

Molecular Docking Studies of Plant Derived Natural Ligands as Insulin Activators for the Treatment of Diabetes Mellitus

Gigin Pullemkunnel¹ and Rishad K.S.²

¹School of Biosciences

Mar Athanasios College for
Advanced Studies Tiruvalla (MACFAST), Kerala 689101

²Unibiosys Biotech Research Labs, Kochi, Kerala

*E-mail: gigin@macfast.org

ABSTRACT

Diabetes mellitus is a chronic metabolic disorder faced by the people worldwide. It is caused mainly by insulin insufficiency or insulin dysfunction. Various medicinal properties of herbal plants have been studied over 1000 years for diabetes treatment. Even though various approaches exist to reduce the ill effects of diabetes herbal drugs are more preferred due to fewer side effects. Medicinal plants such as *Allium sativum*, *Coccinia indica*, *Gymnema sylvestre* etc. used in the traditional ayurvedic medicine can lead to the development of many commercial drugs and nutraceuticals for controlling diabetes mellitus. Phosphorylated Insulin Receptor Tyrosine Kinase in complex with peptide substrate was selected as the targeted protein in this study. For the molecular docking studies Autodock version 4 was used. Several tools like *Chemsketch*, *Open Babel*, *SPDBV*, *UCSF chimera* were used. Protein databases, KEGG pathway were also used as an aid for collecting data required for docking. All the selected ligands were natural origin and undergone several screening processes to find out the best lead molecule. The screening process includes formation of H bonds between ligands and target protein, ADME properties, toxicity, Lipinski rule of five and druglikeness score etc. This project identified 5 potential lead molecules against diabetes mellitus which may be further evaluated for various studies to prove the safety and efficacy of the molecules in the treatment of diabetes.

Keywords : Diabetes mellitus, Insulin receptor, Molecular docking, Antidiabetic activity

Antiviral Activity of Minocycline, an FDA Approved Drug, Against Dengue Virus Infection

Shilpa Lekshmi Leela

School of Biosciences

Mar Athanasios College for Advanced Studies

Tiruvalla (MACFAST), Kerala

E-mail: shilpalekshmi@macfast.org

ABSTRACT

Dengue, one of the most common arthropod-borne viral diseases in the world is caused by dengue virus (DENV), and has become a severe health care hazard these days. Infection with DENV results in a wide range of clinical stages ranging from dengue fever (DF) to severe dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). The complex interplay between the host and viral factors and the adverse effect of hosts' immunological response further accelerate the pathogenesis associated with infection. This makes it difficult for the development of safe therapeutic options against DENV infection and there exists the need for an effective antiviral therapy. This review discusses the recent advances in the antiviral research by targeting FDA approved drugs. Minocycline, a second-generation tetracycline antibiotic, was proved to have antiviral action against many viruses. When used to examine its effect against DENV, it was found to be effectively decreasing the virus production. Viral RNA synthesis and protein synthesis were found to be significantly decreased after minocycline treatment.

Key words: Dengue Virus Infection, Minocycline, Virus Production, Antiviral Genes

Significance of HbA1c Test in Diagnosis of Diabetic Patients

Sini Kurien^{1*} and Raja Maheswari S.²

School of Biosciences

Mar Athanasios College for Advanced Studies

Tiruvalla (MACFAST), Kerala

Vivekanandha College of Arts and Sciences for Women

Namakal, Tamil Nadu, India

* E-mail: sini@macfast.org

ABSTRACT

Diabetes mellitus (DM) is a major public health problem worldwide. Current global estimates indicate that this condition affects 415 million people and is set to escalate to 642 million by the year 2040 (IDF, 2017). The American Diabetes Association has recommended glycated hemoglobin (HbA1c) as a possible substitute to fasting blood glucose for diagnosis of diabetes. HbA1c is an important indicator of long-term glycemic control with the ability to reflect the cumulative glycemic history of the preceding two to three months. HbA1c not only provides a reliable measure of chronic hyperglycemia but also correlates well with the risk of long-term diabetes complications. Elevated HbA1c has also been regarded as an independent risk factor for coronary heart disease and stroke in subjects with or without diabetes. The valuable information provided by a single HbA1c test has rendered it as a reliable biomarker for the diagnosis and prognosis of diabetes. This review highlights the role of HbA1c in diagnosis and prognosis of diabetes patients.

Keywords : Diabetes, HbA1c, Diagnosis, Prognosis, Blood test

Introduction

Analysis of glycated hemoglobin (HbA1c) in blood provides evidence about an individual's average blood glucose levels during the previous two to three months, which is the predicted half-life of red blood cells (RBCs). The HbA1c is now recommended as a standard of care (SOC) for testing and monitoring diabetes, specifically the type 2 diabetes (Khan, 2011).

Historically, HbA1c was first isolated by Huisman et al. in 1958 and characterized by Bookchin and Gallop in 1968, as a glycoprotein (WHO, 2011). The elevated levels of HbA1c in diabetic patients were reported by Rahbar et al. in 1969. Bunn et al. identified the pathway leading to the formation of HbA1c in 1975. Using the HbA1c as a biomarker for monitoring the levels of glucose among diabetic

Brief evaluation of GST on MSMEs in India

Jibumon K. G.

