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Proceedings of

"Conference on Recent Advances in Biomaterials Dec 17-18 '10"

Held at Saveetha School of Engineering, Saveetha University, Thandalam, Chennai-602 105, Tamilnadu, India

SCOPE OF THE CONFERENCE

"The conference will provide a platform for discussing current advancements and future trends in biomaterials for medical and pharmaceutical applications. Through the synergistic approach of applied chemistry and physics, material science, electronics, mechanical engineering, biochemistry and medicine, this Conference on biomaterials includes how the deeper insight into biological events and its interplay with nanotechnology may support the development of a generation of novel materials, micro-nano-devices and molecular level approaches suited to solve relevant biomedical problems both for therapy and diagnostics. The conference will provide an excellent opportunity to meet and forge collaboration with large number of experts with diverse specializations including engineering, basic sciences, medical and dental professionals, etc. For the research scholars and students, CRAB 2010 will be an eye opener and an excellent opportunity to meet experts from various institutions in India and abroad."

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THEME 3

TISSUE ENGINEERING, SYNTHETIC ORGANS, NERVE REGENERATION

Abstract ID: 21

BIO-ACTIVE POLYPHENOLICS OF *KALANCHOE TUBIFLORA*

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Kalanchoe tubiflora is a garden plant, belonging to Crassulaceae family. *K.tubiflora* is also known as mother of thousands as the tiny plantlets grow on the leaf stem ends. *K.tubiflora* is native to Madagascar where it grows as an annual/biannual and blooming habits. The *K.tubiflora* produces beautiful reddish coral pink, bell-shaped flowers in winter. The plant contains a active compounds including alkaloids, terpenoids, flavonoids, steroids have been isolated from this species. Fresh stem of *K.tubiflora* of nearly 4kg was extracted with 85% MeOH under reflux. The alcoholic extract was concentrated in vacuo and the aqueous concentrate successively fractionated with benzene, peroxide free Et₂O and EtOAc. The benzene fraction did not yield any isolable material. The ether fraction gave kaempferol. The ethyl acetate fraction gave Afzelin (kaempferol-3-O-rhamnoside). The structure was ascertained under 1H-NMR, 13-C-NMR, UV, Shift reagents, chemical reactions and hydrolytic studies. The structure was conformed by CO - PC, mixed melting point with an authentic sample. Afzelin is active on both Gram positive and Gram negative organism even at 25µg itself. The ethyl acetate solvent of *K.tubiflora* The SRBC membrane stabilization for anti-inflammatory activity showed two biphasic, one at 25µg and other at 75µg itself. The plant is widely used in traditional medicine for the treatment of variety of ailments and well known for its haemostatic and wound healing properties.

Keywords: Afzelin, kaempferol, *Kalanchoe tubiflora*

Abstract ID: 42

COUNTER TERRORISM

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Data mining can be used to model crime detection problems. Crimes are a social nuisance and cost our society dearly in several ways. Any research that can help in solving crimes faster will pay for itself. About 10% of the criminals commit about 50% of the crimes. Here we look at use of clustering algorithm for a data mining approach to help detect the crimes patterns and speed up the process of solving crime. We applied these techniques to real crime data from a sheriff's office and validated our results. We also use semisupervised learning technique here for knowledge discovery from the crime records and to help increase the predictive accuracy. We also developed a weighting scheme for attributes here to deal with limitations of various out of the box clustering tools and techniques. This easy to implement data mining framework works with the geospatial plot of crime and helps to improve the productivity of the detectives and other law enforcement officers. It can also be applied for counter terrorism for homeland security. Key words: Data Mining, Clustering algorithm, Spatial Mining.

Keywords: Spatial Mining

Abstract id:89

ROLE OF BIOMATERIALS IN JOINT REPLACEMENT

T. Siva, Dr. Rajasekar

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Virtually everyone has a simple biomaterial in their body. Various biomaterials like titanium, cobalt, plastic etc; which were widely used in the field of engineering has recently gained a prime importance in medicine as well. Biomaterials save lives, relieve suffering and improve the quality of life for a large number of patients. Use of these materials in surgery and other invasive procedures has many advantages like high strength, low failure rate and longer life. Application of these biomaterials will be discussed with a special emphasis on knee and hip joint replacements.

