlers of Kattankulathur area. The study was approved by institutional ethics committee of SRM Medical college Hospital and Research centre. A total of 116 children in the age of 4 years were included in this study. Written informed consent was obtained from the parents or guardians of all child participants. The age of the children was recorded from the date of birth written in the vaccination card. The information regarding birth order of child, number of siblings, total family members, parents' education, employment and socioeconomic status was collected through an interview. Weight and Height of the children were taken for assessing their nutritional status. Blood hemoglobin levels of children were estimated by cyanmethemoglobin method, the blood sample obtained by finger prick method. WHO standards for this age group were used to define the presence and severity of Anemia.Data were analyzed by the statistical package SPSS version 17. Chi square was used and p value < 0.05 was considered as statistically significant. The prevalence of anemia was 63.8 %. The percentage of anemic children among male and female was 31.0 % and 32.7 % respectively. BMI, total family members, mothers' education and socio economic factor were important determinants of anemia. There was no significant relationship between anemia and birth order of child and number of siblings. The prevalence of anemia in the children was high 63.8 %. All the malnourished children should be screened for anemia.

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Evaluation of pharmacognostic, preliminary phytochemical and antimicrobial studies on Ruellia tuberosa L. (whole plant).

Arirudran B [1] , Saraswathy A[1], Krishnamurthy V[2]

[1]Captain Srinivasa Murti Drug Research Institute for Ayurveda (CCRAS), Anna Hospital Campus, Arumbakkam, Chennai, India.

[2]Department of Biochemistry, Bharathi Women's college, University of Madras, Chennai, India.

Corresponding author email: arirudran_1975@yahoo.com saraswathy20002004@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.

Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Ruellia tuberoa L. of Acanthaceae family is a Minnie root medicinal, tropical plant widely distributed in south East Asia. In folk medicine, it has been used as diuretic, antidiabetic, antipyretic, analgesic, anti-hypersensitive, thirst-quenching, and antidotal agent. Recently this plant has been incorporated as a component in an herbal drink in Taiwan. However a very few chemical constituents and pharmacological activities have been reported for this species. As there is no pharmacognostic work reported on whole plant, the present investigation attempts to study the pharmacognostical, preliminary phytochemical studies along with HPTLC, fingerprinting analysis and antimicrobial activity of successive extraction using n-hexane, chloroform, ethyl acetate, alcohol and separate aqueous extract from whole plant of Ruellia tuberosa L. against different bacterial and fungal organisms (ATCC, MTCC) using disc diffusion method. Preliminary organic analysis revealed the presence of tannin, flavonoid, steroid, triterpnoid and phenol in different extracts respectively. Physiochemical studies revealed that total ash is 13.53%, acid insoluble ash is 2.36%, alcohol soluble extractive value is 7.67%, water soluble extractive value is 24.78% and loss on drying at 105°C is 11.29%. The antimicrobial study revealed that the chloroform, ethyl acetate, alcohol and aqueous extracts were active against all the bacteria tested and showed significant antibacterial properties. The aqueous extract exhibited less activity against fungal organisms. These specific identities will be useful in identification, authentication of the raw drug and pharmacological activities associated with traditional folk remedy. Thus it may be informed that Ruellia tuberosa L. may be used to treat oral bacterial diseases.

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Insilico studies on the inhibitory effect of flavonoids on angiotensin converting enzyme activity.

Inbathamizh L.
Department of Biochemistry, Meenakshi College for women, Chennai, India.
Corresponding author email: inba66in@yahoo.com

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Angiotensin converting enzyme is an exopeptidase that participates in the body's renin-angiotensin system. By catalyzing the conversion of angiotensin I to angiotensin II and degradation of bradykinin, it results in vasoconstriction and hypertension. It is one of the key enzymes involved in cardiovascular, renal and diabetic disorders and thus can act as a potential drug target. Ligands that can block its activity can be applied for designing novel drugs. Flavonoids are polyphenolic secondary metabolites produced by plants. They are naturally available in vegetables and fruits. This study involves insilico interaction analysis of the drug target with flavonoid ligands obtained from vegetables. Computational Biology tools are harnessed for the structural analysis of the target, docking studies and toxicity prediction of the ligands. The results indicate that flavonoids seem to be natural, safe and potent inhibitors of Angiotensin converting enzyme and further facilitate the understanding of their probable mechanism and application in inhibitor based therapy.

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Green synthesis and applications of silver nanoparticles from medicinal plant.

Jancy Mary E, Inbathamizh L.
Department of Biochemistry, Meenakshi College for women, Chennai, India.
Corresponding author email: jmary138@gmail.com

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ABSTRACT

The environmental friendly synthesis of nanoparticles is a revolutionary step in the field of nanotechnology. In this study, the green synthesis of silver nanoparticles was carried out using rare medicinal plant leaf extract as reducing agent. UV–visible spectroscopy was used for quantification of silver nanoparticle synthesis. The synthesized silver nanoparticles were characterized with Scanning electron microscopy (SEM), Transmission electron microscopy analysis (TEM), X-ray Diffraction (XRD) and Fourier transform Infrared Spectroscopy (FTIR). The invitro antioxidant properties of the green synthesized silver nanoparticles were evaluated by various antioxidant assays. The findings of the present study suggested that the nanoparticle from this plant could be a potential natural source of antioxidants and could have greater importance as a therapeutic agent in preventing or slowing oxidative stress related degenerative diseases, such as cancer. The Anticancer effects of silver nanoparticles from the medicinal plant on HEP 2(Human Epithelium cells of laryngeal cancer) and normal Vero (Verda Reno) Cell lines were evaluated by MTT (3-(4,5-Dimethylthiazol-2-Yl)-2,5-Diphenyltetrazolium Bromide) assay. The greater activity of the nanoparticles on HEP 2 cell line suggested further application of these nanoparticles as anticancer agents.

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Bioremediation of lead and cadmium by tea waste.

Sreedevi P[1], Parameswari CS[2] .

[1] Deapartment of Biochemistry, Annai violet arts & Science College, Chennai, India.

[2] Department of Biochemistry, Bharathi Women's college, Chennai, India.

Corresponding author email: pdvdsa@yahoo.com

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ABSTRACT

Heavy metals released by a number of industrial processes are major pollutants in marine, ground, industrial and even treated waste waters. Conventional techniques have limitations and often are neither effective nor economical especially for the removal of heavy metals at low concentration. Therefore, there is need for the development of a low cost process to remove heavy metals economically. Biosorption is a process that utilizes biological materials as absorbents and several researchers have studied this method as an alternative technique to conventional methods for heavy metal removal from wastewaters. In this study, the efficiency of tea waste has been determined in the process of heavy metal removing from single metal ion solutions and mixed metal ion solutions. Metals of interest are lead and cadmium. They were chosen based on their industrial applications and potential pollution impact on the environment. The research is a bench scale experiment type and analyses have performed by using fixed amount of adsorbent in solution with four different concentrations (5 mg/L, 10 mg/L, 15 mg/L and 30 mg /L) of each metal and also in a mixed combination. Since the pH plays a major role in adsorption, it should be maintained at 4.5 throughout the experiment. Result indicates the removal efficiency is highest for lead than for cadmium. The adsorption data fit well with the Langmuir isotherm model. The maximum adsorption capacity calculated from the Langmuir isotherm for 28.51 mg/L and for cadmium is 24.1 mg/L individually whereas in combination for lead is 28.37 mg/L and for cadmium is 27.27 mg/L. Though tea waste could adsorb 80 ± 2 % cadmium in single metal ion solution, but its adsorption of cadmium get increased to 90 ± 2 % in mixed metal ion solution. This indicates that lead act as the stimulator for cadmium adsorption. Comprehensive parameters indicate tea waste to be excellent parameters for biosorption of lead and cadmium to treat wastewaters containing low concentration of metals.

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Nephroprotective effect of Tribulus terrestris on gentamicin induced kidney damage

Mercy Jasmine J[1] , G. Pramod Reddy G[2].

[1]Institute of Bio-chemistry, Madras Medical College, Chennai, India.

[2]Department of Pharmacology, Siddha Central Research Institute, Chennai, India.

Corresponding author email: jasmine.mercy@gmail.com

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ABSTRACT

Tribulus terrestris is a perennial plant, found predominantly in India and Africa. *T. terrestris* has been widely used in the Ayurveda system of medicine for treatment of various ailments. This study is proposed to investigate the nephroprotective effect of *Tribulus terrestris* on gentamicin induced kidney damage in rats. The kidney damage was induced by the i.m injection of Gentamicin at 80 mg/kg from 6th day onwards in Groups II, III, and IV. Group I and II were kept as normal (Saline) and nephrotoxic respectively. Group III and IV were treated with *Tribulus terrestris* at 300 mg/kg and 500 mg/kg of body weight in oral route respectively, for 10 days. The blood samples were collected and estimated for Creatinine, Blood urea nitrogen (BUN), Uric acid, Total protein, Albumin and Globulin. The kidneys were collected, weighed and processed for histopathology. In the Group III ($P < 0.05$) and Group IV ($P<0.02$) there was a significant reduction in the BUN, Creatinine, Uric acid, Total Protein, Albumin and Globulin levels as compared to that of Group I and II. In the sections of the kidney obtained, there was a mild degree of damage in Group IV (+), followed by Group III (++) as compared to damage in Group II (+++).There was no damage in the sections obtained from Group I, which was normal control. From the results obtained it can be concluded that the alcoholic extract of *Tribulus terrestris* showed a significant decrease in the levels of Non-Protein Nitrogen compound levels and Protein levels probably due to its antioxidant property, thus it may be an effective nephroprotector.

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Antioxidant activities of some selected seaweeds from tuticorin coast.

Parthiban C, Anantharaman P, Balasubramanian T.
CAS in Marine Biology, Annamalai University, Parangipettai, India.
Corresponding author email: panantharaman@gmail.com

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ABSTRACT

The antioxidant potential of the acetone and ethanol extract of six seaweeds collected from Tuticorin coast were determined using total antioxidant capacity, DPPH radical scavenging activity, hydrogen peroxide radical scavenging assay and ferric reducing power. The acetone (16.375±0.44 mg gallic acid equivalents/g) and ethanolic extract (12.84±0.39 mg gallic acid equivalents/g) of brown seaweed Dictyota dichotoma showed higher phenolic content than all the seaweeds used in this experiment. Higher antioxidant activity (232.76±3.80 mg ascorbic acid/g) was observed in acetone extract of D. dichotoma and Turbinaria ornata (231.70±2.64 mg ascorbic acid/g) followed by ethanolic extract of T. ornata (165.42±1.34 mg ascorbic acid/g). The higher DPPH radical scavenging activity was observed in the acetone extracts of D. dichotoma (57.153±1.87%) and T. ornata (52.071±1.05%). In the present study, the extracts from Dictyota dichotoma were found to possess strong antioxidant activity. The antioxidant mechanisms of seaweed extracts may be attributed to their free radical-scavenging ability. In addition, phenolic compounds appear to be responsible for the antioxidant activity of seaweed extracts. On the basis of the results obtained, seaweeds can be used for a variety of beneficial chemo-preventive effects. However, further studies on the antioxidative components of seaweed extracts and more in vivo evidence are required.

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Comparative study of chemoprevention of food factors of Solanum torvum on mcf-7- human mammary gland breast adenocarcinoma cell lines with antimitotic activity using allium cepa root meristamatic cells.

Thenmozhi A.
PG Department of Biochemistry, SRM Arts and Science College, Chennai, India.
Corresponding author email: jayashreethen@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

A major focus of the present work has been to identify the targets of natural non-toxic chemopreventive compounds present in herb what we commonly eat. These compounds have potent anticancer effects that work through unknown mechanism. The present work proposes that the food factors to be an effective chemopreventive agent, it must influence a valid cellular or molecular target. The antimitotic activity was screened using Allium cepa root meristamatic cells, which are having similar cell division like that of cancer cell division in human. Experiments were carried out with incorporation of folic acid in the extract. Folic acid inhibited the antimitotic activity of S.torvum extract. The studies were extended to human cells using MCF-7 Human mammary gland breast adenocarcinoma cell lines. The results obtained were compared with methotrexate- a known anticancer drug. S.torvum extract is effective against A.cepa root cells by inhibiting microtubule formation. Thus it is possible that food factors that affect plant chromosome also affect animals and human cells. Extracts of S.torvum was found to be extremely effective in the chemoprevention of the mammary gland breast adenocarcinoma cell lines. The excellent antimitotic and chemopreventive activities of S.torvum was due to its potential food factors, such as poly phenols steroidal saponin glycoside, alkaloids and flavonoids. Active principle sterol has been separated by TLC. Consumption of a diet rich in food factors which have an anti-cancer or chemopreventive effect in humans remains to be determined. One of the major challenges in conquering cancer is in the area of translational research which will help the scientist for moving promising compounds from the bench to the clinic are in near future..

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Construction of marine compound library.

Avila Pauline L.
Department of Bioinformatics, KG College of Arts and Science, Coimbatore, India.
Corresponding author email: avila_pauline@yahoo.co.in

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The Computer-aided drug design technologies appeared poised to deliver diverse lead compounds for any biological target. Specifically, the present study targeted the marine compound and their analogs through Computer-aided drug design method and led to the discovery of marine compound library.The marine pharmacy currently holds more than 35,054 marine-derived biological samples. The existing Marine Compounds were collected from Pubchem. To ensure a clean dataset for the Computer Aided Drug Design work, a combination of Schrodinger's LigPrep, QikProp, Premin and Macromodel packages are used to prepare the input file. LigPrep is used to generate accurate 3D molecular structures including tautomeric, stereochemical, and ionization variations, as well as energy minimization and flexible filters to generate fully customized ligand libraries that are optimized for further computational analysis.The generated structures were filtered using QikProp. QikProp is a quick, accurate and easy-to-use absorption, distribution, metabolism and excretion (ADME) prediction program designed by Professor William L. Jorgensen. Using QikProp the widest variety of pharmaceutically relevant properties namely octanol / water and water / gas log P, log S, log BB, overall CNS activity, CaCo2 and MDCK cell permeability's, human oral absorption, log Khsa for human serum albumin binding and log IC50 for HERG K+ Channel blockage were predicted for the above filtered molecules. In addition to predicting molecular properties, QikProp provides ranges for comparing a particular molecule's properties with those of 95% of known drugs. Virtual screening is increasingly gaining acceptance in the pharmaceutical industry as a cost effective and timely strategy for analyzing very large chemical datasets and Maestro Packages offers the full spectrum of speed and accuracy from high-throughput virtual screening of millions of compounds to extremely accurate binding mode predictions, providing consistently high enrichment at every level. In this study, we collected the Marine Compound from Pubchem database. A Marine Compound Library with optimized structure are generated by LigPrep, for the above collected Compounds. The ADME property also calculated for the generated compounds using QikProp.The success of these studies in identifying compounds with enhanced biological properties underscores the continuing importance of Marine Compounds as starting points for chemical biology and drug discovery efforts through rational molecular design and chemical synthesis.

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Bio markers in saliva of Type I diabetes mellitus for diagnostic and prognostic significance.

Priyadarshini B [1], Uma R [2].

[1]Department of Biochemistry, Annamalai University, Chidambaram, India.

[2]Department of Biochemistry, D.G. Vaishnav College, Arumbakkam, Chennai, India

Corresponding author email: sivaa1@yahoo.co.uk

From International Conference on Biosciences- Trends in Molecular Medicine.

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ABSTRACT

Salivary biomarkers of Type I Diabetes mellitus in the twenty clinically confirmed type 1 diabetic patients were compared with age matched normal healthy subjects. Salivary and plasma levels of glucose and protein were estimated. Lipid peroxide levels (LPO), glutathione, antioxidant enzymes such as glutathione peroxide, catalase and non enzymic antioxidants such as cerruloplasmin, vitamin E and C were estimated in the saliva. Glucose levels in serum and saliva were increased in the diabetic subjects whereas protein a level does not show any changes. Salivary LPO levels were significantly increased whereas glutathione level was decreased in the diabetic subjects. Cerruloplasmin, vitamin C levels & catalase activity does not show any changes in the diabetic subjects when compared with normal counterparts. Vitamin E & glutathione peroxidase was significantly decreased in diabetic subjects when compared with normal subjects. Interpretation & Conclusion: The study concluded that salivary glucose & LPO was increased, enzymatic and non-enzymatic antioxidant levels were decreased in the saliva of Type I Diabetes mellitus, suggesting that saliva (biological fluid) may be used as biomarker, to overcome the patients “fear of pain” associated with the frequent long term monitoring& management of Type I Diabetes mellitus.

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Comparitive study of antimicrobial activity of acetone, ethyl acetate, methanol and aqueous extracts of Calotropis gigantea L.