Assistant Professor

Department of Management Studies

Mar Athanasios College for

Advanced Studies Tiruvalla (MACFAST), Kerala 689101

E-mail: jibumonkg@macfast.org

ABSTRACT

Implementation of Goods and Service Tax has been making huge impact in the Indian economy. This study focus on the impact of Goods and Service Tax on MSME's in India. The study is relevant because, in India MSMEs contribute over MSMEs contribute around 6.11% of the manufacturing GDP and 24.63% of the GDP from service activities as well as 33.4% of India's manufacturing output. They have been able to provide employment to around 120 million persons and contribute around 45% of the overall exports from India. The sector has consistently maintained a growth rate of over 10%. After the study after the study I can realize that there are multiple impacts in the functioning of MSMEs after GST.

Keywords: Goods and Service Tax (GST), Micro small Medium Enterprises(MSME)

Introduction

The introduction of goods and service tax in India makes a huge impact in the field of taxation in India. This is the first time the nation witnessed such a massive restructuring of taxation after independence. The prime intention of GST is to minimize the tax burden by merging various types of both central and states taxes. for the customers point of view the total cost will be reduced by 20%- 30%.

Since the introduction of GST there is a mix

of responds from the industrial sector, the registration of small scale industries and new start ups recued by 14 % and from main stream industry we can see that a positive impact in the terms of cost reduction.

MSME in India

The Indian MSME sector is the backbone of the national economic structure and has unremittingly acted as the bulwark for the Indian economy, providing it resilience to ward off global economic shocks and adversities. With

Exploring the Intention to Watch Advertisements on YouTube Among Youth

Ligo Koshy¹ and John Manohar, S.²

¹Dept. of Management Studies

Mar Athanasios College for

Advanced Studies Tiruvalla (MACFAST), Kerala 689101

²Research Guide, Bharathiar University, Coimbatore

*E-mail: ligo@macfast.org

ABSTRACT

YouTube is the most popular online video platform. Thousands of videos are being uploaded in to YouTube every day. Marketers are placing their advertisements inside the YouTube videos and over a period of time, this has evolved as a business model which generates revenue for the people who upload videos. The purpose of this study is to analyse various factors resulting in the behavioural intention to watch advertisement on YouTube with the help of the Theory of Reasoned Action. The relationship between attitude towards online advertisements, subjective norms and prior watching of online advertisement videos on the viewer's intention to watch online advertisement is analysed. The study was conducted among the students who are doing their graduation in colleges across Ernakulam district of Kerala. The sample size for the study is 300. The result of the study indicated that there is a positive correlation between Attitude towards online advertisements, Subjective norms and prior experience in watching online advertisements with the intention to watch online video advertisements on YouTube

Keywords: Online advertisements, YouTube video advertising, attitude towards advertising, intention to watch online advertisements

Introduction

The digital revolution in India, driven by the roll out of 4G, reducing data costs, increasing smart phone penetration and increasing time spent on mobile phones, will ensure that digital advertising will also grow at a faster clip as against the traditional media in the very near future. According to a report

on digital advertising by Dentsu Aegis Network, the Indian digital advertising industry, currently pegged at around Rs 8,202 crore, is slated to see a growth at 32% CAGR to reach Rs 18,986 crore by 2020. The report also forecasts that digital media spends, currently contributing 15% of the total

The Gut Microbiome and Mental Health

Gigin Pullemkunnel* and Biju Dharmapalan
School of Biosciences, Mar Athanasios College for
Advanced Studies Tiruvalla (MACFAST), Kerala 689101
*Email: gigin@macfast.org

ABSTRACT

A Microbiome mainly refers to a collective genome of microorganisms in a specific environment and microbiota is a community of same microorganisms. Gut Microbiome is a complex community of microorganisms that lives in digestive tract of human and animals. Gut microbes play a very significance role in many aspects of human health including immune, metabolic and neurobehavioural traits. It also influences many areas of human health from innate immunity to appetite and energy metabolism. The Microbiome consists of at least 1000 different species of known bacteria with more than 3 million genes. This article deals with the relationship gut Microbiome and various mental health issues.

Key words: Gut Microbiome, Microbiota, Prebiotics, Probiotics, Brain

Introduction

Almost half the cells and 1% of the unique genes found in our bodies are human, the rest are from microbes, pre-dominantly bacteria, archaea, fungi, and viruses. These microorganisms collectively form the human microbiota, with most colonizing the gut (Tremlett *et al.*, 2017). The gut microbiome is the centre of human health. Bacteroidetes and Firmicutes make up around 90% of the gut microbiota. The human gut microbiota is an important environmental factor for human health, having evolutionarily conserved roles in the metabolism, immunity, development, and

behaviour of the host (Bäckhed *et al.*, 2015). The inbalancing of gut microbiome has been associated with various disorders like obesity, diabetes, autism, mood disorders etc.

Gut microbiome, also known as microflora of gut is 150 x larger than the human genome. Its composition is quantified using DNA based methods such as next generation sequencing of 16S ribosomal RNA genes or whole genome shotgun sequencing. The gut microbiota, composed of thousands of different microbial species and more than 15000 kinds