Keywords: titanium, cobalt, plastic

Abstract id:73

LUMINAL PLASTINATES- REVEALS THE HIDDEN ANATOMY

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Luminal cast plastination is a boon in anatomy museum technique, which can help the medical students in understanding the internal branching patterns of ducts, arteries and bronchus. These models are useful in student's group discussions for correlating the anatomical structures with its physiological functions and clinical aspects. This paper emphasizes on the procedure, advantages and the uses of luminal cast plastinates in various disciplines.

Keywords: Luminal cast plastination

Abstract id:72

AN APPROACH FOR RETINAL BLOOD VESSEL SEGMENTATION

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An approach to Handle both healthy and unhealthy retinas simultaneously. Detecting blood vessels is an important role and it is difficult in Retinal images with the presence of bright and dark lesions. Segmentation is used to detect the blood vessels. The proposed Multiconcavity approach is to handle both healthy and unhealthy retinas simultaneously. This approach consists of three measures. First, to handle the bright lesions, the differential concavity measure is proposed. Second, to remove the dark lesions, the line-shaped concavity measure is proposed. Third, to deal with unevenly distributed noise due to the spherical intensity variation in a retinal image, locally normalized concavity measure is designed. Finally, the three concavity measures are combined together according to their statistical distributions to detect vessels in general retinal images. The proposed method shows very attractive performances not only on healthy retinas but also on a mixture of healthy and unhealthy retinas.

Keywords: Multiconcavity



Abstract id:69

"INVITRO ANTIOXIDANT AND FREE RADICAL SCAVENGING ACTIVITY OF ETHANOLIC ROOT EXTRACT OF *SESBANIA GLANDIFLORA*

Lakshmi T, Madhusudhanan N, Geetha R.V, Gowtham Kumar S, Anitha Roy

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Sesbania grandiflora, commonly known as "agathi," is widely used in Indian traditional medicine for various diseases. The ethanolic extract of the root of *Sesbania glandiflora* (SGRE) was screened for antioxidant activity using 1,1-diphenyl-2-picryl hydroxyl (DPPH) quenching assay, 2,2'-azinobis-3-ethylbenzothiazoline-6-sulfonic acid (ABTS) cation decolorization test, ferric reducing power (FRP), scavenging capacity towards hydroxyl ion (OH^{*}) radicals and nitric oxide (NO) radical inhibition activity using established assay procedures. The extract exhibited high antiradical activity against DPPH, ABTS, nitric oxide and hydroxyl radicals. The FRP increased with increasing concentration of the sample. The antioxidant activity of the extract was comparable with that of the standard.

Keywords: radical inhibition, DPPH

Abstract id:47

THE EFFECTS OF STREPTOZOTOCIN DIABETES IN THE RAT PENIS

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The objective was to describe the changes in catecholamine levels, noradrenaline (NA) release and the ultrastructural and immunohistochemical changes in the sympathetic nerves in the penis of STZ-diabetic rats. Nerves were studied using immunocytochemistry for tyrosine hydroxylase, and electron microscopy. Immunohistochemical staining for tyrosine hydroxylase showed either no change or an increase in the levels of the enzyme around the central arteries and the outer coverings of the corpus cavernosum. Cavernosal nerves show increased intensity of staining for tyrosine hydroxylase, and the presence of dilated nerve fibres and engorged endings. The axons of the dorsal nerve of the diabetic penis have a smaller cross-sectional area that is most marked in unmyelinated axons. In the diabetic penis, the nerve endings appear to contain significantly more NA than the controls, and the turnover of noradrenaline is increased substantially. There is immunocytochemical evidence of an increase in staining for tyrosine hydroxylase, suggesting an increase in synthetic activity. These results are discussed in relation to the existing literature on the role of amines in normal and disordered erectile function and hence, in the diabetic penis, the NA level is increased during the erectile function.