Hemalatha M.
PG Department of Biochemistry, SRM Arts and Science College, Chennai, India
Corresponding author email: hemalatha_kartheesh@yahoo.co.in

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry , Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The present work is focused to compare the antimicrobial activity of ***Calotropis gigantea*** Different extracts using acetone, ethyl acetate, methanol and aqueous solvents are prepared from the plant part leaf. Disc diffusion method is used to find the antibacterial and antifungal activity. The acetone, ethyl acetate, methanol and aqueous extracts showed excellent activity against all the selected organisms and showed significant antibacterial properties. The methanol, acetone, ethyl acetate and aqueous extracts exhibited less activity against fungal organisms. Thus ***Calotropis gigantea*** **L.** may be exploited in the treatment of microbial diseases.

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Antimicrobial activity of the leaf extract of Senna occidentalis.

Janaky S, Sivasankari K, Sekar T.
PG Research Department of botany, Pachaiyappa's College, Chennai, India
Corresponding author email: janukris@gmail.com

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ABSTRACT

The increase in resistance to existing antimicrobial agents, herbal drugs are being looked as an imperative source for discovery of new agents for treating various diseases related to bacterial infections. S.occidentalis has been used as traditional medicine in Asia and found to possess wide range of pharmacological behaviors. The aim of the study is to evaluate the effects of S.occidentalis leaf extracts on the growth of various pathogenic microorganisms based on the inhibition zone using disc diffusion assay, minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) values. In this, the aqueous leaf extract of S.occidentalis had antimicrobial effect against the test microorganisms when compared with other solvents like petroleum ether, methanol and ethanol.

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Mutation and insilico analysis of myoc gene (myocilin) with phytochemical activity.

Prabhakaran B.
Medical Coder, DELL, Chennai, India.
Corresponding author email: prabhakrn254@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.
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ABSTRACT

Glaucoma is a disease of major sense of vision which permanently impact vision. This was mainly caused by elevated IOP. This work is done to analyze the mutational (in protein level) analysis of aqueous humor sample from glaucoma patient .Estimation of protein was done from the sample and with SDS PAGE mutated myocilin protein was observed. Compuational analysis was done for MYOC gene (myocilin) using Protparam, Automated server mode. Mutation was observed in many of the aminoacids like Trp,Thr,Ser,Ala,Ile which was encoded by myogene. This gene will mutate myocilin protein mutation analysis was done by SWISS Pdv tool. Foeniculum vulgare, Coleus amobinicus plants were found to reduce elevated IOP level and treat glaucoma. The work can be extended by working on Trabecular meshwork cell culture or animal model and by proving the plant drug.

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Protective effect of quercitrin on lipids, lipoproteins and glycoproteins in streptozotocin-induced diabetic rats.

Babujanarthanam R[1] , Kavitha P[1], Mahadeva Rao US [2].

[1]Department of Biochemistry, K.M.G.College of Arts and Science, Gudiyattam, India.

[2]Faculty of Medicine and Health Science, Universiti Sultan Zainal Abidin, Malaysia.

Corresponding author email: prabhakrn254@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.

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ABSTRACT

The protective role of qurecitrin on lipids, lipoproteins, and glycoproteins in streptozotocin-induced diabetic rats has been studied. A single intraperitoneal injection of streptozotocin (50 mg kg—) to rats led to a significant ($P < 0.05$) increase in the levels of lipids (cholesterol, triglycerides, free fatty acids and phospholipids) in plasma and tissues (liver and kidney). The levels of low density and very low density lipoprotein (LDL and VLDL, respectively) cholesterol were increased, whereas the levels of high density lipoprotein (HDL) cholesterol were decreased significantly ($P < 0.05$) in plasma. Streptozotocin injection also increased the levels of glycoproteins such as hexose, hexosamine, fucose and sialic acid in plasma, liver and kidney. Oral administration of quercitrin to streptozotocin-induced diabetic rats significantly ($P < 0.05$) decreased the levels of lipids in plasma and tissues. The levels of plasma HDL-cholesterol increased and the levels of LDL- and VLDL-cholesterol decreased significantly ($P < 0.05$). The levels of glycoproteins were found to be significantly ($P < 0.05$) decreased in plasma, liver and kidney of quercitrin-treated diabetic rats. Quercitrin administration to normal rats did not exhibit any significant ($P < 0.05$) changes in any of the parameters studied. In conclusion, the beneficial effect of quercitrin on lipids, lipoproteins, and glycoproteins could be due to its antioxidant property.

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Role of sirtuin proteins in metabolic regulation.

Nireesha Gundakaram, Srinivasan PT.
Department of Biochemistry, D.G.Vaishnav College,Chennai, India.
Corresponding author email: nireesha4u@yahoo.com

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ABSTRACT

The sirtuins are a highly conserved family of NAD1-dependent enzymes that regulate lifespan in lower organisms. Recently,the mammalian sirtuins have been connected to an ever widening circle of activities that encompass cellular stress resistance, genomic stability, tumorigenesis and energy metabolism. Here we review the recent progress in sirtuin biology, the role these proteins have in various age-related diseases and the tantalizing notion that the activity of this family of enzymes somehow regulates how long we live. Sirtuins in metabolic regulation in mammals include, blood glucose concentration is maintained within a narrow range under a variety of physiological conditions. During starvation, maintenance of serum glucose is achieved in part by implementing a program of hepatic gluconeogenesis. Increasing evidence suggests an important role for sirtuins in this physiological adaptation. The peroxisome proliferator-activated receptor gammacoactivator-1a (PGC-1a) is a known target of SIRT1-dependent deacetylation, and this coactivator also plays a fundamental part in regulating gluconeogenesis and fatty acid oxidation pathways within the liver. The ability of PGC-1a to modulate these latter two pathways appears to require SIRT1. Recently, distinct roles for protein acetylation and SIRT1-dependent deacetylation have been shown to regulate the hepatic response to both short term (,6 h) and long term (.18 h) fasting. In this case, the opposing actions of SIRT1 and the p300/CBP acetyltransferase choreograph hepatic glucose production in the setting of nutrient stress. Finally,the observation that SIRT6-deficient mice demonstrate severe hypoglycaemia suggests a potential role for other sirtuins in glucose production and homeostasis Although the role of sirtuins in regulating metabolism has centred on key metabolic organs, such as liver and pancreas, early studies in human subjects undergoing voluntary caloric restriction suggest that levels of SIRT1 rise in tissues as diverse as skeletal muscle and circulating mononuclear cells. The role of sirtuins in the metabolic adaptation of these cell types is largely unexplored. The intriguing connection between SIRT1 and circadian rhythms provides a glimpse. The observation that SIRT1 can directly deacetylate core components of the circadian clock machinery is particularly fascinating, as the ultimate goal of such rhythms is to coordinate the sleep-wake cycle of an organism with environmental cues, including coordinating and matching intracellular metabolism to external food availability.

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Evaluation of bioactive compound and free radicals scavenging activity of Strychnos Potatorum Linn.

Vijayakumar V[1], Hindhumathy CK[2].

[1]Department of Pharmaceutical Chemistry, Vinayaka Missions college of Pharmacy, Salem, India

[2]Department of Biotechnology, V.M.K.V. Engineering College, Vinayaka Missions University, Salem, India.

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ABSTRACT

The plants that possess therapeutic properties are exerting beneficial pharmacological effects on the animal body are generally designated as medicinal plants. The plant derived products such as flavonoids, terpenoids and steroids have received considerable attention in recent years due to their diverse pharmacological properties. Recently, medicinal plants constitute and important “National Resource” throughout the world. India is one of the richest plant based ethno medical traditions in the world. Most of the plants are known to possess some principles in their extracts, which have an inhibitory action towards pathogens and to treat many degenerative diseases. Numerous plant constituents have proven to show free radical scavenging or antioxidants activity. In the present study Strychnos potatorum Linn. It is a member of Loganiaceae (Strychnaceae) is herbal medicinal plant , popularly known as Nirmali, is known to act as antiarthritis, antidiabetes, and antihypercholesterolemic activity , hepatoprotective and antiulcer etc. The studies carried to understand the phytochemical constituents and free radical scavenging (antioxidant) properties of Strychnos potatorum Linn., which were assessed by the hydroalcoholic extracts of leaf and seed The preliminary photochemical investigation carried out to in the hydroalcoholic leaf and seed extracts of the plant revealed the presence of alkaloids, flavonoids, phenols, glycosides, steroids, tannins and saponins and the absence of resins. The antioxidant activity was analyzed by DPPH, LPO, H2O2 and nitric oxide radical scavenging assay. Showed that leaf and seed possess the bioactive compounds and excellent antioxidant activity.

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Optimization studies of expression of human sg1 gene.

Lakshmi, Hindumathy CK.
Department of Biotechnology Vinayaka Mission University, Salem, India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.
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ABSTRACT

Biopharmaceutical drugs are mainly recombinant proteins produced by biotechnological tools. The patents of many biopharmaceuticals have expired and bio similar is thus currently being developed. Human SG1 is a hematopoitic cytokine that acts on cells of the neutrophil lineage causing proliferation and differentiation of committed precursor cells and activation of mature neutrophils . Recombinant human SG1 has been produced inb genetically engineered Escherichia coli and successfully used to treat cancer patients suffering from chemotherapy – induced neutropenia. Human SG1 is a 175 a. a. protein containing an extra N- terminal methionine, which is needed for expression in E.Coli. Here we have done the optimization conditions for better production of Human SG1 in a simple and low cost process i.e amenable to scaling up for the production and purification of homogenous and active recombinant human SG1 expressed in E.Coli cells. The “Optimization Studies of Expression of Human SG1 Gene” The Protein shows good Expression in TB media . LB and TB media used for the comparison of the Expression of the Protein. Its shows some variations. i.e In Un induced samples also shows a protein band at 18.6 KD of the protein in TB media, it might be due to leaky expression of the protein by lac uv5promotor and other host cell proteins also more in TB induced medium Because it contains rich nutrients when compared to LB media.The recombinant Human SG1 expression was successfully optimized with Different cell densities (OD’s) and Temperature conditions in two different media, a distinct induced protein band was seen on 12% SDS PAGE Gel with 0.2 and 0.5 mM inducer (IPTG) concentration at 18.6KDa. Hence, this Human SG1 protein will be used for further physiochemical, Immunological and biological analysis (characterization studies.) and finally will useful to develop therapeutic bioproducts.

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Pesticide (chlorpyrifos) degradation by strains isolated from contaminated soil.

Gayathri V, Hindumathy CK .
Department of Biotechnology Vinayaka Mission University, Salem, India.
Corresponding author email: Hindumathyck@rediffmail.com

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ABSTRACT

Today's modern agriculture produces plentiful food, at a reasonable price, all year round. Most of us take it for granted that we can buy whatever food we want, whenever we want. We rightly expect our food to be safe and nutritious and we have also become used to food, particularly fruit and vegetables, not having any blemishes or other marks. We don't tend to think about how farmer's produce food or how it gets from the farm to the shops in "perfect" condition. Over the last 60 years farmers and growers have changed the way they produce food in order to meet the expectations of consumers, supermarkets and governments. In doing so they have made many changes to the way they farm. This often includes the use of "Pesticides". Farmers use pesticides to protect crops from insect pests, weeds, and fungal diseases while they are growing, to prevent rats, flies, and other insects from contaminating foods while they are being stored and also to safeguard human health, by stopping food crops being contaminated by fungi. However pesticides used to kill unwanted pests, moulds, and weeds, they can also harm people, wildlife and environment. One drawback to this is that pesticides generally kill not only the pest of concern, but also a wide range of other organisms, including beneficial insects and other pest predators. Another drawback to the increasing pesticide consumption use is the development of resistance in pest species. The individual pests that survive pesticide applications continue to breed, gradually producing a population with greater tolerance to the chemicals applied. Keeping the above effect the study was carried out on biological dissipation of pesticide in the Chlorpyrifos contaminated soil. In the present study, the effect of pesticide (Chlorpyrifos) on Rhizospheric soil and Non – Rhizospheric soil of two plants marigold and Canna has been investigated. Further, microorganisms have been isolated from Rhizospheric and Non – Rhizospheric soil, characterized and their pesticide degradation ability was investigated. Most of bio process materials have been taken and analyzed for microbial composition. The efficiency of microbial consortium obtained from each of this bio process material for chlorpyrifos degradation has been studied. Theresult indicates that presence of glucose supports more biomass, which in turn brings about higher degradation and dissipation of pesticide. Maximum 84.5% dissipation was observed through bacterial isolate in presence of glucose as compared to 73.3% dissipation in absence of glucose. In case of fungal isolate 76% dissipation occurred in presence

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of glucose and only 58% was dissipated in absence of glucose. Both the isolates showed resistance to chlorpyrifos at 10 ppm concentration and also brought about significant dissipation of this pesticide. Therefore, these isolated could be potential candidates for microbe mediated bioremediation of chlorpyrifos contaminated soils.

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Evaluation of lipid peroxidation and antioxidant status in saliva of oral cancer –a case control study.

Meenakshi Sundari S[1], Revathee R[2], Uma R[3].

[1]Dept of Biochemistry, Bharathidasan University , Trichy, India.

[2]Dept of Biochemistry, Prist University , Tanjore, India.

[3]Dept of Biochemistry, D.G. Vaishnav College, Arumbakkam, Chennai, India.

Corresponding author email: meenmalar@gmail.com

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The objective of the present study was to evaluate the magnitude of oxidative stress and antioxidant involvement in Oral cancer. Twenty normal healthy subjects in the age group 40 - 60 years served as control (group I) and clinically confirmed patients of Oral cancer of the same age served as (group II) subjects. The following biochemical parameters which includes Lipid peroxides, Glutathione & Protein were assayed in saliva. Antioxidant enzymes which includes Glutathione peroxidase and Catalase, non-enzymatic antioxidants such as Ceruloplasmin, Vitamin E & C were determined in saliva. Significantly low levels of Salivary antioxidants such as Ceruloplasmin, and Vitamin E & C were observed in group II subjects when compared to those of controls ($p<0.001$). However, lipid peroxidation levels was higher & the Protein level was significantly decreased in oral cancer ($p<0.001$).Glutathione peroxidase was significantly decreased in group II when compared to healthy controls ($p<0.01$).Catalase activity does not show significant changes in group II subjects. The findings suggest that oxidative stress altered salivary composition in oral cancer subjects there by, reducing enzymatic and non-enzymatic antioxidants. The study concludes that the above mentioned parameters would be good bio indicators for diagnosis and prognosis of Oral cancer in saliva which are sensitive, accurate & cost effective

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Aeromycometric investigation of vellore corporation, Tamilnadu .

Udaya Prakash NK [1], Aishwariya S[2], Kotteshwari J2, Priya Tharshini P[2], Saraswathi NC[2], Bhuvaneswari Udaya Prakash S[3].
[1]Research and Development, Veltech Dr. RR Dr. SR Technical University Avadi, India.
[2] Department of Biotechnology, Veltech Hightech Dr. RR Dr. SR Engineering College, Avadi Alamathy Road, Chennai, India.
[3]R & D, MARINA LABS, 40, Anna Nedum Pathai, Choolaimedu, Chennai, India.
Corresponding author email: nkudayaprakash@gmail.com

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ABSTRACT

The air we inhale is heavily infested with a wide variety of biological particles in addition to organic substances such as gases, dust and smoke. Airborne fungal spores are one among the biological particles known to be responsible for causing respiratory disorders, in addition to pathogenesis and toxigenesis. This study focus on the presence of Aeromycoflora in the atmosphere over Vellore Corporation, TN. The study on the presence of atmospheric fungi of Chennai, Salem, Madurai, Trichy and Tiruvannamalai belonging to state of Tamil Nadu was previously studied by earlier workers. However, Vellore being a corporation of Tamil Nadu is not studied for its atmospheric presence of fungi so far. Hence, to know the nature of fungi, their no. of presence and their frequency of occurrence the aeromycometric investigation on Vellore Corporation of Tamil Nadu is probed. The study was conducted using the exposure of Petridishes containing Potato Dextrose Agar (PDA). The petridishes were exposed using Andersen Single Stage Sampler (Aerotech Samplers, Inc. Phoenix, AZ, USA). Altogether a total of 19 samples were taken within the limit of Vellore Corporation. The Sampler was operated at the sucking rate of 20 LPM of Air for 5 minutes. The exposed petridish were incubated at room temperature and growing colonies were identified. A total of 28 species belonging to 13 genera were recorded from the atmosphere of Vellore. Among the genera, the genus, *Aspergillus* was represented by maximum no. of species (10) followed by *Penicillium* (3 species). The following genera, *Cladosporium, Curvularia, Fusarium* and *Trichoderma* were represented by couple of species and all other genera recorded single species each. The details on the colony forming units (CFU) recorded per cubic meter, the percentage contribution, their frequency occurrence and the diversity of fungi will be discussed.

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Effect of ethanolic extract of musa paradisiaca flowers on the key enzymes of carbohydrate metabolism studied in stz induced experimental diabetes in rats.