WIDE



Shot on vivo S1
AI Triple Camera

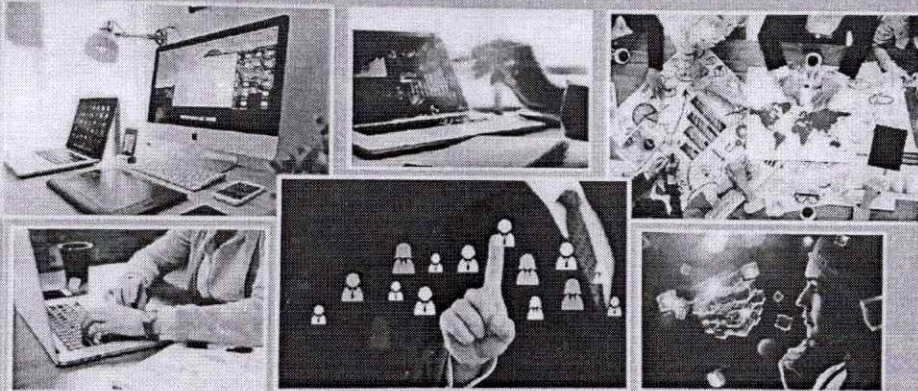


INTCONF 2K18

Conference

Proceedings on

Emerging Trends in Management



2021.07.10 12:00

MARIAN INTERNATIONAL INSTITUTE OF MANAGEMENT
Kuttikkanam P.O, Peermade, Idukki Dist
Kerala



Wide Shot on vivo S1
AI Triple Camera

2021.07.10 12:00

	Contents
9. Indian Financial System: Pitfalls and Future Trends <i>Jinu Joseph</i>	101
10. Demographic Perspective of Competency: A Study among Banking Professionals <i>Keerthy T.R. and M.K. Biju</i>	115
11. 'Factors Influencing Online Shopping Behaviour of Consumers': A Study with Respect to Kottayam District <i>Neethu Ann Georgie,</i>	126
12. A Study on Service Quality and Customer Satisfaction on Banking Services, with Special Reference to the Educational Loan Beneficiaries from North Kerala Region <i>P.V. Joseph and R. Sakthivel</i>	131
13. Issues and Challenges of E-Commerce <i>Rinu Raju and Ronal Sunny</i>	139
14. Testing the Application of Capital Asset Pricing Model in IPOs Listed in BSE <i>V. Saravanan and Joji Chandran</i>	150
15. A Descriptive Analysis on Investors' Economic Factors Influencing Gold ETF Investments in India <i>K.H. Sheeba</i>	160
16. Entrepreneurship Development in Rural India Opportunities and Challenges <i>Shino Abraham, Bincy Babu and Prashant S. Kumar</i>	170
17. Review of Service Quality, Customer Satisfaction as Antecedents of Customer Loyalty <i>Abhishek Asthana, Sindhu and M.S. Bhat</i>	182
AUTHOR INDEX	197

ABSTRACT

Consumer behaviour and attitude place a key role in determining the success or failure of any business and hence the former is capable of predicting the future trends of any business. Firms try to make use of various strategies so as to attract consumers and the latter's behaviour varies with respect to these strategies. The case is not different with respect to online shopping, the phenomenon that gained popularity due to IT revolution. Online shopping uses internet as the medium for buying goods and services and the consumers have varied thoughts and intuitions with respect to this medium. As a single factor can create different responses among consumers, it always has been an area of interest for marketers as well as researchers. The current study aims in analysing the sway of selected factors like convenience, delivery of product, return policy and ease of using debit/credit card information with respect to the dependent variable, consumer's behaviour towards online shopping and correlation using spss is used to evaluate the influence. The crum conducted shows that convenience act as a motivating factor whereas fear for loss of money, non delivery and improper return policy have depressing effect on online shopping behaviour.

Keywords: Online Shopping, Consumer Behaviour, Non Delivery, Return Policy, Convenience

INTRODUCTION

As we are dwelling in consumer oriented society, the field of 'Consumer behaviour' has attained high importance especially in marketing planning and management. Consumer behaviour is an attempt to understand what the consumer want, why they want and when they want. Clear consideration of the buying behaviour has become a necessity in modern society, as the success or failure of any product or firm ultimately depends upon the behaviour of the target customers. The advent of internet has provided ample opportunities for organisation as well as consumers, as the former functions in a global village whereas the latter have access to products from national as well as international players. Marketing through online media can be termed as S-commerce or social commerce. Social commerce contains social media or online media and it maintains the social collaboration and customer's involvement



Shot on vivo S1
AI Triple Camera

helps online purchasing and vending of the products and the services. Consumers undergo some steps while they make purchase through the online platform and it includes

- Search for the need-based information.
- Evaluating alternatives.
- Choose one that best fits criteria.
- Transaction is processed (Li and Zhang 2002).

While the consumers undergo their rummage around online sites, they may face various opinions in their mind and the case is not different while they undergo the purchase process. The document is an analysis on various factors that have effect on online shopping and consumer's behaviour and attitude.

OBJECTIVE OF THE STUDY

The broad objective of the study is to analyse the influence of factors like convenience, return policy, delivery of goods and financial risk on the dependent variable, consumer's attitude towards online shopping and the work proceeds with determination of the relationship between the independent factors and consumer's attitude on online shopping.