Key words: Diabetes and streptozotocin

Abstract id:57

BONE MORPHOGENETIC PROTEIN IN REGENERATIVE MEDICINE

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Bone morphogenetic proteins (BMPs) are multi-functional growth factors that belong to the transforming growth factor beta (TGFbeta) superfamily. The roles of BMPs in embryonic development and cellular functions in postnatal and adult animals have been extensively studied in recent years. (Chen D et al (2004) Growth factors). currently 20 BMP varieties have been identified, of which BMP 2 is in wide clinical practise. BMP used in clinical practise is genetically engineered version of protein that occurs naturally. The protein is isolated from the laboratory and then purified, its reproduced with Recombinant DNA Technology. BMP is combined with sponge and placed in the bone defect areas for development of new bone. BMP are local acting –signaling proteins. BMP signals are mediated by type I and II BMP receptors and their downstream molecules. They send signals to the receptors present on the surface of the cell. These receptors transmit the signals to the responsive mesenchymal cells inducing bone and cartilage forming cells. These transform into osteoblastic cells helping in bone formation. This paper reviews on the isolation, osteoinductive nature of Bone Morphogenetic Protein. It also throws light on its clinical implications and its role in Regenerative medicine.

Key words: (TGFbeta) superfamily, Morphogenetic Protein

Abstract id:107

GOLDEN RICE

Chandrasekharareddy arumalla

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Over 500 000 children and over one million deaths annually can be attributed to VAD (vitamin A deficiency). The normal rice endosperm lacks essential nutrients, such as carotenoids with provitamin A activity. The role of vitamin A is in vision and maintaining the health of the eye as well such as maintaining the immune system. Golden rice that contains high amounts of β -carotene (provitamin A) in its endosperm. The present poster focussed on how the genes isolated from the daffodil plant and inserted into the rice species, along with the diagrammatic representation of the beta carotene production pathway in golden rice. And the activation of the daffodil gene leads to the synthesis of the enzymes Phytoene synthase, Phytoene desaturase, ξ -carotene desaturase and Lycopene-beta-cyclase leads to the production of vitamin A (beta carotene). In this paper elaborately focused on the advantages, disadvantages, the ongoing and future research work on Golden rice.

Keywords: Lycopene-beta-cyclase, Phytoene synthase, Phytoene desaturase



Abstract id:109

PHYTOCHEMICAL STUDIES ON *HIBISCUS ROSASINENSIS*

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Hibiscus rosasinensis Linn. of Malvaceae family popularly known as semparuthi in Tamil is an evergreen woody glabrous, showy shrub. It is a native of China. The flowers are reported to be eaten, raw or pickled in China and Philippines. Analysis of the flower showed the presence of thiamine and ascorbic acid. Crushed flowers yield a dark purplish dye which was formerly employed for blackening shoes. The flowers contain cyanidin-diglucoside. The leaves contain carotene. The flowers are considered demulcent, emollient, refrigerant, aphrodisiac and emmenagogue. They are made into a paste and applied to swellings and boils. A decoction of the flowers is given in bronchial catarrh. They are fried in ghee and given for menorrhagia. In Malaya, a decoction of the root is used for venereal diseases and fever. Fresh root juice is given for gonorrhoea and powdered root for menorrhagia. The root is used in Mysore for certain diseases of cattle. Antipityrosporum activity of an herbal drug combination of *Wrightia tinctoria* and *Hibiscus Rosa-sinensis* was tested against the isolates of pityrosporum ovale recovered from dandruff by in vitro study. *Hibiscus Rosa-sinensis* have been found to contain Antifungal activity. The fresh flowers of *Hibiscus Rosa-sinensis* were subjected to phytochemical studies and found that the flowers contain the compounds such as quercetin and azaleatin-3, 7 di-o-glucoside. The structure of the isolated compounds were characterized by PC, UV, H1-NMR and C13-NMR spectra and the isolated compound possessed fairly good pharmacological activities.

Keywords: Thiamine; Ascorbic acid; quercetin ; azaleatin-3, 7 di-o-glucoside



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