Shanmuga Sundaram C, Subramanian S.
Department of Biochemistry, University of Madras, Guindy Campus, Chennai, India.
Corresponding author email: subbus2020@yahoo.co.in

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ABSTRACT

Diabetes mellitus is a metabolic disorder characterized by disturbances in the carbohydrate, protein and lipid metabolism. Though drugs are plenty for the treatment of diabetes, none is found to be ideal due to undesirable side effects. Hence search for novel drugs, especially from plant origin continues. Based on folkloric use, the present study was designed to evaluate the antidiabetic potential of ethanolic extract of the nonfunctional male part of Musa paradisiaca flower (MPF) in STZ-induced experimental diabetes in rats. Qualitative analysis of the extract indicated the presence of biologically active ingredients such as flavonoids and saponins in the MPF extract. Acute toxicity studies revealed the non-toxic nature of MPF extract. Oral treatment of MPF extract (200 mg/kg body weight) to diabetic rats for 30 days established a significant decline in blood glucose and glycosylated hemoglobin levels and a significant increase in plasma insulin level. The altered activities of key enzymes of carbohydrate metabolism such as hexokinase, pyruvate kinase, lactate dehydrogenase, glucose-6-phosphatase, fructose-1, 6-bisphosphatase, glucose-6-phosphate dehydrogenase, glycogen synthase and glycogen phosphorylase in liver and kidney tissues of diabetic rats were significantly reverted to near normalcy by the administration of MPF extract. Thus, MPF extract regulates carbohydrate metabolism by modulating the key regulatory enzymes in the hepatic and renal tissues of diabetic rats. Separation, isolation and identification of the individual components from the extract are under progress.

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Propolis - an unique source of flavonoids.

Iyyam Pillai S, Kandaswamy M.
Department of Inorganic Chemistry, School of Chemical Sciences, University of Madras, Guindy campus,Chennai, India.

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ABSTRACT

Propolis, also known as “Bee glue” is a resinous material collected by honeybees from aerial plant parts. It is used by the bees for construction of hives and to prevent the spreading of microbial contamination as well as embalming dead insects that enter the hives. Propolis has been used in the traditional medicine for the treatment of ulcers, wounds and tumours. Previous reports indicate the presence of more than 300 compounds in propolis. Recently, we have reported the antiulcerogenic and wound healing properties of ethanolic extract of Indian propolis in experimental animal model. The present study was aimed to analyze the presence of pharmacologically active flavonoids in Indian propolis. The ethanolic extract was found to contain relatively more number of flavonoids than the aqueous extract. Several flavonoids with known pharmacological activities have been found to be present in the ethanolic extract. The presence of individual flavonoids was confirmed using reference samples of known spectral data.

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Antidiabetic and antioxidant nature of Pithocellobium dulce fruits studied in STZ induced experimental diabetes in rats.

Pradeepa S, Kaviyarasan V.
CAS in Botany, University of Madras, Guindy campus, Chennai, India.

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ABSTRACT

Pithocellobium dulce (Roxb) Benth is a tropical tree distributed through out the tropics. The plant is known for its unique edible fruits. The fruits of *Pithocellobium dulce* are widely used in traditional medicine for various ailments including ear ache, leprosy, ulcer and other gastro intestinal disorders. The edible part of the fruits is reported to contain various biologically active ingredients of known pharmacological actions. The present study was aimed to evaluate the hypoglycemic and antioxidant potential of fruit extract in STZ induced experimental diabetic rats. Phytochemical analysis revealed the presence of alkaloids, flavonoids, carbohydrates, glycosides, saponins, phytosterols, triterpenoids, proteins and aminoacids. Oral administration of *Pithocellobium dulce* fruit extract (300 mg/kg body weight) for a period of 30 days significantly reduced the levels of blood glucose, glycosylated hemoglobin, urea, creatinine and improved the antioxidant status in the plasma of diabetic rats with a concomitant decrease in lipid peroxidative products. The observed antidiabetic and antioxidant activity of the extract might be due to the presence of biologically active phytoconstituents such as flavonoids and saponins in the edible part of the fruits.

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Fisetin improves pancreatic beta-cell function by ameliorating oxidative stress in streptozotocin induced experimental diabetes in rats.

Sriram Prasath G, Subramanian S.
Department of Biochemistry, University of Madras, Guindy Campus, Chennai, India.
Corresponding author email: subbus2020@yahoo.co.in

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ABSTRACT

Hyper physiological burden of free radicals causes imbalance in homeostatic phenomena between oxidants and antioxidants in the body. Oxidative stress is an imbalance between the generation of reactive oxygen species and antioxidant defense capacity of the body and is closely associated with aging and a number of diseases including cancer, cardiovascular diseases and diabetes complications. The sensitivity of pancreatic β-cells to oxidative stress has been attributed to their low levels of antioxidants compared with other tissues. Fisetin (3, 3', 4, 7 tetrahydroxyflavone), a bioflavonoid was examined for its antioxidant potential in plasma and pancreatic tissues of streptozotocin (STZ)-induced diabetic rats. Diabetes was induced in experimental rats by a single intraperitoneal injection of STZ (50 mg/kg). The levels of fasting plasma glucose and insulin were estimated. The levels of lipid peroxidative products and antioxidants were estimated in plasma and pancreas. A significant increase in the levels of fasting plasma glucose and lipid peroxidative products and a significant decrease in plasma insulin, enzymatic antioxidants, and nonenzymatic antioxidants in plasma and pancreas of the diabetic rats were observed. Oral administration of fisetin (10 mg/kg) for a period of 30 days significantly decreased fasting plasma glucose, increased insulin levels, and improved the antioxidant status in diabetic rats. Histopathological studies of the pancreas revealed the tissue protective role of fisetin. Thus, the present study clearly illustrate that fisetin possess potent antioxidant effect in STZ induced diabetic rats.

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Gossypin, a flavonol glucoside recuperates pancreatic beta cell function by attenuating hyperglycemia mediated oxidative stress and inflammatory responses in streptozotocin – induced experimental diabetes in rats.

Thamizhiniyan V, Subramanian S.

Department of Biochemistry, University of Madras, Guindy Campus, Chennai, India.

Corresponding author email: subbus2020@yahoo.co.in

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ABSTRACT

There is considerable evidence that chronic oxidative stress plays a crucial role in the progression of pancreatic beta cell dysfunction in diabetes mellitus. The present study was aimed to investigate role of gossypin, 3,3',4',5,7 pentahydroxy flavonol glucoside, on persistent high glucose mediated oxidative stress induced pancreatic beta cell dysfunction in streptozotocin – induced diabetic rats. Oral administration of gossypin to diabetic rats significantly improved the enzymatic and non enzymatic antioxidants in pancreatic tissues. The plasma non enzymatic antioxidants, oxidative stress markers and nitric oxide, inflammatory cytokines were also significantly reverted upon treatment with gossypin. The reduced insulin content in pancreas was significantly improved in the experimental diabetic rats treated with gossypin. In addition, the histological and ultrastructural observations demonstrate the possible role for gossypin in the protection of pancreatic beta cells.

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Synthesis and characterization of zinc-3 hydroxy flavone, and evaluation of its antidiabetic efficacy in streptozotocin induced diabetic rats

Vijayaraghavan K, Subramanian S.
Department of Biochemistry, University of Madras, Guindy Campus, Chennai, India.
Corresponding author email: subbus2020@yahoo.co.in

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ABSTRACT

The use of metals in therapeutic drugs becomes increasingly important over the last couple of decades resulting in a variety of exciting and valuable metallopharmaceutical drugs. Zinc is essential in the physiology of insulin and has prominent roles in the structural and functional aspects of insulin. Though zinc, mimics most of the actions of insulin, zinc complexes so far tested for their antidiabetic potential exerts significant toxicity. Flavonoids are known for their wide range of beneficial effects on human health especially in quenching oxidative stress, and preventing secondary complications. Hence, the development of zinc complexes with various ligands in order to reduce the toxicity of zinc continues. In the present study, we have designed and synthesized a novel zinc complex using 3-hydroxy flavone (flavonol) as an organic ligand. The metallo-complex was characterized by spectral studies and antidiabetic potential was evaluated in streptozotocin induced experimental diabetes in rats. The spectral data provides information that complexation involves the binding of zinc ion with α hydroxyl keto group of the 3-hydroxy flavone (flavonol). Acute toxicity and dosage fixation studies revealed that the Zn-flavonol complex is non toxic and oral administration of the complex at a concentration of 5 mg/kg b.w/rat/day for 30 days to STZ induced diabetic rats showed significant reduction in blood glucose, glycosylated hemoglobin (HbA1c), urea, uric acid and creatinine with concomitant improvement in plasma insulin and C-peptide levels. The reduced activities of serum AST, ALT and ALP in the diabetic rats treated with the complex revealed the non-toxic nature of the zinc-flavonol complex.

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Green synthesis of silver nanoparticles and its activity against drug resistant bacterial isolates.

Meena N [1],Jeya M, Arumugam[2], Kasi M[3]
[1] Department of Microbiology Chettinad Hospital and Research Institute, Chennai, India
[2] Centre for advanced studies, University of Madras, Chennai, India
[3]Armats Biotech Private Ltd., Chennai, India

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ABSTRACT

Plant mediated synthesis of silver nanoparticles is an increasing commercial demand in medicine due to its inhibitory activity on microbes. The emergence of multidrug resistant organisms raises the problem of untreated bacterial infections. To overcome the problem of antibiotic resistance use of silver nanoparticles synthesized from plants could be an alternate for therapeutic purpose. To determine the antibacterial potential of silver nanoparticles(AgNPs), synthesized from leaf extract against various drug resistant clinical isolates and to compare the antibacterial activity of AgNPs with that of crude methanolic leaf extract of L.tetraphylla. Silver nanoparticles were synthesized by a simple procedure using leaf extract as the reducing agent.The nature of AgNPs were analysed by UV-Vis spectroscopy.X-ray diffraction and Scanning Electron Microscopy(SEM).Bacteriological tests were performed in Muller Hinton Agar medium by well diffusion method to compare the antibacterial potential of synthesized AgNPs with that of crude methanolic leaf extract. The synthesized silver nanoparticles(AgNPs) from aqueous leaf extract with an an average size of 30nm was spherical in nature and polydispersed. The AgNPs synthesized at 30-50µg significantly inhibited bacterial growth against Methicillin resistant Staphylococcus aureus(MRSA),Extended spectrum beta lactamase producing Escherichia coli, Metallo bata lactamase producing Pseudomonas aeruginosa and Acinetobacter species.The crude methanolic leaf extract inhibited the growth of only ESBL E.coli at 1mg. The silver nanoparticles(AgNPs) synthesized by aqueous leaf extract may be an good alternative to antibiotics in controlling infections caused by drug resistant isolates.

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Invitro study of antibacterial profile of *aegle marmelos* leaf extract on mrsa (Methicillin resistant *STAPHYLOCOCCUS AUREUS*).

Srikala Ganapathy[1], Karpagam S[2]
[1]Bharathiar University, Coimbatore, India.
[2] Department of Botany, Queen Mary's College, Chennai , India.
Corresponding author email: srikala_ganapathy@yahoo.com

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ABSTRACT

An alarming increase in the antibiotic resistant bacterial strains, forces mankind to search for newer compounds. The scope of medicinal plants as potent therapeutic agents in biomedicine for the treatment of infectious diseases is reflected in our research work. An attempt was made to investigate the antibacterial activity of *Aegle marmelos.* Crude ethanolic extract of the leaves was subjected to antibacterial sensitivity test against MRSA (methicillin resistant *staphylococcus aureus*), *E.coli* and *Salmonella typhi* bacterial strains. The ethanolic extract showed significant antibacterial activity against MRSA. Thin layer chromatography (TLC) was employed to isolate active constituents from the crude extract. Characteristic yellow bands were observed indicating the presence of flavonoids. The crude extract was further purified by column chromatography to fractionate active phytochemical principles. The fractions demonstrated good antibacterial activity against MRSA and active phytochemical compounds were identified by GC-MS method. The present study authenticates the antibacterial potential of *Aegle marmelos* against MRSA. Standardisation of bioactive principles and clinical trials of the bioactive extract may prove the plant to be a promising drug for the treatment of infectious diseases in the near future.

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Molecular phyto medicine.

Naresh T
Department of Biochemistry, SRM Arts & Science College,Chennai, India.

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ABSTRACT

Salmonella typhi related enteric fever is still an endemic in all parts of India. Worldwide 16 million cases are estimated to occur annually with 60000 deaths,primarily children below 7years most affected. Even the most effective Fluroquinolone antibiotic adaptable strains have emerged. So focusing on a lead molecule would yield far fetching benefits to mankind as a whole. The present study was done with for assessing the anti-microbial efficacy of a crude plant extract *Solanum xanthocarpum* was used since it is was ubiquitous in nature. A serendipitous observation was made as the plant species exhibited (ie) crude extract of *Solanum xanthocarpum* was highly potent against MDR stains of *Salmonella typhi.*This is in accordance with the in-vitrio studies carried out at ARMATS BIOTEK, Chennai.Agar diffusion was used to determine the minimum inhibitory constant values.Broth dilution assay was meant to assess the percentage of viable cells.MTT- cytotoxicity assay yielded complementary results. Amongst the two *Gram positive* and two *Gram negative* strains utilized a highly effective MIC values and low percentage of viable cells was obvious in MDR – resistant strain of *Salmonella typhi.*The concept of drug development for a new candidate lead molecule falls under this purview. If this phytochemical purported to possess the activity of antibiosis against *Salmonella typhi* was isolated purified and characterized for structure activity relation,[SAR-analysis].It would ultimately pave way for an antibiotic that is affordable, cost effective and reliable in terms of Pharmokinetic and toxicological profile.

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Effect of vitamin e on urinary com binding protein.

Padmavathi C.
Department of Biochemistry,Thai Moogambigai Dental College & Hospital, Chennai, India.

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ABSTRACT

Urinary stone disease has affected mankind since antiquity and persists with serious medical consequences throughout a patient's lifetime. Etiological factors for renal stone formation include hypercalciuria, hyperoxaluria, hyperuricosuria and hypocitraturia. Organic matrix of urinary stones is essential for its genesis and mineralization. Calcium oxalate monohydrate crystals adsorbed proteins have an important role in stone formation. Study of these proteins in order to assess the medical management becomes inevitable. Hence, the present study is aimed to find out whether vitamin E is capable of recovering the structural and functional alterations of calcium oxalate monohydrate binding proteins.

Group I - Normal healthy individuals (control)
Group II a - Stone patients
Group IIb - Stone Patients supplemented with vitamin E (Evion 400mg) for 3 months
Group II - Stone Patients supplemented with vitamin E (Evion 400mg) for 6 months
Group IId - Stone Patients supplemented with vitamin E (Evion 400mg) for 9 months

Twenty four hours urine samples were collected from stone formers before supplementation of vitamin E and at three months interval for the duration of nine months after supplementation. Vitamin E supplementation was given along with their regular treatment regime. Calcium Oxalate Monohydrate (COM) binding proteins were isolated, by DEAE cellulose column chromatography the major proteins were isolated.The salient feature of vitamin E is not only to upgrade the antioxidant status of the cell, but also to protect the proteins from oxidative damage, which indirectly aids in protection of stone formation. With vitamin E supplementation the aggregation of COM crystals were less pronounced. COM binding proteins were functionally altered and exhibited low thiol content in hyperoxaluric condition. The increased urinary risk factors and the altered kinetics of COM binding fractions were found to be normal on vitamin E pre-treatment.

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Analysis of lipid peroxidation on cytoprotective effect of curcumin in perchloroethylene induced cytotoxicity.

Revathi Mani R[1], Venkateswari B[2], Nithya G [3], Sakthisekaran D[4]
[1]Department of Home Science, Queen Mary's College, Chennai, India.
[2]Department of Biochemistry, Vels University, Chennai, India.
[3, 4] Department of Medical Biochemistry, University of Madras, Chennai, India.
Corresponding author email: b.revathimani@yahoo.com

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ABSTRACT

Contemporary medicine is in general conducted within health care systems. Legal, credentialing and financing frameworks are established by individual governments, augmented on occasion by international organizations. The characteristics of any given health care system have significant impact on the way medical care is provided. Apart from the modern system of medicine, traditional and indigenous medicinal systems like Ayurvedic and Unani systems are in practice throughout the country. Turmeric (Curcuma longa) is extensively used as a spice, food preservative and colouring material in India, China and South East Asia. It has been used in traditional medicine as a household remedy for various diseases, including biliary disorders, anorexia, cough, diabetic wounds, hepatic disorders, rheumatism and sinusitis. Curcumin (diferuloylmethane), the main yellow bioactive component of turmeric has been shown to have a wide spectrum of biological actions. Curcumin is the principle "curcuminoid" (a polyphenol compound) of the Indian spice turmeric. The polyphenols give it, its distinctive yellow colour. It has served as a treatment for jaundice, menstrual difficulties, hematuria, hemorrhage, colic, and flatulence. In modern times, research has focused on Curcumin's antioxidant, anti-inflammatory, anticarcinogenic, and antimicrobial properties, and on its use in cardiovascular disease, gastrointestinal disorders, and as a treatment for the liver. Lipid peroxidation is a well-defined mechanism of cellular damage in both animals and plants that occurs in vivo during aging and in certain disease states. In our study experimental animals were divided into three groups. Group I served as control (received sesame oil by oral gavage) and group II as PER treated (PER along with sesame oil) and group III treated with (PER and Curcumin). The animals were sacrificed and various cellular constituents and enzymes were assayed in liver and kidney, in which the group II showed significant changes in the level of antioxidants, lipid peroxidation and in histopathology. Our current study indicates that animals treated with curcumin showed reduced lipid peroxidation compared with Perchloroethylene treated animals and are well tolerated at a very high dose without any toxic effects. Thus, curcumin have the potential for the development of modern medicine for the treatment of various diseases.