CONCEPTION AND MODEL

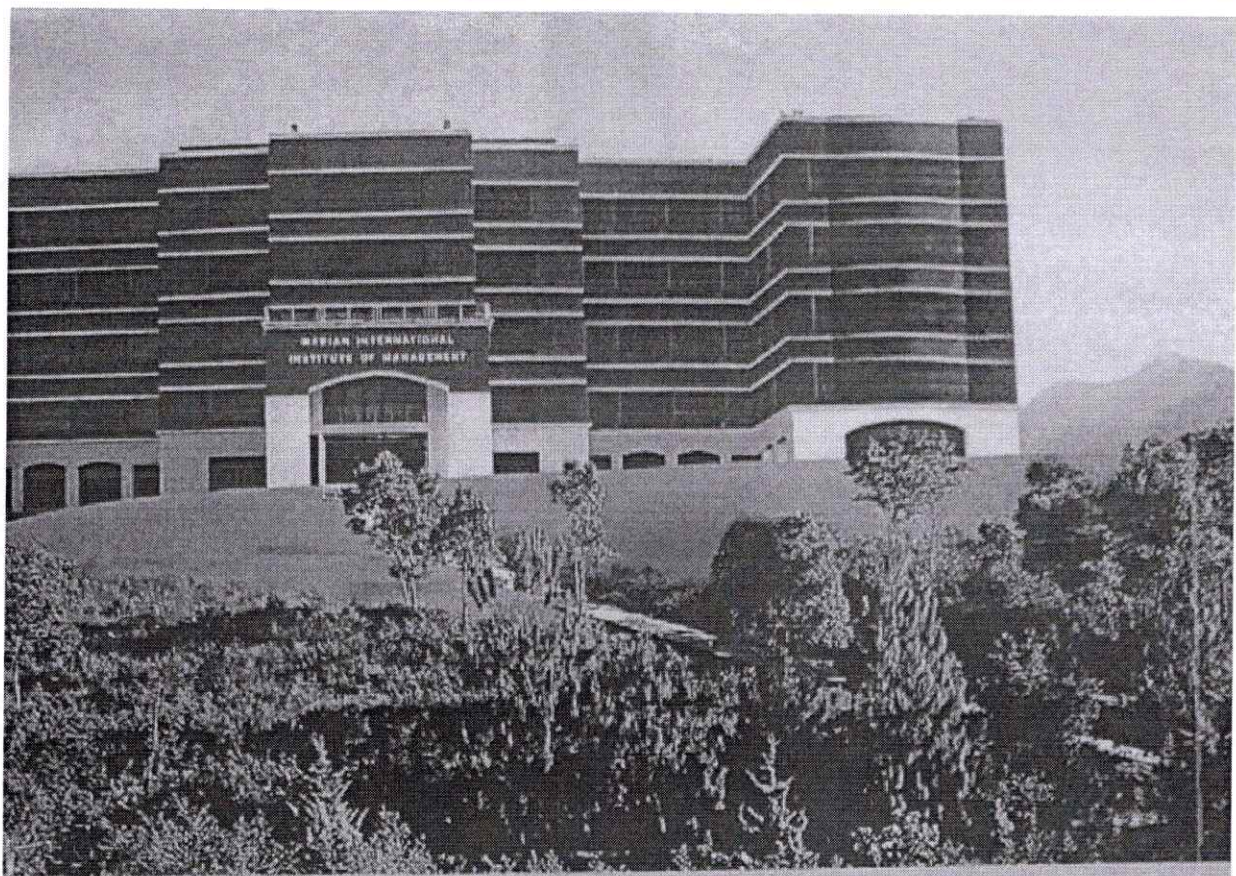
Online stores have many advantages over traditional shopping. They are appropriate and time saving and do not require wandering and waiting in long queues. They are available anytime and anywhere and offer consumers with free and rich product information and services. E-stores uses online tools to help consumers match and make purchase choices among several products and services (Moshrefjavadi, Dolatabadi et al., 2012). They also try to maintain the social collaboration and customer's involvement so that these factors will encourage buyers to make or repeat online purchasing and vending of the products and the services from same site or related sites (Shen and Eder 2012).

The customer's knowledge about online shopping have a vital influence on brands choice and consumers attitude. Social networking sites offer divers standards, principles and ethics for improved brand equity as well as word of mouth communications, business framework information sharing and engendering consumer's social care (Ballantine and Stephenson 2011). The earlier studies and researches scrutinized a lot of factors that effects on online shopping and consumer's behaviour and attitude. The factors such as financial, product convenience and non-delivery may act as boon or curse for online shopping (Chen 2009). The insights obtained from previous research works were used to develop a conceptual model. The model uses factors like

2021.07.10 12:02

Shot on vivo S1
AI Triple Camera





INTERNATIONAL INSTITUTE OF MANAGEMENT

Kuttikkanam P.O.

Peermade, Idukki Dist., Kerala-685531

Ph: +91 4869 233914

Email: directormiim@gmail.com

www.miim.ac.in

Excel
INDIA PUBLISHERS

EXCEL INDIA PUBLISHERS

91 A, Ground Floor, Pratik Market, Munirka, New Delhi-110067

Call: +91-11-2671 1755/ 2755/ 3755/ 5755 • Fax: 011-2671 6756

Cell: +9899127755/ 9999609755/ 9910757755

e-mail: publishing@groupexcelindia.com • Web: www.groupexcelindia.com



₹ 1200 ■ US\$ 50

A Review on Bioformulations in Plant Growth Promotion

Femin S. Uthup

School of Biosciences, Mar Athanasios College for
Advanced Studies Tiruvalla (MACFAST), Kerala 689101
Email: femins@macfast.org

ABSTRACT

Microbes have one of the important roles in sustainable agriculture as these microorganisms tend to reduce the dependence on chemical fertilizers and pesticides. The regular use of the pesticides and chemical fertilizers has a negative effect on agro-ecosystem and is also harmful to human and animal health. In recent years, the development of microbial bioinoculants for enhancing plant growth and disease eradication has emerged as an alternative. Bioformulations are the products that contain microbes or their metabolites which can be used for providing bioregulators or nutrients or to fight phytopathogens. At the economic and social level, the green strategy of using microbes as bioformulation is facing hurdles and lags behind the competitors which are mainly the synthetic fertilizers and pesticides. It has been found most of the times that results given by bioformulations are different and are not good compared to laboratory conditions. Such constraints are one of the major challenges of this greener approach. This review article intends to explore different aspects of bioformulation development.