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SYNERGISTIC EFFECTS OF *Solanum trilobatum* and *Solanum melongena* EXTRACT AGAINST β-galactosamine INDUCED HEPATIC DAMAGE IN RATS.

Shahjahan M, Purushothaman A, Kathiravan MN, Meenatchi P, Saravanan S, Thangaraj A.
Post Graduate and Research Department of Biochemistry, Mohamed Sathak College of Arts and Science, Chennai, India.
Corresponding author email: mnkathir2025@gmail.com

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ABSTRACT

In this study, methanol extract of *Solanum trilobatum* and *Solanum melongena* has been evaluated for antioxidant activity and hepatoprotection against experimentally induced hepatic damage in Wistar albino rats. The methanol extract of *Solanum trilobatum* and *Solanum melongena* was evaluated (250 mg/kg body weight administered orally for 7 days by gastric intubation) for the hepatoprotective activity against β-galactosamine induced hepatic Damage in Wistar Albino rats. The Activities of marker enzymes such as aspartate tranaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP), lactate dehydrogenase (LDH) and gamma glutamyl transferase (γ-GT) in serum and liver homogenate of control and experimental animals were studied. The status of antioxidants such as catalase (CAT), superoxide dismutase (SOD), reduced glutathione (GSH), glutathione peroxidase (GPx) and lipid peroxidation in the liver homogenate of control and experimental animals were also compared. Results of the study revealed the elevated levels of serum AST, ALT, ALP, LDH and γ-GT in β-galactosamine induced animals, which might be due to the damage liver tissue or changes in cell membrane permeability. Oral administration of the extract of ST and SM significantly (p<0.05) reduced the elevated levels of the above marker enzymes in serum. The enzymic and non enzymic antioxidants in liver were restored to normal values after the oral administration of the plants extract and suppressed the formation of the superoxide anion radical and reduced β-galactosamine induced lipid peroxidation. From the results, it can be inferred that the combined extract of *Solanum trilobatum* and *Solanum melongena* positively modulated the marker enzymes and antioxidant activity and the bioactive compounds derived from these plant can be supplemented with hepatoprotective medicines.

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Antioxidant activity of geraniol against diethyl nitrosamine (den) induced hepatocarcinogenesis in adult wistar albino rats.

Fouzia Banu
Department of Biochemistry, J.B.A.S. College for Women (Autonomous), Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.
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ABSTRACT

Hepatocellular carcinoma (HCC) is a malignant tumour that arises from hepatocytes, the major cell type in the liver. HCC is the most common primary hepatic tumour. One among the cause for HCC is due to Nitrosamines, chemical compounds produced from nitrites and secondary amines, which often occur in the form of proteins. They cause cancers in human beings due to their environmental presence and have high carcinogenic potential in animal models. Diethyl nitrosamine (DEN) is one of the most important environmental carcinogens in N-nitrosamines class, which primarily induces tumours of the liver. As rat liver is one of the most extensively studied organ of carcinogenesis, in the present study, DEN is used as a hepatocarcinogen to induce liver cancer in rats. Geraniol, an acyclic monoterpene and a potent antiproliferative drug which has cytostatic effect inhibiting DNA synthesis in cancer cells is used to study the antioxidant activity against DEN induced hepatocarcinogenesis in wistar albino rats.The enzymatic antioxidants like Superoxide dismutase, Catalase, Glutathione peroxidase as well as non-enzymatic antioxidants like Reduced glutathione, Ascorbic acid and Vitamin E were assayed in the hemolysate and liver homogenate. Significant results were obtained in enzymatic antioxidants like Superoxide dismutase ($p<0.001$), Catalase ($p<0.001$) and Glutathione peroxidase ($p<0.01$) in hemolysate of DEN induced rats treated with geraniol. In the liver homogenate of DEN induced rats treated with Geraniol, the enzymatic antioxidants also showed promising results ($p<0.001$). Similarly the non enzymatic antioxidants like Reduced glutathione, Ascorbic acid and Vitamin E in both hemolysate and liver homogenate showed significant ($p<0.001$) increase in the level after the treatment with Geraniol. Hence this study supports the possibility that Geraniol has significant antioxidant activity against DEN induced hepatocarcinogenesis in rats.

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Hepatoprotective potential of liverem – a polyherbal formulation on paracetamol - induced mitochondrial damage in rats.

Rizwana Begum S.
Department of Biochemistry, Justice Basher Ahmed Sayeed College for Women, Chennai, India.

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ABSTRACT

Today burden on the liver is heavier than ever before in history due to alcohol, prescription drugs, nutritional deficiencies and imbalances. Overburdened and undernourished liver can be the root cause of many diseases. Paracetamol (acetaminophen) is an effective analgesic/ antipyretic drug when used at therapeutic doses. However, overdose of paracetamol can cause severe liver injury and necrosis. As herbs play an important role in the management of liver disorders, there is a significant need to evaluate the hepatoprotective potential of polyherbal formulations. Mitochondrial damage is a major mechanism of paracetamol-induced liver injury. Oxidative stress in mitochondria triggers mitochondrial membrane rapture due to mitochondrial permeability transition. This can severely deplete ATP and cause liver cell necrosis.Present study attempted to evaluate the hepatoprotective potential of Liverem on paracetamol-induced acute liver injury. Hepatotoxicity was induced by administering a single oral dose of paracetamol (750 mg/kg). Pretreatment with “LIVEREM”a commercial polyherbal formulation (50 mg/kg bodyweight orally for 15 days) offered significant protection against paracetamol-induced hepatotoxicity as assessed in terms of biochemical, histological and antioxidant parameters and the levels of calcium and ATP in mitochondria of liver of experimental animals. This protective efficacy of Liverem could be due to the presence of *Picrorhiza kurroa* and other herbs present in it.

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Synthesis, characterisation and biological evaluation of novel coumarin derivatives.

HemanthSudheer Kumar K [1], P. Ramalakshmi P[1], Nalini CN[1], P. Selvam P[1], Devi R[1], Sivamani R[1], Arun Kumar S[2].

[1]Department of Pharmaceutical Chemistry, C.L.BaidMetha College of Pharmacy, Chennai-97.
[2]Department of Pharmaceutical Chemistry, S.R.M.College of Pharmacy, Chennai-89.

From International Conference on Biosciences- Trends in Molecular Medicine.

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ABSTRACT

Coumarin chemically known as 2H-1-benzopyran-2-one. It has a significant resemblance to the construction of Vit-k and this led to assumptions that the substance functions against prothrombin that leads to blood clotting. They have varied bioactivities such as inhibition of platelet aggregation, anti-inflammatory2, anti-convusant3, anti-viral4, anticoagulant5, antioxidant6, antitubercular8, antifungal9, anti-HIV10, anticarcinogenic material11 and antihistamine. The purity of the compounds was checked by TLC on pre-coated SiO2 gel (HF254 200 mesh) aluminum plates (E. Merck) using Dichloromethane: Ammonia: Methanol as eluent and visualized in UV-chamber. For Biological evaluation sources are swiss albino mice and method is Hot plate. For evaluation of acute oral toxicity following procedures are OECD Guidelines-423. Evaluation of *Invitro* anti-microbial activity is by Paper Disc Diffusion Method for knowing Preliminary screening of anti-microbial activity. Among all the title compounds [IIa-1 (Ciprofloxacin)], [IIa-2 (Norfloxacin)], [IIa-3 (Sparfloxacin)], [IIa-5 (n-Methyl piperazine)], [IIb-2 (p-toludine)], [IIb-5 (P-anisidine)], [IIb-6 (Sulphanilamide)], [IIb-7 (sulphadiazine)], [IIb-8 (Sulphamethoxazole)], [IIc-2 (tyrosine)], [IIc-3 (Tryptophan)] synthesized mannich bases with prilimary and secondary amine substitutions showed moderate to good anti oxidant activity. The importance of coumarin ring with the features of substitutes of piperazine, sulpha, aniline and amino acids responsible for the analgesic, anti inflammatory, anti microbial, anti tubercular and anti oxidant activities and therefore may serve as a lead molecule for further modification to obtain clinically useful novel entities in the new millennium

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Screening and identification of taxol producing endophytic fungi from endangered medicinal plant.

Nomila Merlin J[1], Nimal Christhudas IVS[2], Praveen Kumar P[2], Agastian P[2]
[1]Department of Biochemistry, Annai veilankanni's College, Saidapet,Chennai , India
[2]Department of Plant Biology and Biotechnology, Loyola College,Chennai, India.

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ABSTRACT

An endophyte is an endosymbiont, often a bacterium or fungus. It lives within a plant for at least part of its life without causing apparent disease. In this study, 25 endophytic fungal isolates were obtained from root of *Tylophora indica* (Burm.f) and screened for presence of taxol. Among the 25 isolates, *Fusarium solani LCPANCF01* was identified based on the micro morphology, cultural characteristics and sequence analysis by using internal transcribed spacer (ITS1 & ITS4). The sequence was submitted to GenBank (JN786598). The *F.solani LCPANCF01* strain was grown in M1D liquid medium for 21days and it was extracted by using dichloromethane. The presence of taxol was confirmed by using TLC, UV, IR, HPLC and ESI-Mass spectroscopy analysis by comparing with standard drug. The amount of taxol was quantified as 247µg/L in HPLC. The isolated fungal taxol was screened for anticancer activity by *in vitro* cytotoxicity assay using VERO and HeLa cell lines. The results suggest that the endophytic fungi present in *T.indica,* showed anticancer activity. The discovery of such microbiological production of drug can revolutionize the search for effective pharmaceutical agents to control cancer.

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Biochemical changes and antibacterial study of fumes on pathogenic microorganisms

Vaidehi S [1], Sridevi G[2].
[1]Department of Biochemistry, D.G Vaishnav College, Chennai, India.
[2]Department Of Biochemistry, Mohammad Sathak College, Chennai, India.
Corresponding author email: sridevigangadharan@gmail.com.

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ABSTRACT

The lifestyle of people in this changing world has intensified the quantum of pollution paving way to new diseases. Microbial pollution is the most important type of pollution for personnel working in laboratories, hospitals, industries of food and beverages. The widely adopted method of fumigation in microbial labs, hospitals is the usage of formaldehyde with potassium permanganate. Frequent usage of formaldehyde can lead to sulphydryl poisoning, protein denaturation leading to cancer. The smoke of medicinal plants can be used as a potential alternative. In this study four common pathogenic organisms in the environment namely Klebsiella pneumoniae, Pseudomonas aeuroginosa, Staphylococcus aureus, Escherichia coli were exposed to fumes of Sambrani, Incense stick and Dharbai to look for antibacterial activity and changes , if any, on their structural compositions like total protein, membrane protein, phospholipid before and after exposure to fumes. The results showed that fumes of sambrani completely inhibited the growth of K.pneumoniae and S.aureus, showing a drastic decrease in the amount of total protein in K.pneumoniae, E.coli. The concentration of total protein, membrane protein was also found to be decreased in other organisms after exposure to fumes of dharbai, incense stick. The amount of phospholipids in all the organisms was found to be more after exposure to fumes. From this study it can be concluded that exposure to fumes of sambrani, incense sticks, dharbai shows antibacterial activity and changes in biochemical parameters on pathogens. Thus the fumes can be recommended as fumigant.

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Anti-elastase and anti-tyrosinase activities of silica and titania nanoparticles isolated from aspergillus flavus.

Jayapriya J[1], Umasaravanan D[2], Rajendran BR.

[1]Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India.

[2]Department of Environmental Biotechnology, School of Environmental Sciences, Tiruchirapalli, India.

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ABSTRACT

Silica and titania nanoparticles extracted from Aspergillus flavus have been screened for the elastase and tyrosinase inhibition activities. The extracted Silica nanoparticles showed remarkable Tyrosinase inhibitory activities ranging from 59-79% at a concentration of 15µg/mL. Si nanoparticles extract dissolved in water showed 65.82%, crude Si nanoparticles extract showed 58.64% and the enzyme inhibitory activities were compared with ascorbic acid which showed 75.52% activity. Ti nanoparticles extract dissolved in water showed 78.48%, crude Ti nanoparticles extract showed 69.19% and the enzyme inhibitory activities were compared with ascorbic acid which showed75.52% activity. Elastase inhibition results at a concentration of 15µg/mL, Si nanoparticles extract dissolved in water showed 70.28%, crude Si nanoparticles extract showed 59.41% and the enzyme inhibitory activities were compared with ascorbic acid which showed 57.24% activity. Ti nanoparticles extract dissolved in water showed 82.6%, crude Ti nanoparticles extract showed 73.18% and the enzyme inhibitory activities were compared with ascorbic acid which showed 57.24% activity. Hence the maximum Tyrosinase activity was observed for Si nanoparticles extract dissolved in water and crude Ti nanoparticles extract, Si nanoparticles extract dissolved in water and crude Ti nanoparticles extract showed maximum elastase inhibitory activity. According to the excellent anti-tyrosinase and elastase activity Si and Ti nanoparticle extract might be used for cosmetic and pharmacology industries and also as anti-melasma agent.

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Antimicrobial effect of methanol extract of nutmeg on clinical strains of streptococcus mutants isolated from patients with dental caries.

Selvan A K[1], Singh RC[2].
[1]Department of Microbiology, Krishnadevaraya College of Dental Sciences Hospital & Biotechnology
[2]Department, Sir M. Visvesvaraya Institute of Technology, Bangalore, India.

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ABSTRACT

Dental caries or tooth decay is one of the most common chronic diseases in the world. Streptococcus mutants are the major etiological agent of caries. At present, antibiotics like penicillin, vancomycin is administered to treat caries. Fluoride and chlorhexidine in various preparations is also the mainstay for caries management. Fluorine possesses high levels of toxicity. Fluoride and chlorhexidine are not recommended for children below 6 years. The prevalence of dental caries is very high in children below 6 years. As such there is no complete treatment available for caries especially to children. Natural antibiotics are products obtained from plants which have been used in folk medicines for the treatment of various ailments. Nutmeg is a spice from the tree Myristica Fragrans that has long been prized for its medicinal properties. Nutmeg is known for its antimicrobial properties against several pathogenic bacteria. In our study we obtained a methanol extract of nutmeg, performed phytochemical studies on the extract, purified the extract by silica gel column chromatography, and identified the active ingredient as macelignan by NMR. We isolated 250 strains of Streptococcus mutants from patients suffering from caries who attended the outpatient clinic of our hospital. Mitis salivarius bacitracin agar was used for the primary isolation. We tested the antimicrobial effect of methanol extract of nutmeg, on the clinical strains of strep-mutants by disc method. We determined the minimum inhibitory concentration of the natural antibiotic by broth dilution method. We have observed that all the 250 strains of Streptococcus mutants isolated from patients with dental caries were inhibited by methanol extract of nutmeg. Bacterial strains from 64.8 % of the patients were inhibited at concentration of 31.25 µg / ml of nutmeg. We hereby report that methanol extract of nutmeg has high inhibitory activity against the clinical strains of Streptococcus mutants.

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Synergistic activity of chitosan with chlorhexidine and their antimicrobial effect on the oral microbial flora causing gingivitis in patients with poor oral hygiene.

Selvan KA[1], Archana V[2] Kaneemozhe H[3], Shariff K[3], Kiran C, Komal U[3],
[1]Department of Microbiology, Krishnadevaraya College of Dental Sciences
[2]Department of Periodontics, Krishnadevaraya College of Dental Sciences
[3]Department of Biotechnology Sir MVIT, Bangalore, India.

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ABSTRACT

Gingivitis is a form of periodontal disease. Gingivitis is due to the long-term effects of plaque deposits which is a cause of tooth decay. Chlorhexidine a chemical antiseptic is majorly used for the treatment of gingivitis. It is effective on both Gram-positive and Gram-negative bacteria. Chlorhexidine is toxic in high concentrations, but is used safely in low concentrations in many products, such as mouthwash and it is observed to have several side effects. Chitosan is a linear polysaccharide composed of randomly distributed β-(1-4)-linked D-glucosamine and N-acetyl-D-glucosamine. It has a number of commercial and biomedical uses. Chitosan is produced commercially by de-acetylation of chitin, which is the structural element in the exoskeleton of crustaceans. Chitosan is antimicrobial against several pathogenic bacteria and fungi. Chitosan is non-toxic and has no observed side effects. Our study deals with the in vitro comparison of antimicrobial effect of chitosan and chlorhexidine and also their synergistic effect against oral microbial flora causing gingivitis. Plaque scrapings were obtained from patients with gingivitis and transported using thioglycolate broth. Specimen was incubated for one hour at 37 0 C and inoculated onto sterile Brain heart infusion agar plates for lawn culture. Sterile filter paper discs incorporated with 10 µl of 0.2% chlorhexidine (Group A), 0.5% chiotosan (Group B), and their combination in 1:1 ratio (Group C). The plates were incubated overnight at 37 0 C and the zone of inhibition of growth was measured. This method was carried out for samples from 40 patients and statistical analysis was done from the obtained results.

Average zone sizes were tabulated to be as follows:
Group A- Chlorhexidine- 15.93mm
Group B- Chitosan-18mm
Group C- Combination (1:1) - 21.93mm

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It was observed that chitosan showed better inhibition than chlorhexidine. The combination of chitosan and chlorhexidine was observed to have a comparatively better inhibitory effect than the individual components thus proving the synergistic effect.

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Bioactive components from Fcus Racemosa linn.

Ramila Devi M, Manoharan A.
Department of Plant Biology and Plant Biotechnology, Presidency College, Chennai, India

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ABSTRACT

Bioactive compounds in plants can be defined as secondary plant metabolites eliciting pharmacological or toxicological effects in man and animals. Secondary metabolites are produced within the plants besides the primary biosynthetic and metabolic routes for compounds associated with plant growth and development, and are regarded as products of biochemical “side tracks” in the plant cells and not needed for the daily functioning of the plant. Several of them are found to hold various types of important functions in the living plants such as protection, attraction or signaling. Most species of plants seem to be capable of producing such compounds. The main chemical groups of bioactive compounds in plants with their main pharmacological or toxicological effects in man as well as the main producing plant family are presented here.Ficus racemosa Linn. is a moderate sized avenue tree found throughout India. It is popular in indigenious system of medicine like ayurveda, siddha, unani and homoeopathy. In the traditional system of medicine various plant parts such as bark, root, leaves, fruits and latex are used in dysentry, diarrohoea, diabeties, stomachache, piles and as carminative and astringent and also as antioxidant and anticancer agent.

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Free radical scavenging activity of selected coffee bean variety.

Myla N, Gunalan G, Balabhaskar R.
Department Of Bio Chemistry, SRM Arts And Science College, Kattankulathur, India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.
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ABSTRACT

Antioxidant properties elicited by plant species have full range of perspective application in human health care. In the last years, interest in the antioxidant activity of plant extracts, of isolated substances from plants, has grown, due the fact that free radicals have been related to some diseases, as well as to the aging process. Coffee is a brewed beverage with a dark, acidic flavor prepared from the roasted seeds of the coffee plant, coffee Arabica. It is the highly regarded species of c.robustae. The aim of the study was to investigate the free radical scavenging activity of two selected varieties of c.arabica namely special A and kumbakonam (local brand). Coffee brews (1g/100 ml of distilled water) were prepared from commercial coffee beans of these two selected varieties. Preliminary phytochemical analysis was done based on standard methods. Total phenols and total flavonoids were also estimated. Free radical scavenging capacity was determined using 4 invitro models namely, DPPH radical, hydroxyl radical, superoxide radical and nitric oxide radical scavenging activity. The total reducing power was also determined. Preliminary analysis shows the presence of tannins, cardiac glycosides, sugars, alkaloids and flavonoids in both the varieties. From the results, it was evident that varieties, special A and kumbakonam have radical scavenging activity. Hence it may be concluded that coffee intake can promote anti-oxidant levels. Further studies are required to isolate and characteristic the active component which is responsible for this activity.

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Hypolipidemic effect of triterpenoid extract from the back of terminilia arjuna.

Udhayarani P ,Parameswari CS.
Department of Biochemistry, Bharathi College for women's, Chennai , India.

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ABSTRACT

The present study was aimed to investigate the possible cardio protective role and hypolipidemic effect of Arjunolic acid (AA) isolated from the bark of Terminilia arjuna against Cyclosporine A (CsA) treated rats. The animals were treated with the AA (10mg/kg.B.wt) along with CsA (25kg/B.wt) in olive oil for 21 days. After 21 days all the animals were anesthetized heart and aorta were removed. The tissues were homogenated and the estimation of Cholesterol; TG & FFA were carried out. The levels of cholesterol, TG & FFA were estimated in serum also. The statistical analysis of data showed that CsA caused a significant increase in cholesterol. TG & FFA in the CsA treated rats. The triterpenoid extract containing AA has significantly decreased cholesterol, TG & FFA in CsA and AA treated rats. The AA present as the active compound in TA extract, successfully prevented atherogenesis. It also has high hypolipidemic effect. Further studies will help develop AA as an anti-atherogenic drug.

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Protective effect of quercetin on diethylnitrosamine induced hepatocellular cancer in male wistar rats

Venkateswari R[1], Revathi mani B[2], Dhivya S[3], Sakthisekaran D[3].

[1]Department of Biochemistry, Vels University, Chennai, India.

[2]Department of Home Science, Queen Mary's College, Chennai, India.

[3]Department of Medical Biochemistry, University of Madras; Chennai, India.

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ABSTRACT

Diethylnitrosamine (DEN), found in many commonly consumed foods, is widely reported to induce cancer in animals and humans. Hepatocellular carcinoma (HCC), is a primary malignancy of the hepatocyte, induced by DEN, accounts for a high incidence in western countries and to some extent in Asia and Africa. Adriamycin (Doxorubicin), an anthracycline antibiotic, is a widely used anticancer agent to treat solid tumors. The use of doxorubicin in clinical chemotherapy is limited, due to diverse toxicities, in spite of its high antitumor efficacy. The aim of the present study was to investigate the hepatoprotective role of quercetin along with adriamycin against diethylnitrosamine induced liver cancer in male wistar rats. Quercetin is one of the most abundant dietary flavonoid found in apples, black and green tea, onions, raspberries, red wine, red grapes, cherries, citrus fruits, broccoli and other green leafy vegetables. Quercetin offers several potential therapeutic uses in the prevention of CVD, cancer, cataract, schizophrenia and prostatitis. Quercetin, a ubiquitous bioactive flavonoid, can inhibit the proliferation of cancer cells.In the present study, we evaluated the anti-tumor potential of quercetin (100 mg/kg, orally), and adriamycin (10 mg/kg, i.p.) alone and in combination for a period of 15 days against DEN induced hepatocellular carcinogenesis in male wistar rats. The animals were divided into control, DEN treated, DEN + adriamycin treated, DEN + adriamycin and quercetin treated and DEN + quercetin treated. DEN treatment to rats resulted in significantly elevated levels of serum aspartate transaminase, alkaline phosphatase, lactate dehydrogenase along with significant decrease in the levels of the marker enzymes in the liver tissue which are indicative of hepatocellular damage. Quercetin treatment significantly improved the levels of marker enzymes of hepatotoxicity, resulting in the reversal of most of the parameters studied and also improved the efficacy of the standard anticancer drug adriamycin.

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Candida biofilms: development, architecture and perfusion of antifungal agents

Subha TS[1], A.Gnanaman A[2], Biswas AK[3], Sekaran G[3].

[1]Bharathi Women's College, Microbiology Division, Environmental Technology

[2]Central Leather Research Institute

[3] Indian statistical Institute, Chennai, India.

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ABSTRACT

The paper describes development of biofilm by Candida albicans on fifteen different clinically important substrate materials. The substrate material was characterised for its physical properties. Upon adherence to the substrate materials, candida albicans develops into biofilm. Substrates were grouped on the basis of their adherence promoting nature as measured by five different parameters namely biomass- fresh weight, dry weight, colony forming units, growth OD and metabolic activity, using cluster analysis. Effects of five drugs on Candida Biofilms grown on fifteen substrate materials were compared amongst each other. The combinations of substrate materials and drugs were analysed and it was found that in certain drug-substrate combinations there is a reduction in biofilm growth, however complete lysis of the biofilm was not encountered. The perfusion studies reveal that none of the drugs were able to perfuse through biofilms completely. Reason behind such non-perfusing nature of biofilm was further investigated through CLSM studies. The results illustrate presence of "wafer" type of biofilm formation with continuous "-cells-matrix-cells-matrix-cells-"layering in biofilm. This layer forming mechanism of biofilm could be one of the reasons for non-perfusion of drugs.

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Antidiabetic effect of *Symplocos Cochinchinensis* (Lour) S. Moore bark in high fat diet – low Streptozotocin induced type 2 diabetic rats

Sunil C, Irudayaraj S, Ignacimuthu S.
Division of Ethnopharmacology, Entomology Research Institute, Loyola College, Chennai, India.

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ABSTRACT

Type 2 diabetes mellitus is a heterogeneous disorder characterized by a progressive decline in insulin action (insulin resistance) followed by the inability of beta cells to compensate for insulin resistance (pancreatic beta cell dysfunction). It accounts for more than 90-95% of all diabetes. Synthetic hypoglycemic agents can produce serious side effects and fail to alter the course of diabetic complications. Herbal remedies are effective with no side effects and at low costs compared to oral synthetic hypoglycemic agents. Symplocos cochinchinensis (Lour.) S. Moore. is used in Indian system of traditional medicine to treat diabetes mellitus. The present study aims to investigate the antidiabetic efficacy of the methanol extract of S. cochinchinensis bark in high fat diet–low streptozotocin induced type 2 diabetic rats. Acute toxicity study, oral glucose and insulin tolerance tests were carried out. The antihyperglycemic effect of S. cochinchinensis at 250 and 500 mg/kg was studied in high fat diet–low streptozotocin induced diabetic rats for 28 days. The extract showed no adverse effects up to 5g/kg body weight. In oral glucose tolerance test, the treatment with the S. cochinchinensis at 250 and 500 mg/kg showed a highly significant reduction of plasma glucose levels at 30 min after glucose load. The insulin tolerance test also showed improved insulin sensitivity after 60 min of insulin treatment. In high fat diet–low streptozotocin induced type 2 diabetic rats, after 28 days treatment with the methanol extract at 250 and 500 mg/kg reduced the plasma glucose levels significantly. A significant reduction in plasma insulin, plasma and hepatic total cholesterol, triglycerides and free fatty acids and a significant increase in liver glycogen were observed in treated diabetic rats. This study demonstrated the potential antidiabetic property of methanol extract of Symplocos cochinchinensis bark on type 2 diabetes mellitus, thus justifying its traditional usage.

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Antihepatotoxic potential of marine red algae chondrococcus hornemanni and spyridia fusiformis.

Bhuvaneshwari. S, Murugesan. S
Unit of Algal Biotechnology and Bionanotechnology, Department of Botany, Pachaiyappa's College, Chennai, India.
Corresponding author email: smurugesan@gmail.com.

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ABSTRACT

The present study revealed that the protective effect of the marine red algae Chondrococcus hornemannni and Spyridia fusiformis on the hepatic antioxidants status of Chromium(VI) induced in male albino wistar rates. Levels of Diagostic marker enzymes (alanine amino transferase (ALT), aspartate amino transferase (AST) in plasma, lipid oxides, reduced Glutathione and anti peroxidative enzyme catalase (CAT) and Superoxide dismutase (SOD)in the liver tissues were determined prior to oral administration of the methanolic extract of these two marine red algae (200 mg/kg bodyweight/ day for 29 days). There was a considerable increase in the levels of diagnostic marker enzymes in plasma of attenuated chromium ($p<0.01$) induced experimental rats. It also demonstrated that an antioxidant activity against chromium induced hepatitis by inhibiting the stimulation of lipid peroxidation and by preserving the hepatic enzymatic and non-enzymatic (ALT& AST) antioxidant defence system. The study confirmed the antioxidant potential of these marine red algae might be related to its antihepatotoxic property.

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Serum proteome analysis - a tool to identify protein markers for chronic pancreatitis

Vijayashankar S[1], Arumugam Geetha A[1], Rajagopal Surendran R[2]

[1]Department of Biochemistry, Bharathi Women's College, Chennai, India.

[2]Department of Surgical Astroenterology and Proctology, Stanley Medical College and Hospital, Chennai, India.

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ABSTRACT

Serum proteome analysis can reveal differentially expressed protein(s) in pathological conditions. Chronic Pancreatitis (CP) characterized by severe inflammation of pancreas, lacks specific clinical markers except serum amylase and lipase. The present study is focused on evaluating new protein markers for CP by proteome analysis. CP patients registered in the Department of Surgical Gastroenterology and Proctology, Stanley Medical College and Hospital with the age group of 20-50 were selected for the study before starting any therapeutic measure.The pooled serum was used for Proteome Analysis consisting 2D-Electrophoresis, Identification of differentially expressed proteins, Isolation and Tryptic digestion of proteins of interest, Separation of digested peptides by Liquid Chromatography and Identification of peptides by Mass Finger Printing Technique. The peptides were confirmed by protein search engine programme. The identified proteins were confirmed by quantitative analysis in individual serum samples. Among the 45-48 differentially expressed proteins, haptoglobin 2 (Hp 2) and fibronectin portion of collagen VII were found to be significantly elevated in CP. The Hp 2 isoform was confirmed by specific benzidine H2O2 stain. Other inflammatory markers CRP, C3a and α2 macroglobulin were quantified and a significant elevation was seen only in haptoglobin level. Collagen VII is formed during tissue injury to act as anchorage protein that can hold the tissue architecture intact. This change might be due to an imbalance in the enzyme proteins involved in the turnover of collagen VII such as matrix metalloproteinase- 9(MMP 9) and tissue inhibitor of metalloproteinase- 1(TIMP 1). Haptoglobin- 2 and fibronectin portion of collagen VII can be used as new protein markers for chronic pancreatitis.

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Post thane storm biodiversity changes of algal species observed in coastal regions of Cuddalore district, Tamil Nadu, India.

Murali R [1], Vijayalakshmi TM[2].

[1]Department of Plant Biology, Plant Biotechnology, R.K.M.Vivekananda College

[2]Department of Biochemistry, D.G.Vaishnav College, Arumbakkam, Chennai, India. 600106.

Corresponding author email: muralimurali2008@gmail.com.

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ABSTRACT

Thane storm had created a miserable disaster in most of the coastal belts of South India. This natural calamity had changed the chemical and biological properties of the waterbodies. In the current study, changes observed in the biodiversity of algae, located in the coastal area of Cuddalore district and the impact of the physicochemical parameters on their growth were assessed. Results obtained have shown a reduction in the values for some of the critical physicochemical parameters, which serve as the nutritive source for the growth of algae. The predominat algal species belonging to Chlorophyceae, Pheaophyceae, Rhodophyceae and Cyanophyceae that were observed in the study area during the month of July had been changed to Chlorophyceae, Pheaophyceae, Xanthophyceae and Chrysophyceae during the month of January after the Thane storm. The observed change is due to tidal shifting of sea water on the surface which shall determine the algal biodiversity of the study area, until another natural calamity strike the study area.

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Structure based drug design of some novel flavone derivatives.

Devi R, Nalini CN, Hemanth K, Kumar S, Sivamani R.
Department of Pharmaceutical Chemistry, C.L.Baid Metha College of Pharmacy, Chennai, India.
Corresponding author email: deviumesh2001@gmail.com

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ABSTRACT

Computer-aided approaches have been widely used in pharmaceutical research to improve the efficiency of the drug discovery and development process. To identify and design small molecules as eligible drug candidates, various computational methods have been evaluated as promising strategies, depending on the purpose and systems of interest. Both ligand and structure-based drug design approaches are powerful technologies, which can be applied to lead identification and optimization. Here, in this present study, some novel flavones derivatives were synthesized and studied for structure based drug design to perform the studies based on the targets of interest. Computer aided structure based methods like Toxicity Risk assessment study (OSIRIS property calculator), Prediction of Activity Spectra for Substances (PASS), Rat acute toxicity prediction (GUSAR) and Molecular Docking (AC MECHO LEAD PRO VERSION 2.5) were done to accelerate the process and to minimize the synthetic and biological testing efforts. Structure Based Drug Design (SBDD) approach requires the understanding of receptor–ligand interactions. If the target 3D structure is known, it can be used for the design of new ligands. The structural information is either from X-ray crystallography, NMR, or from homology modeling. SBDD approaches are responsible for evaluating the complementarities and predicting the possible binding modes and affinities between small molecules and their macromolecular receptors. The Protein structure is collected from Protein Data Bank (PDB). Here some novel flavones derivatives are docked with Hexokinase (PDB ID- 1V4S) for Antidiabetic Activity and Acetyl cholinesterase (PDB ID- 1B41) for Nootropic (cognitive-enhancing) Activity and the free energy of binding in kcal/mol are compared with the standards.

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Protective effect of chrysin in streptozotocin induced diabetic in rat.

Premalatha M, Parameswari CS.
Department of Biochemistry, Bharathi Women'College, Chennai, India.