Key words: Active ingredients, additives, bioformulation, carriers

Introduction

Bioformulations are the products that contain microbes or their metabolites which can be used for providing bioregulators or nutrients or to fight phytopathogens. A bioformulation is typically a mixture of an active ingredient with inert or inactive substances. A typical bioformulation has an active ingredient, carrier material and additive

The active ingredient is mostly a living or viable organism. Active ingredients can also be called as bioagents and they are generally found in rhizosphere. Bioagents have diverse mechanisms which effect the plant growth directly or indirectly (Jambhulkaar *et al.*, 2013). Microbes belonging to genera Bradyrhizobium, Rhizobium, Mesorhizobium,

Clovora -A New Herbal Mouthwash for Oral Hygiene

Amal P. K., Anu Anna Joy, Athira Thomas, Jessiya Jacob,
Biju Dharmapalan* and Pinchu Elizabeth Thomas
School of Biosciences, Mar Athanasios College for
Advanced Studies Tiruvalla (MACFAST), Kerala 689101
*Email:biju@macfast.org

ABSTRACT

The aim of the study is to reveal the relevance of herbal mouthwash over the chemical one. Nowadays numerous mouthwashes are available in the market in various brands. Most of the ingredients used in it are chemicals and it may cause adverse effects to the oral health. Thus comes the relevance of herbal mouthwash which doesn't contain any chemical ingredients. Therefore we formulate a new herbal mouthwash - 'CLOVORA'. The study shows the effectiveness of the herbal mouthwash against the harmful oral bacteria.

Key words : Herbal mouthwash, Clovora, Oral Hygiene, Antimicrobial studies.

Introduction

The importance of mouth and teeth cleanliness has been recognized from the earliest days of civilization to the 21st century. Patients and oral health practitioners are faced with a multitude of mouthwash products containing many different active and inactive ingredients. Making informed decisions as to the suitability of a particular product for a particular patient can be a complex task. Although many popular herbal products have helped to control dental plaque and gingivitis, they have been used for a short time and only as an adjunct to other oral hygiene measures such as brushing and

flossing (Bhavana and Vidya, 2012).

Plaque accumulation and oral micro-organisms are the main predisposing factors to various orodental infections and targeting these, therefore, can prove to be an effective way of combating these diseases. Herbal extracts have been of particular interest these days owing to various side effects associated with conventional modes of treatment (Metha *et al.*, 2013).

The mouth contain a wide variety of oral bacteria, but only a few species of bacteria are believed to cause dental caries; *Mutans*

A Review on Detection of Adulterants in Chilli Powder

Ann Mary C Simon*, Athira Thomas and Biju Dharmapalan
School of Biosciences, Mar Athanasios College for
Advanced Studies Tiruvalla (MACFAST), Kerala 689101
Email:annmaryc@macfast.org

ABSTRACT

Food is adulterated to increase the quantity and to make profit. Detection of food adulterants in food products is mandatory to ensure food quality. If adulterants are not detected properly various health hazards and fatal diseases may occur. Adulteration in chilli powder became much prominent now days. Most of the adulterants are added to increase the quantity, to improve color and appeal. This review gives an account on various techniques involved in determination of adulterants in chilli powder, which is a commonly used ingredient in cuisines. It includes simple physical methods to highly sophisticated spectrophotometric techniques.

Key words : Adulteration, chromatography, NIR Spectroscopy, RAPD, SCAR

Introduction

Food is a basic need of all people and must be wholesome and safe, deliberate attempts to tamper with the purity or genuineness of a food commodity should be considered as one of the most heinous crimes. Now a day's food adulteration is a major public health hazard which causes many health problems. Food adulteration is an act of intentionally debasing the quality of food by substitution of inferior

substances or removal of some valuable agents (Kaleeswari and Vasantharathna, 2016). Though some adulterants may not pose any health hazard, certain others may lead to quite serious consequences (Whagray *et al.*, 2011). Adulterants when used in illicit drugs are called cutting agents, while deliberate addition of toxic adulterants to food or other products for human consumption is known as poisoning.

Role of Advertising in Creating A Customer-Centric Ecosystem

Ligo Koshy*¹ and John Manohar S.²

¹Research Scholar, Bharathiar University, Coimbatore

²Research Guide, Bharathiar University, Coimbatore

*E-mail:ligo@macfast.org

ABSTRACT

Advertising effectiveness pertains to how well a company's advertising accomplishes the intended result. The Advertising effectiveness greatly depends up on the attitude of the customers towards the advertisements. The attitude of consumers' is influenced by their beliefs regarding the roles played by the advertising and can be successfully predicted by the dimensions of those beliefs. The current research explored the customer's belief about the roles played by the advertising on the overall attitude towards Advertising. Data were collected from 300 students who are doing undergraduate and post graduate studies in Kerala using nonprobability convenience sampling. Online Questionnaire is used as the survey Instrument. The questionnaire consists of 28 items anchored on agreement continuum scale ranging from strongly disagree to strongly agree and 3 questions related to demographic profile of customers. Pearson Correlation analysis was used to investigate the relationship between variables such as Product Information, Hedonic/ Pleasure, Social image and Role, Good for economy, Materialism, Falsity/ No Sense and value corruption and Attitude towards advertising. Product Information, Hedonic/ Pleasure, Social image and Role, Good for economy have got positive relationship with attitudes towards online advertising while Materialism, Falsity/ No Sense and value corruption was found negatively related with attitudes.