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ABSTRACT

Chrysin (5,7-dihydroxyflavone) is a flavonoid, found to be present in many plants and possesses potent anti-cancer, anti-inflammatory anti- bactericidal, anti-viral, anti-allergic, and antioxidant properties. The present study was designed to investigate the possible beneficial effects of chrysin in streptozotocin induced diabetic in rats. Wistar male alino rats were divided into four groups. Control rats (Group 1) received Dimethyl Sulphoxide as a vehicle, diabetic rats (Group 11) received Streptozotocin (STZ) 50mg/kgbwt, (Group 111) rats received Chrysin 20mg/kgbwt and (Group 1V) rats received STZ 50mg/kgbwt and Chrysin 20mg/kgbwt. We evaluated the beneficial effect of chrysin by measuring the levels of blood glucose, urea,glycosylated hemoglobin, plasma insulin, serum creatinine, lipid peroxidative products and antioxidant enzymes. Chrysin treatment markedly reduced the levels of blood glucose, glycosylated hemoglobin, urea, serum creatinine and increased plasma insulin. Study result indicated that the antioxidant enzyme activity of the kidney was increased, while thiobarbituric acid reactive substances (TBARS) were reduced in chrysin treated diabetic rats. In conclusion, the present result suggest that chrysin protects the kidney in sever diabetic and thus may provide promising antidiabetic drug for managing diabetic kidney disorder.

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Production and partial purification of cellulase from *Aspergillus Niger.*

Sathesh J, Meena P, Neethi Jayan
Department of Biotechnology, Sree Sastha Institute of Engineering and Technology, Chembarambakkam, Chennai – 600123, Tamil Nadu, India.
Corresponding author email: satheshj@yahoo.com.

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ABSTRACT

Enzyme Cellulase (EC 3.2.1.4) producing microorganism was screened by carboxymethyl cellulose plate assay method and identified as *Aspergillus niger*. Different substrates were tested for cellulase production by solid state fermentation. The maximum production was found to be at 96 hr, 33°C and 4.0 for incubation period, temperature and pH respectively with wheat bran as substrate. An optimum inoculum size was 1ml (5×10^8/ml) with moisture content of 60%. Addition of inducers to the substrate enhanced the production of cellulase. The enzyme characterization was studied by different parameters such as temperature and pH. The enzyme was found to be stable between pH range 4.0 – 8.0 and temperature 30 – 70°C. The enzyme showed optimal activity at pH 4.8 and temperature of 50°C. An optimum carbon source was carboxymethyl cellulose and an optimum nitrogen source was peptone. The cellulase enzyme was concentrated and purified by ammonium sulfate precipitation and dialysis. The purified enzyme molecular mass was determined by SDS-PAGE as 40KDa. Data emphasized the possibility of the production and purification of cellulase for application under industrial scale.

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Ethological study of diabetic foot ulcer infection & anti-foot ulcer activity of aloe vera extract.

Balaji S, Das S.
Vels University, Pallavaram, Chennai, India.

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ABSTRACT

Exploitation of drug use in the present days has become very drastic, especially in case multi- drug usage. Multi- drug usage is routinely been used on all living stocks; of course on human being, which has also reached even the neonatal stage. Sensitivity of tissue is increasing day- by- day. One final day there might be a revolution where the drugs will not show any sensitivity. Thus, this can be avoided or it can be replaced by herbal products. In the present work, the exudates (sample) or pus culture of diabetic foot ulcer patients were used in the study were carefully collected in sterile moist cotton swabs and immediately dipped into nutrient broth. Three different medium namely Nutrient agar, Teepol agar and Blood agar were used in the present experimental studies. Four different pathogenic organisms were isolated. Aloe barbadensis was used to study the effect of plant extract as an anti-foot ulcerative. Four different solvents were taken namely Ethanol, Methanol, Chloroform, Acetone and Water as the fifth mixture, with five different concentrations (500, 250, 125 and 62.5mg/ml). Aloe vera juice and gel are known to contain the anthraquinone aloe emodin which would have brought the antimicrobial activity

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In vitro studies on antimicrobial and antioxidant properties of indigenous medicinal plants – *Diplocyclos palmatus, Ctenolopis garcinii, and Kedrostis rostrata.*

Kavitha R[1], Chitti Babu CV[2] , Subha TS[1].

[1]Department of Botany, Bharathi Women's College

[2] Nandhanam Arts College for Men, Chennai, India.

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ABSTRACT

In general, most of the members of the family cucurbitaceae are well exploited for medicinal, economic and culinary values, however, there are certain less known members like Diplocyclos palmatus, Ctenolopis garcinii and Kedrostis rostrata . Ethanobotanical survey conducted in Cuddalore district of Tamil Nadu reveal that certain group of people uses the said plants as Expectorant and Anti-asthmatic especially in pediatric medicine.This paper deals with antibacterial and antioxidant potency of the said plants. Broad spectrum antibacterial efficacy was analysed and the results reveal that of the three plants Kedrostris rostrata shows appreciable antibacterial potency. Antioxidant property of the said plants were analysed using DPPH assay, Tocopherol was used as standard.

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Studies on burn wound healing property of compounds from *musa paradisiaca l on* albino rats.

Amutha K , Shalini RV.
Department of Biotechnology,VELS University, Pallavaram, Chennai, India.
Corresponding author email: priyadarshiniprathiba@gmail.com.

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ABSTRACT

The medicinal values of the plant musa paradisiaca pertaining to wound has not yet been reported. The plantain banana was selected with the promise that the drug promoting wound healing could have effect on wound healing. Ripe banana are highly beneficial in the treatment of ulcerative colitis, being bland, smooth, easily digestible and slightly laxative. Banana stem called the pseudostem, is juicy material rich in fibre has medicinal value It is available in India as any other vegetable on the markets. Juice from banana stems a well-known remedy for urinary disorders. It improves the functional efficiency of kidney and liver thereby alleviating the discomforts and diseased in them. It clears the excretory organs in the abdominal region of toxins and helps to eliminate then in the form of urine. It has been found to be of great help in the treatment for the removal of stones in the kidney, gall bladder and prostate. Wound healing drug is a developing area in modern biomedical sciences. They relieve acute symptoms and promote the healing process Banana stem called the pseudo stem is juicy material rich in fibre. It is one of the various other common foods in India. Wound healing drug is a developing area in modern biomedical plant, mineral and animal origin are described for their wound healing properties under the term Vranaropaka. Most of these drugs are derived from plant origin. Some of these plants have been screened scientifically for the evaluation of their wound healing activity in different pharmacological models and patients. The several natural productions, which are composed active principles, like triterpenes and alkaloid and flavonoids and bio molecules have been reported to promote the process Of wound healing. Phenyl phenonalenone and sulphadimidine steryl glycosides so for the above mentioned compound where reported and musa paradisiaca extracts in my present study. I concentrated on burn healing compound identification from musa paradisiaca this finding my help us to introduce musa paradisiacal extracts and reached bandage production in future.

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Genetic manipulation of tobacco plant with wheat germ agglutinin (wga) gene through agrobacterium mediated transformation.

Kumutha G.
Department of Biochemistry SRM Arts and Science College, Kattankulathur, India.
Corresponding author email: kumuthausha@gmail.com.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.
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ABSTRACT

Nowadays scientist are working under various research studies by applying modern technologies, in that genetic engineering is the most developing one in recent days, which emphasis that a test tube science that makes possible to break through the species barrier and to shuffle its genetic information between completely unrelated species. In the present work, construction and transformation of pGPTV vector carrying WGA gene to E.col iDH5a and transfer of vector to Agrobacterium tumefaciens were performed. The transformed Agrobacterium tumefaciens are used to create transgenic tobacco plants by co-cultivation method. Thus the results of the study shown greater production of transgenic plants using rDNA technology could be a major step in achieving large scale production of plants and reduces the accumulation of chemical pesticides that are hazardous to the environment.

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Characterization of Acinßetoacter against 3rd generation ß- Lactum antibiotics.

Marfas MP, Asheeba ST, Bosco Dhanaseeli P.
Asan Memorial College of Arts and Science, Jaladampet, Chennai, India.

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ABSTRACT

Acinetobacter species is one of the most prevailing multi drug resistant strains, more predominantly seen in ICU of hospital environment was targeted for the present investigation. In this present study the strains of Acinetobacter was isolated from the blood samples of ICU admitted patients were screened for the resistance capacity towards 8 ß-lactum containing 3rd generation antibiotics. Out of which 61% of the strains are resistant to the antibiotics CA2 and AT, the most commonly used antibiotics today for the treatment of bacterial infections. Also, when these strains were analyzed for biofilm assay, 27.7% of the strains were categorized under strong, 27.5% under moderate and 44.4% under weak biofilm producers. Hence it is concluded that, the ESBC producing strains were categorized under weak and moderate biofilm producers.

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Investigation of the antioxidant and antimicrobial activity of methanolic extracts of raw and cooked scallion (Allium Wakegi).

Deepalakshmi J, Ambika K, Purushothaman A, Kathiravan MN.
Department of Biochemistry, Mohamed Sathak College of Arts & Science, Sholinganallur, Chennai, India.
Corresponding author email: trishabaskaran@yahoo.com

From International Conference on Biosciences- Trends in Molecular Medicine.
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ABSTRACT

This study presents the quantitative estimation of total phenol, total flavonoids content of raw and cooked onion methanolic extracts. Further, these extracts used to evaluate the free radical scavenging and antimicrobial activities. The total content of the raw and cooked scallion extracts was found to be 9.8 mg/ g GAE and 7.9mg / g GAE respectively. The total flavonoids content was estimated to be 428.6±23.1mg/100g for raw and 348.2±19.4 mg / 100g cooked scallion extracts. From the results, the cooked scallion extracts shows up to 22% and 18% decreased contents of the TPC and total flavonoid respectively. The DPPH IC50 values of the raw and cooked scallion methanolic extracts were 0.84 mg/ml and 1.22mg/ ml, respectively. This result suggests that raw onion was found to be more powerful free radical scavenger when compared with cooked onion. The methanolic extracts of raw and cooked onion were screened for antibacterial activities. The extracts showed the widest zone of inhibition (between 4 – 10mm) in the order of E.Coli > Klebsiella sp. > Pseudomonas sp. > B. subtilis. No zone of inhibition was found in Staphylococcus in the raw onion extract. However, cooked onion extract shows poor zone of inhibition (less than 4mm). The present study revealed the raw onion methanolic extract has strong antioxidant and antimicrobial activity than cooked onion extracts.

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A study on mineral status in gestational diabetes mellitus

Sripriya L[1], Vijayalakshmi M[1], Praveena J[2].

[1]M.G.R. Educational Research Institute & University, Maduravoyal, Chennai, India.

[2]Biochemistry Dept., Jaya College of Arts and Science, Thiruninravur, India.

Corresponding author email: vamshisripriya@yahoo.com

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ABSTRACT

Gestational diabetes mellitus is a form of diabetes affecting only pregnant women. If a pregnant woman develops diabetes for the first time during pregnancy, she is said to suffer from gestational diabetes mellitus. Blood samples were collected from control subjects (Group I) and GDM patients (Group II). After preliminary preparation, the processed samples were subjected to mineral analysis in Atomic Absorption Spectrophotometer. After Deuterium lamp background correction, Calcium, copper, magnesium and zinc levels were greater than control whereas the level of iron is less than control.

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Structure based drug design of some novel flavone derivatives.

Devi.R, Nalini CN, Sudheer Kumar KH, Sivamani R.
Department of Pharmaceutical Chemistry, C.L.Baid Metha College of Pharmacy, Chennai, INDIA - 97.
Corresponding author email: eviumesh2001@gmail.com

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ABSTRACT

Computer-aided approaches have been widely used in pharmaceutical research to improve the efficiency of the drug discovery and development process. To identify and design small molecules as eligible drug candidates, various computational methods have been evaluated as promising strategies, depending on the purpose and systems of interest. Both ligand and structure-based drug design approaches are powerful technologies, which can be applied to lead identification and optimization. Here, in this present study, some novel flavones derivatives were synthesized and studied for structure based drug design to perform the studies based on the targets of interest. Computer aided structure based methods like Toxicity Risk assessment study (OSIRIS property calculator), Prediction of Activity Spectra for Substances (PASS), Rat acute toxicity prediction (GUSAR) and Molecular Docking (AC MECHO LEAD PRO VERSION 2.5) were done to accelerate the process and to minimize the synthetic and biological testing efforts. Structure Based Drug Design (SBDD) approach requires the understanding of receptor–ligand interactions. If the target 3D structure is known, it can be used for the design of new ligands. The structural information is either from X-ray crystallography, NMR, or from homology modeling. SBDD approaches are responsible for evaluating the complementarities and predicting the possible binding modes and affinities between small molecules and their macromolecular receptors. The Protein structure is collected from Protein Data Bank (PDB). Here some novel flavones derivatives are docked with Hexokinase (PDB ID-1V4S) for Antidiabetic Activity and Acetyl cholinesterase (PDB ID-1B41) for Nootropic (cognitive-enhancing) Activity and the free energy of binding in kcal/mol are compared with the standards.

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Evaluation of phytochemical constituents and antioxidative properties of herbal plant a. monophylla.

Shyam Krishnan M[1], Sagadevan E[2].

[1]II M.Sc Medical Biochemistry.SRM Medical College & Research Institute.

[2]Armats Biotech

Corresponding author email: gingeesaga@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.

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ABSTRACT

The work was carried out to evaluate the phytochemical constituents and Antioxidative properties of herbal plant A. Monophylla. A number of in vitro and in vivo assays have been developed to measure the antioxidant activity of plant extracts.

In this area, the assessment of the effectiveness of potential antioxidants, using vegetable oils and fats as oxidation substrates has been the focus of intense research.

Direct extraction with hexane, ethyl acetate and methanol following the method of Eloff, 1998 was used as an extraction method for the purpose of preliminary screening of the A.monophylla. The extract of A.monophylla plant was subjected to Phytochemical screening by various tests like detection of alkaloids, saponins, glycosides, phenolic compounds etc. Also the crude extract of A.monophylla was subjected to preliminary screening by TLC and Bioautography was also done. The RSA activity of different extracts was determined using DPPH assay according to Nenadis and Tsimidou (2002), with small modification. Following this, TBA & FTC methods were performed for the assessment on decrease in lipid peroxidation by the free radical scavenging activity of A.monophylla plant.

The phytochemical analysis showed the presence of major compounds like Phenols, Carbohydrates and glycosides and also minor compounds like proteins. In the Bioautography, it was observed that the whole extract had the free radical scavenging activity and thus a broad spectrum was obtained at the Rf of 0.57. The best results of radical scavenging activity were obtained with a maximum of 75% for ethyl acetate sample which was nearly equal to the radical scavenging activity of the standard α-tocopherol (84%). In the analysis of metal chelating activity it has been reported that A.monophylla has the ability for iron binding and could reduce the generation of hydroxyl radicals.

The preliminary phytochemical screening of A.monophylla has revealed the presence of phenolics, carbohydrates and glycosides in high amounts, whereas, proteins was present in trace amount. Thus the

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antioxidant activity may be because of the above phytochemicals present in the extract. Possible applications of the selected target plant extract as food supplement for human health care are also under evaluation. However, further analysis on various compounds and their mechanism of action must be studied extensively to bring out these essential plant components in food industries.

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Comparative study on antibiograms of coagulase positive and negative staphylococci isolated from various samples.

Vidhya CV, Niren Andrew S.
Department of Microbiology, Ethiraj college for women, Chennai, India.
Corresponding author email: vidhyacv_2005@yahoo.com.au

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ABSTRACT

Coagulase positive Staphylococci (COPS) are serious pathogens since many decades. Various strains of coagulase positive Staphylococci cause a wide range of disease in human beings. They are characteristically localized and are both immune related and hematogenous infections. But coagulase negative Staphylococci (CONS) were thought to be laboratory contaminants or commensals and were not considered important in pathological studies. Currently CONS have emerged as potential pathogens causing various diseases ranging from mild infections like eye and wound infections to fatal diseases like UTI, endocarditis, polymer associated infections etc. Multi-drug resistant strains of both coagulases positive and negative Staphylococci have emerged. Comparative study of their anti-biograms hence has become indispensable. Their rate of incidence in various parameters like age and sex of the patient and site of infection has also been studied.

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Evaluation of antileptic activiyy of selected indian herbal formulation.

Hemachitra P, Saraswathi U.
Department of Biochemistry, PSG college of Arts & Science, Coimbatore, India.
Corresponding author email: sarabiochem@yahoo.co.in

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Epilepsy is a disorder of the central nervous system. Seizure occurs when the brain's nerve cells misfire and generate a sudden uncontrolled surge of electrical activity in the brain. Seizures can be controlled with modern medicines and surgical techniques and are found to have side effects. Natural products from folk remedies are an alternative source of anti-epileptic drugs with better safety and efficacy profiles. The present study was aimed to assess the anti-epileptic activity of a poly herbal extract (PHE) including Zinger officinace, Caesalpinia bonducella, Aloe vera and Croton figilum. The evaluation of anti-epileptic activity was carried out with maximal electric shock (MES) and Pentylene Tetrazole (PTZ) models. Epileptic seizure challenged animals treated with poly herbal extract showed reduction of MES and PTZ in induced epileptic seizure. The activity of mono amine oxidase was significantly decreased and biogenic amines were elevated by the administration of poly herbal extract. PHE has also improved spine arrangement of nuclei and regained neuronal morphology. Thus the results suggested that PHE possess anti-epileptic activity.