Key words : Product Information, Hedonic/ Pleasure, Social image and Role, Good for economy, Materialism, Falsity/ No Sense and value corruption.

Antioxidant Activities of Betel Leaf (*Piper betle* L.) Extracts

Gipthi Mohan* and Treesa Varghese

School of Biosciences

Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101

*E-mail: gipthi@macfast.org

ABSTRACT

Natural antioxidants play an important role in the prevention of many age-related diseases and promotion of health. Among natural antioxidants from plants, flavonoids and other phenolic compounds are potent antioxidants and chelating agents. Betel (*Piper betle*) is the leaf of a vine belonging to the family *Piperaceae*, which also includes pepper and kava. It is valued both as mild stimulant and appetizer. Betel leaf is mostly consumed in Asia, and elsewhere in the world by some Asian emigrants, with or without tobacco, the later is an addictive psychostimulating and euphoria-inducing formulation with adverse health effects. Betel leaf is said to have antioxidant properties. The antioxidant activities of leaf extracts of selected betel leaf extracts were carried out. Results revealed that the leaves have sound ROS scavenging activity. Present papers highlights the antioxidant and medicinal importance of common betel leaf.

Keywords: Antioxidant activity, Betel leaf Extracts, Scavenging Activity

Introduction

Antioxidants provide protection against degenerative diseases including cancer, coronary heart, and Alzheimer's diseases. Reactive Oxygen Species (ROS), contribute to cellular aging, mutagenesis, carcinogenesis, and coronary heart disease, likely through destabilization of membranes, DNA and protein damage and oxidation of low-density lipoprotein (LDL) (Rahaman, 2007). Furthermore, antioxidants scavenge reactive species, and upregulate antioxidant defenses. Plants are rich sources of natural antioxidants, the best known are tocopherols, carotenoids, Vitamin

C, flavonoids, and different other phenolic compounds. Recently, among natural antioxidants, flavonoids have received increasing attention (Dehshahri *et al.*, 2012). As compared with Vitamin C and E, dietary flavonoids are considered to be more powerful antioxidants. Flavonoids are known to be highly effective antioxidants playing the role by scavenging oxygen radicals (Dinicola *et al.*, 2014). They also possess interesting anti-cancer, hypolipidemic, anti-ageing, and anti-inflammatory activities. Moreover, the protective effects of flavonoids in biological systems are attributed to their capacity to

Fish Collagen as a Potential Biocompatible Composite with Biomedical Applications

Treesa Varghese, Jenny Jacob* and Shilpa Lekshmi L.
School of Biosciences
Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101
*E-mail: jenny@macfast.org

ABSTRACT

Collagen is the most abundant protein in fish. Most characteristic feature of this protein is its ability to form supramolecular aggregates in extracellular space. Collagen is widely used for biomedical and pharmaceutical applications owing to its cell attachment capabilities, excellent biocompatibility, biodegradability and weak antigenicity. Main applications of collagen are shields for drug delivery systems, sponges for burns/wounds, mini-pellets and tablets for protein delivery, gel formulation in combination with liposomes for sustained drug delivery, transdermal material delivery, and nanoparticles for gene delivery and basic matrices for cell culture systems. It was also used for tissue engineering including skin replacement, bone substitutes, and artificial blood vessels and valves. This article reviews biomedical applications of collagen including the collagen film.

Keywords: Collagen, Biomaterial, Drug/gene delivery, Tissue engineering

Introduction

Fish collagen is a complex structural protein that helps maintain the strength and flexibility of skin, ligaments, joints, bones, muscles, tendons, blood vessels, gums, eyes, nails and hair. The scales, skin, bones and fins of fresh or saltwater fish are used for the creation of fish collagen source. Since these parts are considered waste products during fish processing, using them to create other products helps reduce environmental pollution.

Collagen is an important natural biological

material and has been extensively studied as a polymer for use in manufactured materials. The triple helix nature of collagen is due to high content of glycine, an amino acid residue. However, the length of the helix and the nature and size of non-helical portions of the molecule vary from type to type. The dominant collagen of skin, tendon and bone is type-I. Type II collagen is unique to cartilage, and type- III collagen occurs in adult skin (5-10%) in association with type-I.

Atelocollagen, which is produced by

The Effect of pH on Colour Behaviour of Anthocyanin Pigment from *Brassica oleracea*

Akshay B. Chandran, Basma Yoosuf, Athira Rajan and Sini Kurien*
School of Biosciences
Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101
*Email: sini@macfast.org

ABSTRACT

This study focuses on the extraction of anthocyanin pigment from *Brassica oleracea* and its application as natural pH indicator. An indicator is a chemical that turns different colour when it comes into contact with an acid or a base. Red cabbage contains a pigment molecule called flavin (an anthocyanin). Very acidic solutions will turn anthocyanin a red colour. Natural solutions result in a purplish color. Basic solutions appear in greenish-yellow. Therefore, it is possible to determine the pH of a solution based on the color it turns the anthocyanin pigments in red cabbage juice. Samples of anthocyanin in aqueous solutions were studied at various pH levels between 1.0 to 12.0 at a period of 10 days. Powdered anthocyanin exhibits more stable compared to juice anthocyanin at most pH values, showing no changes in color intensity and color tone and little changes in color lightness. The variation in the results suggested that further developments of anthocyanin as a potential pH color indicator in food packaging system are required. The color of the juice changes in response to changes in its hydrogen ion concentration. pH is the $-\log[H^+]$.