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Use of flowers as antimelanocyte agent against UV radiation effects.

Jayanthy V, Shafna A.
Department of Biotechnology, PSG College of Arts and Science, Coimbatore, India.
Corresponding author email: jayanthybiochem85@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

India being a tropical country, greater is the damage to skin due to UV hazards. Herbal remedies and health care pharma are dwelling into natural products of clinical importance for treatment and care. Use of flowers as antimelanocyte agent was the topic of current interest. Three flowers namely, *Celosia cristata, Polianthes tuberosa* and *Cassia occidentalis* were chosen for the study due to their abundance and availability. Investigation based on phytochemical analysis, antioxidant properties and antimicrobial effect were done with the three flowers. Sun protection factor (SPF) was also studied. On comparison it was observed that *C.occidentalis* had the highest SPF value with antioxidant and antibacterial property followed by *P.tuberosa* and *C.cristata*. This study concludes the use of *C.occidentalis P.tuberosa* flowers as antimeloncyte agent for UV radiation hazards.

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Design, synthesis, characterisation and biological evaluation of novel quinazoline derivatives.

Sivamani R, Nalini CN, Manasa K, Ramalakshmi P, Uma G, Devi R.
Department of Pharmaceutical Chemistry, C.L.Baid Metha College of Pharmacy, Chennai, India.

Corresponding author email: mani.sivamani2010@gmail.com

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Quinazoline skeleton appears mainly in alkaloids, most commonly in the form of 4-(3H)-quinazoline moiety. A few of these alkaloids have been the object of synthetic work by Bergmanand co-workers, among them Rutaecarpine is one of the several quinazoline and carboline alkaloids isolated from the various plants of Rutaceae. Quinazoline nucleus is having analgesic, anti-cancer, anti-inflammatory, anti-convulsant, antibacterial and antifungal activity. Melting points of synthesized compounds were determined in open capillary tubes and are uncorrected. Thin layer chromatography was performed using pre-coated aluminum plates coated with silica gel GF254 [E.Merck] of 0.25 mm thickness. The spots were visualized in the ultraviolet light chamber.IR spectra were recorded on ABB BOMEM FTIR pectrometer using KBr pellets. 1H NMR spectra of the compounds in duetereated ethanol was recorded on JEOL GSX 400 NMR spectrophotometer. Mass spectroscopy was recorded on GCMS QP 5000 Shimadzu. The animal used for the biological evaluation is swiss albino mice using the Hot plate method. Compounds were evaluated for anti-tubercular activity using REMA method against mycobacterium tuberculosis compounds were evaluated for antioxidant activity by p-NDA method using ascorbic acid as standard drug. Compounds I-A2, I-A5, I-A6,II-A2,and II-A6 showed good antioxidant activity. Quinazoline ring with substituted anilines showed moderate analgesic, anti- inflammatory, anti-tubercular and antioxidant activities. Whereas it showed good anti-cancer activity against MCF-7 breast cancer cell lines, therefore these compounds may serve as a lead molecule for further modification to obtained clinically useful novel entities in the new millennium.

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Gene therapy .

Kezia Susanna M, Tamilarasi M.
B.Sc. Biochemistry, J.B.A.S. College for Women, India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Gene therapy is a rapidly growing field o medicine in which genes are introduced into the body to treat diseases. Gene therapies are done for the following disease,-H I V-malignant melanoma -muscular dystrophy, hemophilia, breast cancer, lung cancer treat familial hypercholesterolemia cystic fibrosis, sickle cell anemia, Gaucher's diseases etc. In conclusion, research continues to grow and is likely to change medicine faster than any previous advancement.

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Nutrition biochemistry and naturopathy.

Javeri J.
IGNOU, Chennai, Inida.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Cure of common cold, cough, and fever through natural diet and naturopathy treatments.The cure of common cold, cough, and fever was seen on number of 15 patients coming to the naturopathy clinic. These clients came with the symptoms of cold cough and fever through naturopathy treatments and natural diet within three days all the symptoms were completely vanished and the clients were healthy again.Diet given was morning 1 glass of water with 2 drops 0of lime. Naturopathy treatment –mud pack on stomach and eyes for 20 minutes . Then Hot Foot bath was given. First breakfast given at 9.00am was – 20 pieces of dried grapes (munakkas) were soaked overnight and the client was given. Second breakfast given was 250- 500gms of fresh fruits were given. At 1.30 pm in lunch – Hot bowl of mixed vegetables was given. Evening -1 glass of fresh fruit juice was given. Dinner was given at 6.30 pm – hot bowl of mix vegetable soup was given. The client was requested to sleep by 9.30 pm –as Sleep is a best medicine according to naturopathy.The Clients were kept on this diet for 3 days and he/she was perfectly fin within three days without the use of medicines.

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Gene- diet interactions prevents – obesity.

Meena P, Neethi Jayan, Sathesh J.
Department of Biotechnology,Sree Sastha Institute of Engineering and Technology, Chennai , India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The research demonstrates that obesity is a complex disorder with a strong genetic basis and a multifactorial etiology in both adults and mostly the children these days. Yet despite the overwhelming evidence that genes play an important role in the development of obesity, many people argue that the increasing prevalence of obesity is simply due to an abundance of palatable food, a dearth of opportunities for physical exercise and other environmental factors. While activity and eating behaviors contribute substantially to the development of obesity, considering these to be the only etiologic factors is directly contradictory to what is now known about how eating and energy balance are regulated. Genes influence every aspect of human physiology, development, and adaptation. Obesity is no exception. The basic knowledge of the molecular processes controlling eating behavior, in particular, has accelerated exponentially in the last 10 years, and this is one area in which obesity genetics has made great progress. The search for human obesity genes began several decades ago.Genetic variation may interact with behavioral factors to influence the regulation of body weight and adiposity. Although exercise and diet strategies are used routinely for obesity treatment, there is a huge variability in how individuals respond to these interventions. There is also a substantial amount of evidence that such responses may also be regulated by genes. Thus this is one of the way by which we can cut down the growth in the increased obesity rate in our country. More research is needed to identify the genes responsible for these interaction effects, and the use of animal models of diet-induced obesity represents a promising approach. Data on children are needed to allow assessment of the tracking of nutrient intake between childhood and adulthood.

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Applications of genetic engineering.

Vinoth D, Muthu Alagammai N, Sathesh J.
Department of Biotechnology, Sree Sastha Institute of Engineering and Technology, Chennai , India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Genetic engineering has wide applications in modern biotechnology. For various industrial processes, this technique may be used in microorganisms as well as with higher organisms. The principle involved is the construction of plasmids of desired biochemical characteristics i.e., the plasmids can be spliced with genes from an unrelated organism. The genes now produce the protein in the cell of host microorganisms. The plasmids are tiny ringlets of DNA, apart from the chromosome, that may contain 2 – 250 genes. They exist autonomously in the cell. This plasmid technology can be applied in the three different sectors in biotechnology such as pharmaceutical industries, agriculture and fermentation industries. Plasmid technology has shown that products like insulin, interferon, vaccines and human growth hormones may be industrially possible. Similarly the genes which produce desire enzymes and secondary metabolites can be driven by introducing plasmid gene for increasing the production of our desired product. In agriculture, nitrogen fertilizers may be eliminated by incorporating plasmids, containing bacterial genes for nitrogen fixation into the plant cells. By 1984, over 200 companies world over had established gene splicing experiments and working, on industrial applications of genetic engineering. One company in 1980 could harvest insulin from bacteria whose plasmids had been spliced with DNA for this protein. There are many other products derived from genetic engineering. Urokinase, a clot dissolving enzyme is produced from genetically engineering bacteria. Endorphin, a pain killer is also derived from bacteria.

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Invitro antibacterial activity of plant extracts of cissus quadrangularis on methicillin resistant staphylococcus aureus (mrsa).

Ganapathy S, Karpagam S.
Bharathiar University,Coimbatore.
Department of Botany, Queen Mary's College, Chennai, India

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ABSTRACT

The rise in antibiotic resistant bacteria over the past decades has resulted in renewed interest in alternative medicine. Our study brings to focus the qualitative antibacterial sensitivity profile of Cissus quadrangularis on Methicillin Resistant Staphylococcus aureus (MRSA). Antibacterial activity of Aqueous, ethanol, chloroform and hexane extracts of Cissus quadrangularis was investigated using Agar gel Disc-diffusion method. Aqueous and hexane extracts showed no inhibitory activity against MRSA while ethanol and chloroform extract showed less inhibition against MRSA with the zone of diameter recorded 10 mm and 9 mm respectively, comparatively less significant than the standard antibiotic. Although our findings are quite unexpected, the investigation brings to focus that the plant needs to be considered and carefully controlled for experimental analysis in future studies. Though antibacterial profile does not show significant results, the ethnobotanic survey claims the plant to have many therapeutic characteristics. Further studies like free radical scavenging and anti-inflammatory studies would be carried out in near future.

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Potential strategy of diet on gene expressions in alzheimer's disease (ad)

Zakira, Thendral Hepsibha B.
Department of Biotechnology, Alpha Arts & Science College, Chennai , India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Alzheimer's disease (AD) an age-related neurodegenerative disease has gained much attention due to their irreversibility, multifactorial approach with increase in prevalence and accompanied socio economic burden. Many studies have focused on a new modality of treatment where nutritional factors can influence the expressions of genes, central to the pathogenesis of AD. This review showcases the pathogenesis of AD and the beneficial effects of diets rich in flavonoids and resveratrol in influencing normal cognitive function. Flavonoids are known to mediate specific interactions within the ERK and PI3-kinase/Akt signaling pathways and are shown to increase the expression of neuroprotective and neuromodulatory proteins and increase the number of, and strength of, connections between neurons and decreases the neuronal stress through the generation of a heat shock protein 70 (HSP70). Resveratrol performs its action through SirT1 gene. Thus the therapeutic potential of the diets provide a better understanding of the ageing mystery.

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Gene-diet interaction on cancer risk in colorectal region.

Jayapriya J, Kopiga R.
Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Genetic factors clearly play a role in carcinogenesis, but migrant studies provide unequivocal evidence that environmental factors are critical in defining cancer risk. Therefore, one may expect that the lower availability of substrate for biochemical reactions leads to more genetic changes in enzyme function. At an international level, colorectal cancer (CRC) is a major cause of morbidity and mortality. Diet plays a major etiologic role, and a range of putative dietary carcinogens have been identified. The probability with which these lead to mutations, and thereby cause cancer, is strongly impacted by variants in genes coding for xenobiotic metabolizing or DNA repair enzymes. Nutrient deficiencies also play a role, which will be exacerbated by variants in metabolic genes. Characteristics of gene and dietary factors are divided into four categories: one carbon metabolism-related gene polymorphisms and dietary factors including folate, vitamin B group and methionines; oxidative stress-related gene polymorphisms and antioxidant nutrients include vegetable and fruit intake; carcinogen-metabolizing gene polymorphisms and meat intake including heterocyclic amines and polycyclic aromatic hydrocarbon; and other gene-diet interactive effect on cancer. Some diet-regulated genes (and their normal, common variants) are susceptibility genes and likely to play a role in the onset, incidence, progression, and/or severity of chronic diseases.The degree to which diet influences the balance between healthy and disease states may depend on an individual's genetic makeup.

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Nanodrops: recent developments in vaccination.

Jayapriya J , Caroline Priyadharshini R, Jenifer A, Umasaravanan D.
Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India.
Department of Environmental Biotechnology, School of Environmental Sciences, Tiruchirapalli, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

In the past 100 years, vaccination has contributed immensely to public health by preventing a number of infectious diseases. Attenuated, killed or part of the microorganism is employed to stimulate the immune system against it. Progress in biotechnology has provided protective immunity through DNA vaccines. Various technologies have been employed for delivering drugs – needle–syringe, liquid jet injectors, micro needle arrays/patches and biolistic particle injection. The advantage of a needle-free system is that it is painless and more effi cient in delivering drug, plasmid DNA and protein. It is a practical alternative to the needle–syringe route for targeted delivery of vaccines.In recent years, nanovaccine is a novel approach to the methodology of vaccination. Nanomaterials are delivered in the form of microspheres, nanobeads or micro-nanoprojections. Painless, effective and safe needle-free routes such as the intranasal or the oral route, or patches of microprojections to the skin are some of the approaches which are in the experimental stage at present but may have a great future ahead in nanovaccination. Many of the nanovaccines are non-invasive, delivered by the oral or nasal route, diffusion patches or microneedle arrays, thus allowing pain-free delivery with minimal damage. This is an advantage over conventional vaccines, which are usually multi-injection, multi-dose delivery systems. In recent years, the number of consumer products containing nanoparticles has nearly doubled, Nanomedicine is a cutting-edge area of research that combines the concepts of nanotechnology and medicine, and provides new hope for research in this field. The idea that a nanostructure could be designed, manufactured and introduced into the human body to improve health, including cellular repairs at the molecular level, is encouraging. Worldwide vaccination programmes have eradicated diseases such as smallpox, diphtheria, poliomyelitis and neonatal tetanus in most of the developed and some developing countries. Thus, immunization has reduced the incidence of such deadly diseases.

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Emerging nanotechnology approaches for HIV/AIDS treatment and prevention.

Jhoncy Rani J, Jayapriya J.
Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India.

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Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The HIV/AIDS pandemic is an increasing global burden with devastating health-related and socioeconomic effects. The widespread use of antiretroviral therapy has improved life quality and expectancy of infected individuals, but limitations of currently available drug regimens and dosage forms, alongside with the extraordinary adapting capacity of the virus, have impaired further success. Currently, there is no cure and no preventive vaccine for HIV/AIDS. Combination antiretroviral therapy has dramatically improved treatment, but it has to be taken for a lifetime, has major side effects and is ineffective in patients in whom the virus develops resistance. Nanotechnology is an emerging multidisciplinary field that is revolutionizing medicine in the 21st century. It has a vast potential to radically advance the treatment and prevention of HIV/AIDS. In this, we discuss the challenges with the current treatment of the disease and shed light on the remarkable potential of nanotechnology to provide more effective treatment and prevention for HIV/AIDS by advancing antiretroviral therapy, gene therapy, immunotherapy, vaccinology and microbicides. Alongside, circumventing the escalating number of new infections can only be attained with effective and practical preventive strategies. Recent advances in the field of drug delivery are providing evidence that engineered nanosystems may contribute importantly for the enhancement of current antiretroviral therapy. Additionally, groundwork is also being carried out in the field nanotechnology-based systems for developing preventative solutions for HIV transmission. Thus the AIDS patient is provided with the immune system so that he can defend himself from diseases. In India more than 50 lakhs of people are infected by this dreadly disease and it constitutes 10% of the total infected. This reviews recent advances in the field of nanotechnology-based systems for the treatment and prevention of HIV/AIDS. Particular attention is given to antiretroviral drug targeting to HIV reservoirs and the usefulness of nanosystems for developing topical microbicides and vaccines.

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Genetically engineered plastid for vaccine production.

Thiyagarajan K, Jayapriya J.
Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Chloroplasts (a type of plastids) are one of the many different types of organelles in the plant cell. In general, they are considered to have originated from cyanobacteria through endosymbiosis. Infectious diseases represent a continuously growing menace that has severe impact on health of the people worldwide. Novel prevention and treatment strategies are urgently needed to reduce the rate of these diseases in humans. Plant expression system is an alternate way to the usual microbial expression systems. Especially plastids showed positive results in the antigenic protein production from different viruses and bacteria. Here we discuss about the improvements that can be done in plastid expression system to choice of expression cassettes, use of inducible systems, marker gene removal and selection of specific antigens for manufacturing at a low cost.

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Peptide mediated targeting angiogenesis with nanoparticles.

Saranya MK , Jayapriya J.
Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Robust angiogenesis underlies aggressive growth of tumors. Therefore, one of the mechanisms to inhibit angiogenesis is to starve tumor cells. Angiogenesis is regulated through a complex set of mediators and recent evidence shows that integrin αvβ3 and vascular endothelial growth factors (VEGFs) play important regulator roles. Therefore, selective targeting of αvβ3 integrin and VEGFs is a novel anti-angiogenesis strategy for treating a wide variety of solid tumors. One approach is to coat nanoparticles with peptides that bind specifically to the αvβ3 integrin and the VEGF receptor .The synthetic peptide bearing Arg-Gly-Asp (RGD) sequence is known to specifically bind to theαvβ3 integrin expressed on endothelial cells in the angiogenic blood vessels, which can potentially inhibit the tumor growth and proliferation. Following hydrophobic modifications, glycol chitosan is capable of forming self-aggregated nanotube and has been used as a carrier for the RGD peptide, labeled with fluoresein isothiocyanate (FITC-GRGDS) .These nanotubes loaded with FITC-GRGDS might be useful for monitoring or destroying the angiogenic tissue/blood vessels surrounding the tumor tissue. (RGDSK-RNT) rosette nanotubes are a G/C motif which imparts functional versatility to the nanotubes for specific medical or biological applications. Therefore, the RNTs can be potentially modified to target a variety of therapeutic molecules in vivo to treat cancer and novel class of nanotubes that are biologically inspired and naturally water soluble upon synthesis. These nanotubes are formed from guanine-cytosine motif as building blocks. However, one of the novel properties of the RNT is the ability to accept a variety of functional groups at the inflammatory diseases.