Key words: Indicator, pH, anthocyanin

Introduction

Anthocyanins are the naturally occurring, water-soluble compounds that impart many of the orange, red, magenta, violet, purple and blue colours to a variety of fruits, vegetables and plants. Color stability of anthocyanin influenced by many factors include structure and concentration, pH, temperature, light, presence of co-pigments, self-association,

metallic ions, enzymes, oxygen, ascorbic acid, sugar and their degradation products, proteins and sulphur dioxide (Ersus and Yurdagel, 2007).

The main focus of this study is to determine the colour behaviour of anthocyanin towards various pH levels. Generally, increasing of pH during storage increased the degradation rates of anthocyanin. Anthocyanin can be found in

Zebrafish and its Gene Similarity with Human

Gigin Pullemkunnel
School of Biosciences
Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101
E-mail: gigin@macfast.org

ABSTRACT

Zebrafish (*Danio rerio*) is an important and widely used vertebrate model organism in scientific research. Zebrafish was the first vertebrate to be cloned. The zebrafish genome has some unique features that are not seen in other vertebrates. Zebrafish is an ideal vertebrate system which is used to model cancer. Zebrafish as an experimental model offers many advantages including their ability to produce large number of eggs, they develop outside the body are transparent, development is rapid. With the exception of few organs namely like lungs, prostrate and mammary gland, most of the tissues and organs present in human are found in zebrafish. Zebrafish genome possesses a high degree of similarity to that of humans. The use of zebrafish in the drug screening approach potentially facilitates fast and cost effective identification of potential lead components and initial validation as potential therapeutics. Using of zebrafish models to characterize human diseases helps researchers to identify and test new drugs to treat the diseases being modeled. The ability of zebrafish to generate many embryos every time they breed makes them especially useful for high throughput drug screening. This article deals with its genetic similarity with human and about related studies.

Keywords : Zebrafish, *Danio rerio*, Genome, Databases

Zebrafish

The Zebrafish has recently emerged as an important model organism for studies of invertebrate genetics, genomics and development. Zebrafish is an important model system for analysis of vertebrate development (Kimmel, 1989; Driever *et al.*, 1996) and an

emerging model system for human disease (Zon, 1999). Understanding the relationship between the zebrafish and human genomes will help identify roles for human genes from zebrafish mutations, and help identify zebrafish models for genes identified by human disease (Brownlie *et al.*, 1998).

A Review on Design and Modelling of Plant System for Phytoremediation with Hydroponics as a Potential approach

Femin S. Uthup* and Biju Dharmapalan
School of Biosciences

Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101

*E-mail: femins@macfast.org

ABSTRACT

Hydroponic systems have been utilized as one of the standard methods for plant biology research and are also used in commercial production for several crops. It is also established to be effective in the reduction of different contaminants in water. Textile dyeing effluents containing recalcitrant dyes are one of the major contaminants polluting water. Conventional treatment systems based on chemical or physical methods are quite expensive and consume high amounts of chemicals and energy. In this review article, design and modelling of a cost-effective and environmentally stable phytoremediation system is studied and evaluated.

Keyword : Hydroponic, phytoremediation, Textile dyeing effluents

Introduction

In recent years, due to the rapid industrialization, urbanization and population growth the environment of India has become a delicate issue. In the past two decades the use of plants for treatment of soil and ground water polluted with heavy metals and other organic compounds has gained acceptance due to its cost effective and invasive property.

Textile industries for the manufacturing and processing of fabrics have turned out to be one of the worst polluters of the environment. In the textile industries, dyes are used for the purpose of colouring the fabrics. Up to 30% of

the dyes used in colouring are lost and discharged with the effluent. Therefore, the removal of dyes from the textile effluent has become major environmental concern. Dyes have the property of high brilliance which makes them visible even in small quantities and this property makes the effluent from textile industries even more aesthetically displeasing. The textile effluent contains large quantity of recalcitrant dyes, surfactants, acids, bases, detergents, oxidants etc. which makes it totally undesirable. The textile dyes are designed in a way that they become resistant to fading and chemical attack which makes it even more difficult to treat and degrade. Also, textile dyes

Digital Economy: The Great India Journey towards a Developed Nation

Vijayamohan V. P.

Department of Management Studies

Mar Athanasios College for Advanced Studies Tiruvalla (MACFAST)

Kerala, India-689 101

*E-mail: vpvijayamohan@gmail.com

ABSTRACT

Digitization of the economy is the future. There is no looking back on that. In order to make the economic growth move through an upward route, it is important for the government, business organizations, education system and the people to realize that embracing the changing technology would help the country and its people to grow and remain competitive enough to be developed. Both developed and developing economies are reaping benefits for digitization. Researchers say developed countries are trading higher economic benefits from digitization; although job creation is more in the developing countries. This article discusses the relationship between the digital economy and economic development and explores the benefits and challenges for emerging economies

Keywords. *Digitization, digital economy developed and developing economies*

Introduction

According to the OCED, "Digital economy is an umbrella term used to describe markets that focus on digital technologies." It refers to the full range of our economic, social and cultural activities supported by the Internet and related information and communications technologies. "These typically involve the trade of information goods or services through electronic commerce. It operates on a layered basis, with separate segments for data transportation and applications" (OECD 2012).