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Emerging trends in genetic engineering.

Jayapriya J, Nataraj S, Aravindkumar S
Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Applications of genetic engineering in agriculture and the food industry could increase world food supplies, reduce environmental problems associated with food production, and enhance the nutritional values of certain foods. Recombinant DNA techniques, which manipulate cells' deoxyribonucleic acid (DNA), developed in the 1970's enable researchers rapidly to make specific, predetermined genetic changes. Because the technology also allows for the transfer of genes across species and kingdom barriers, an infinite number of novel genetic combinations are possible. By the mid-1990's, more than one thousand genetically modified crop plants were approved for field trials. The goals for altering food crop plants by genetic engineering fall into three main categories: to create plants that can adapt to specific environmental conditions to make better use of agricultural land, increase yields, or reduce losses; to increase nutritional value or flavor; and to alter harvesting, transport, storage, or processing properties for the food industry. Many genetically modified crops are sources of ingredients for processed foods and animal feed. Genetically modified microbes are used for the production of food additives such as amino acid supplements, sweeteners, flavors, vitamins, and thickening agents. In some cases, these substances had to be obtained from slaughtered animals. Altered organisms are also used for improving fermentation processes in the food industry. The transfer of genetic material to wild relatives (outcrossing, or "genetic pollution") might also lead to the development of new plant diseases. As with any new technology, there may be other unpredictable environmental consequences.

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Genetically engineered plant –made vaccines in response to emerging trends.

Largus Shylee M.
Department of Biotechnology, Alpha Arts and Science College, Porur, Chennai, India

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The use of plants as production systems for vaccine antigens has been actively investigated overthe last 15 years. Plant molecular biology and biotechnology have enhanced and expanded the medicinal applications of plants in many ways. Plants can be engineered to act as bioreactors for vaccine and therapeutic production, and their metabolic pathways can be manipulated to increase compounds of benefit or decrease detrimental compounds. While some of these activities can be achieved through mutagenesis and traditional plant breeding, the most direct and exacting path is through genetic modification or transformation of plant cells. Expressing recombinant proteins in transgenic plants has been actively researched for the past 20 years, resulting in a fast and flexible production system. The knowledge, tools and techniques have been steadily building, and have now reached the point where commercial production of biopharmaceuticals by transgenic plants is a certainty. Vaccines are one of the most successful public health achievements of the last century. Systematic immunisation programs have reduced the burden of infectious diseases on a global scale. Furthermore, the requirement to keep vaccines within the cold-chain throughout manufacture, transport and storage is often impractical and prohibitively expensive in developing countries—the very regions where vaccines are most needed. In contrast, plant-made vaccines (PMVs) can be produced at a lower cost using basic greenhouse agricultural methods, and do not need to be kept within such narrow temperature ranges. This increases the feasibility of developing countries producing vaccines locally at a small-scale to target the specific needs of the region. Additionally, the ability of plant-production technologies to rapidly produce large quantities of strain-specific vaccine demonstrates their potential use in combating pandemics. PMVs are a proven technology that has the potential to play an important role in increasing global health, both in the context of the 2015 Millennium Development Goals and beyond.

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Etravirine: a second-generation non-nucleoside reverse transcriptase inhibitor (NNRTI). Active against nnrti-resistant strains of HIV.

Shakthi narayanah KV, Mohan prakash RL.
Department of Biochemistry, R.K.M.Vivekanandha College (unaided), Mylapore, India

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The rapid replication of HIV-1 and the errors made during viral replication cause the virus to evolve rapidly in patients, making the problems of vaccine development and drug therapy particularly challenging. In the absence of an effective vaccine, drugs are the only useful treatment. Anti-HIV drugs work; so far drug therapy has saved more than three million years of life. Unfortunately, HIV-1 develops resistance to all of the available drugs.. The three viral enzymes, reverse transcriptase (RT), integrase (IN), and protease (PR) are all good drug targets. Two distinct types of RT inhibitors, both of which block the polymerase activity of RT, have been approved to treat HIV-1 infections, nucleoside analogs (NRTIs) and nonnucleosides (NNRTIs). Etravirine and rilpivirine are two new nonnucleoside reverse transcriptase inhibitors (NNRTIs) that have the distinct advantage of being able to be used in patients with exposure to previous NNRTIs (e.g., nevirapine or efavirenz). Etravirine was approved by the United States Food and Drug Administration to be used twice/day in treatment-experienced patients infected with the human immunodeficiency virus. The approval was based on phase III clinical studies in which 61% of etravirine-treated patients reached an undetectable viral load of less than 50 copies/ml compared with 40% of patients who received the optimized background regimen. Etravirine was well tolerated with a self-limiting skin rash being the most common toxicity, reported in 19% of patients. Rilpivirine, a once-daily NNRTI, is entering phase III studies; the drug appears to be effective against a broad range of NNRTI-resistant viruses including etravirine-resistant strains.

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Gene cloning and gene therapy for human welfare.

Shakthi Narayanah KV, Mohan Prakash.
Department of Biochemistry, Ramakrishna Mission Vivekananda College, Mylapore, India

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

In the present day scientific world, the importance of Gene Cloning and Gene Therapy cannot be underestimated. Gene cloning is the act of making copies, or clones, of a single gene. Once a gene is identified, clones can be used in many areas of biomedical and industrial research. The treatment of genetic diseases by introducing proper genes into patient's cells is called Gene Therapy.This paper deals with the mechanisms involved in the production of Insulin, Somatotropin, Somatostasin and B-endorphin. The paper also deals with the mechanism of transplantation of Bone Marrow and Liver as part of Gene Therapy.

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Nanotechnology in research.

Ankita Purkayastha.
PG Department of Biochemistry, S R M Arts and Science College, Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

The concept of nanotechnology was first coined by Richard Feynman in 1959.Nanotechnology refers to manipulation of material at a scale of individual atoms and molecules. Use of specialized bacterium sized "assembler" devices; it permits a programmable control of molecular structures. Definition: Nanotechnology represents a biological process to the manufacture of pharmaceutical and other goods. Nanorobots are nanodevices that will be used for the purpose of maintaining and protecting human body against pathogens. They will have a diameter of about 0.5 to 3.0 microns and with a dimension of 1 to 100 nanometres. The powering of these nanorobots will be done by metabolizing local glucose and oxygen for energy. There are two types of applications-Diagnostic and Therapeutic. Improved Imaging of human body, Nano tracking for tumour detection, Quantum dots emitting wavelength depending upon its size are diagnostic applications. These nano devices can be inhaled directly to lung, which then enters the alveolar duct. There are many therapeutic applications like, Delivering medicine, For example, Organic dedrimers (artificial delivering molecule), hollow polymers (gold coated glass beads), Bc12 family of proteins can be used to destroy harmful cancer cells. These can generate radiation which can kill the bacteria, viruses and other cancerous cells, mimic the natural biological process like repair of damaged tissue, healing of broken bones, transport of oxygen to the body to produce more red blood cells, cure skin diseases, mouthwash full of smart nanomachines can be used to clean the mouth and can remove atherosclerotic plaques preventing heart attacks.

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In vitro and in vivo studies on anti-diabetic potential of the stem of Acalypha indica Linn.

Priya CV, Bhaskara Rao KV.
Molecular and Microbiology Research Lab, Environmental Biotechnology Division, School of Bio Sciences and Technology, VIT University, Vellore-632 014, Tamil Nadu, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Diabetes mellitus is a chronic metabolic disorder leading to the raise in blood glucose level resulting in several complications effecting over 346 million people worldwide. Post pandrial hyperglycemia is one of the leading complications of Diabetes mellitus which can be regulated by α-Glucosidase inhibitors. Phytomedicine is well thought to be low toxic and with no side effects. Ethanobotanical studies reveal that over 800 species of medicinal plants are reported to have antidiabetic potential. Acalypha indica (Euphorbiaceae) commonly known as Kuppaimeni is a weed plant growing as an annual herb throughout the Plains of India and traditionally used as a medicine for diabetes. In this study, the aqueous extract of A. indica stem was examined for in vitro and in vivo antidiabetic activities. At a dose of 10 mg/ml, aqueous extract showed 96.6% inhibitory effect on α-Glucosidase in vitro. In vivo antidiabetic activity was carried out in Streptozotocin induced diabetes in Swiss albino rats. Oral administration of aqueous extract at 300 mg/kg body weight reduced blood glucose level by 63.5% in Streptozotocin induced diabetic rats. With all these results we can conclude that aqueous extract of Acalypha indica stem is an effective antidiabetic agent and gives a hope to use herbal medicine as an alternate for treating Diabetes mellitus.

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In vivo screening procedures for evaluating antidiabetic drugs from medicinal plants.

Irudayaraj SS, Sunil C, Ignacimuthu S.
Division of Ethnopharmacology, Entomology Research Institute, Loyola College,Chennai-34

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Diabetes mellitus (DM) is the most common metabolic disorder affecting millions worldwide. It is recognized as a global major health problem. It is caused by an absolute or relative lack of insulin or reduced insulin activity which results in hyperglycemia and abnormalities in carbohydrate, fat and protein metabolism. It leads to micro vascular (retinopathy, neuropathy, and nephropathy) and macro vascular (heart attack, stroke and peripheral vascular disease) complications. It is estimated that there are approximately 33 million adults with diabetes in India. This number is likely to increase to 57.2 million by the year 2025. Type I diabetes (insulin dependent) is caused due to insulin insufficiency because of lack of functional beta cells. Patients suffering from this are therefore totally dependent on exogenous source of insulin while patients suffering from Type II diabetes (insulin independent) are unable to respond to insulin and can be treated with dietary changes, exercise and medication. Type II diabetes is the more common form of diabetes constituting 90% of the diabetic population. This is one of the main reasons for increasing search for improved antidiabetic drugs. Due to the side effects of the existing synthetic drugs, plants are considered a potential source for the treatment of diabetes and search is on within traditional ethnomedical practices. Although medicinal plants have been traditionally utilized for diabetes treatment, a few of them have been proved by scientific evidence. Of late vast diversity of animal models have been developed for the better grasping of the pathogenesis of DM and new drugs have been launched in the market for treatment. This paper reviews the available methods and animal models to explore the mechanism of action of drugs with potential antidiabetic property by in vivo method.

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Computational biology.

Prasannakumar B.
Department of Biochemistry, SRM Arts and Science college, Kattankulathur, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Computational biology is a multidisciplinary area that involves the development and applications of data analytical and theoretical methods, mathematical modelling and computation simulation techniques to the study of biological, behavioural, and social systems. Biomedical image analysis is a fast evolving field driven by the advancement of imaging modalities and high content screening techniques. Many clinical applications are also emerging that use biomedical image processing for decision support. Computational biology which covers the method development and applications, the latter notably in pharmaceutics and medicine. On methodical side we perform research on the analysis of biological sequences(including recombination, viral evolution and computational epigenetic) analysis and prediction of protein structure and function, analysis of intermolecular interactions and interaction net works, gene and protein expression patterns, computational drug screening and drug design. On the application side, we focus on the diseases HIV/AIDS, where we analyze viral drug resistance patterns as well as variants of viral entry into the host cell, HCV/Hepatitis C , where we contribute to uncovering the molecular basis of host –pathogen interactions and neurodegenerative and auto immune disease, where we study underlying protein interaction net works.

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Gene and diet interaction in brain and ageing process.

Priyadharshini P.
Department of Biochemistry, SRM Arts and Science College, Kattangulathur, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

People who live for 100 years or more with little evidence of a decline in brain function ,many others or not so fortunate and experience a neurodegenerative disorder like Alzheimer disease or Parkinson disease .two incurable brain disorders that take a heavy toll on patients as well as the health care system . Although an increasing number of genetic factors may affect the risk for neurodegenerative disorders are being identified. Both disorders involve increased oxidative stress , metabolic impairment, and abnormal protein aggregation .dietary factors play major role in determining whether the brain ages successfully or experiences a neurodegenerative disorder .Dietary factors may interact with disease causing or predisposing genes in molecular cascades that either promote or prevent the degeneration of neurons. Epidemiologic findings suggest that high calorie diets and folic acid deficiency increase the risk for Alzheimer disease and Parkinson disease. Studies on animal models of these disorders have shown (reduced calorie intake or intermittent fasting)and dietary supplementation with folic acid can reduce neuronal damage and improve behavioral outcome .Results from animal studies have shown that the beneficial effects of dietary restriction on the brain increases the production of neurotropic factors and cytoprotective protein chaperones in neurons. Overeating is a major modifiable risk factor for several age-related disease, including cardio vascular disease and type2 diabetes mellitus .recent findings suggest that calorie intake also influences the risk for Alzheimer's and Parkinson disease .Dietary restrictions promote neuronal survival, plasticity, and even neurogenesis by inducing a mild cellular stress response that involves activation of genes that encode proteins design to promote neuronal growth and survival.

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A comparitive study on antibacterial activity of common weeds.

Latha S, Gunasundari S.
Biochemistry, JBAS College for Women, Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

In this study a comparision on antibacterial potency of common weeds i.e. Antigonon leptus, Croton sparsiflorus and Lantana camara were conducted . Antibacterial efficacy on the microorganisms, bacillus subtilis, Escherichia coli, Klebsiella pneumonia, and pseudomonas aeruginosa and Staphylococcus aureus were investigated. For this purpose, the leaf extracts of the plants were prepared using acetone, chloroform, hexane and methanol. The prepared extracts were analysed for its bioefficacy through disc diffusion method. Among the solvent studied, methanolic extract alone given positive results. The hexane and chloroform extract of all the three plants showed poor response in resisting bacterial growth. Among the plants studied, methanolic extract of Lanthanacamara possess greater activity than Croton sparsiflorus and antigonon leptopus.

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Alternative medicines.

Sivasankari V, Shunmuga Priya S, Sathesh J.
Department of Biotechnology, Sree Sastha Institute of Engineering and Technology, Chennai, India.

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Alternative medicines cover a broad range of healing philosophies approaches and therapies. It provides powerful cure in treating depression, act as anesthetic, energizing the body's own healing power and offers hope for certain illness. For example: Herbal medicine, Homeopathy, Yoga therapy, Acupuncture and Ayurveda. Worldwide, only a ten to thirty percent of human health care is delivered by conventional biochemically oriented practitioners. The remaining seventy to ninety percent ranges from self care according to folk principles.

Herbal medicine is the most ancient form of healthcare known. Many drugs that are now considered conventional medications were originally derived from herbs. Homeopathy seeks to cure in accordance with natural laws of healing and uses medicine made from natural substances such as animal, vegetable and minerals. Yoga therapy to address mental and physical problems while integrating body and mind. Acupuncture is an ancient Chinese medicine, based on the idea that the body's energy must be able to flow smoothly through fourteen major energy channels. Ayurvedic medicine is a system of traditional medicine native to India. Twenty percent of ayurvedic treatments tested contained toxic level of heavy metals such as lead, mercury and arsenic. Others concerns include the use of herbs. Alternative medicines have little to no side effects and each remedy may serve multiple purposes.

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Antimicrobial, phytochemical analysis and wound healing activity of Couroupita guianen.

Amutha KA, Roshni NP.
Department of Biotechnology,VELS University, Pallavaram, Chennai, India

From International Conference on Biosciences- Trends in Molecular Medicine.
Post Graduate Department of Biochemistry, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai 600 106, India. 7-8 February 2012.

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ABSTRACT

Couroupita guianensis is a medical plant, used in several diseases like skin diseases antibiotic, antifungal, antiseptic and analgesic qualities. The juice made from the leaves is used to cure skin diseases. The inside of the fruit can disinfect wounds and young leaves ease toothache. The methanol extract showed high antibacterial activity against Staphylococcus aureus, Bacillus subtilis, E. coli, Klebsiella. The crude methanol solvent extract showed antifungal activity against Aspergillus flavus, A. niger and Pencillium citrium. Four different compounds were obtained from TLC analysis among the four compounds two of them were major fraction, which contains higher Rf values. One of the major compound was partially purified by scrapping and elution method. The wound was created of about 500 mm2 diameter on the dorsal back of testing rats. The C. guianensis water extract ointment treated wounds was compared with control and herbal ointment. The tensile strength indicates better wound healings stimulated by applied herbal formulation. Wherever created the wound, the scar areas were cured with in nine days of period.

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