The term 'Digital Economy' was coined in Don Tapscott's in his best-seller 'The Digital Economy: Promise and Peril in the Age of Networked Intelligence' (1995). Academicians and institutions are fine tuning the concept as well as boundaries of digital economy since then. A widely-accepted understanding about digital economy is its activities on and around the digital world. Mesenbourg (2001) has provided three main components for Digital Economy.

Anti-inflammatory Drugs : Current Scenario

Jenny Jacob

School of Biosciences

Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101

E-mail: jenny@macfast.org

ABSTRACT

Inflammation can be defined as the response of the human body to pathogenic stimuli. The process of inflammation is important to maintain a generalised health of the human body. This review serves to explain the basic processes involved in inflammation. The mediators of inflammation have been discussed followed by the different strategies involved in the control of inflammation. Anti-inflammatory drugs and the mechanism of action are also explained. Medicinal plants can also serve as excellent source of anti-inflammatory drugs but more requires a focussed translational research.

Key words: Inflammation, innate immunity, Inflammatory mediators

Introduction

Inflammation is a physiological reaction that develops as a response to a variety of stimuli. The stimulus involved can be mechanical (pressure), chemical toxins, physical conditions (temperature), internal biochemistry of the system, or due to the presence of microorganisms. Inflammation is considered a part of innate immunity as it is not a specific response to a particular pathogen but a generalised response to any stimuli that causes a deviation in the normal conditions of the system (Abbas and Lichtman, 2009).

Inflammation includes numerous complicated processes involving cellular and humoral components and ultimately targets the repair and regeneration of the biological system (Ferrero *et al.*, 2007). This process is important in the protection of the biological system from complications and diseases by unleashing a barrage of cells and chemical mediators to face the attacking factors and prevent infection.

The initial response to any harmful stimulus that is achieved by the transport of blood leukocytes into the inflamed site can be classified as acute inflammation. This acute inflammation

Analysis of Factors Influencing Online Banking Portals Using DEMATEL Method

Preetha G Panicker*, Jeevan Kumar J and Jerly Akku Cherian
Department of Management Studies,
Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101
*E-mail: preethag@macfast.org

ABSTRACT

This study investigates the impacts of various internet banking portal service quality dimensions on overall internet banking portal service quality. The research used the dimensions of online service quality, internet banking service quality and web portal service quality to develop a framework that can be used to measure internet banking portal service quality in Pathanamthitta District. Data for the research was collected from a sample of 10 bank employees of some selected Indian public and private banks. Five dimensions of internet banking portal service quality are identified. These include information quality, website design, ease of use, reliability, security and privacy. Analysis is done using a multi criteria decision making tool called DEMATEL. The results of the analysis show that security and privacy have the top priority as compared to the other four dimensions. Furthermore, a cause and effect relation diagram were also constructed to gain a better understanding of the interactive relationship between those dimensions. Finally, this paper prioritizes the factors influencing the online banking portals.

Key words: Service quality, Dimensions of online service quality, Decision-making Trial and Evaluation Laboratory (DEMATEL), Causal diagram, Online banking.

Introduction

With the popularity of the internet, innovation in technology and the changing needs of customers, banking services have been undergoing tremendous transformation. In banking services, a new technological innovation is internet banking portal. Internet banking portal means that all stages of the financial transactions can be processed

electronically. This is achieved by replacing personal interaction and physical facilities with technological solutions. As a consequence, customers are able to carry out different financial transactions at one site including paying bills, booking railway and air tickets, charging mobile phone and TV, donating money, paying tax, filing tax return, viewing bank statements, purchasing stocks and other

Six sigma – An Overview

Neethu Ann Georgie

Department of Management Studies
Mar Athanasios College for Advanced Studies Tiruvalla
(MACFAST), Kerala, India-689 101

E-mail: neethu.ajith@macfast.org

ABSTRACT

Since its instigation at Motorola, Six Sigma has been widely accepted by different sorts of organizations. Six Sigma is a systematic business strategy and is considered as an important advance in quality management and process improvement. The techniques acceptability is due to the fact that its systematic use can lead to the breakthrough in profitability through quantum gains in product/service quality, customer satisfaction and productivity. The paper mainly focuses on six sigma, its invention and method followed for implementation. The elements of six sigma along with the pros and cons faced by organization after implementation also forms a part of the paper

Keywords: Six sigma, quality management, product/service quality, customer satisfaction.

Introduction

Six Sigma is that it is a defect rate metric. In statistics, the Greek letter 'sigma' refers to standard deviation and hence Six Sigma implies six standard deviations. Thus six sigma means that processes incorporating the techniques are highly capable that customer specifications are actually six standard deviations away from the process centre. In other words Six Sigma is a disciplined, statistical-based, data-driven approach for eliminating defects in a product, process or service.

Times Gone by Six Sigma

Six Sigma was invented at Motorola in the 1980s (Barney, 2002; Delsanter, 1992) and the credits goes to Bill Smith, an engineer of the firm. The invention was motivated by the high cost of poor quality discovered at Motorola. Like many companies at that time, it was as high as 15% to 20% of the sales revenue (Crosby, 1979). The production processes had low capability. A large portion of the products failed to meet customer requirement. This led to scrap, rework, field service, or return or