



CONFERENCE PROCEEDINGS



**2ND INTERNATIONAL CONFERENCE ON
NOVEL APPROACHES IN CANCER
RESEARCH AND THERAPY**

[NACRAT 2K17]

June 27-28, 2017

ORGANIZED BY:



**Saveetha Dental College & Hospitals,
Saveetha University,
Chennai, India**

ORGANIZING COMMITTEE

CHIEF PATRON:

Dr. Deepak Nallaswamy

Director of Academics,
Saveetha University, Chennai

CONVENER:

Dr. N. D. Jayakumar

Dean,
Saveetha Dental College & Hospitals,
Saveetha University, Chennai

ORGANISING SECRETARY:

Ms. T. Lakshmi

Assistant Professor,
Department of Pharmacology, Saveetha Dental College & Hospitals,
Saveetha University, Chennai

JOINT SECRETARY:

Ms. Anitha Roy

Assistant Professor,
Department of Pharmacology, Saveetha Dental College & Hospitals,
Saveetha University, Chennai

TREASURER:

Dr. D. Ezhilarasan,

Department of Pharmacology, Saveetha Dental College & Hospitals,
Saveetha University, Chennai

PC- 01

NEEM AS A MEDICINAL PLANT IN THE CANCER MANAGEMENT**Sarvesh*, Lakshmi. T., Anitha Roy, Ezhilarasan Devaraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

There are many traditional systems of medicine in the world. In the last few years there has been an exponential growth in the field of herbal medicine and these drugs are gaining popularity both in developing and developed countries because of their natural origin and less side effects. The World Health Organization (WHO) has listed 21,000 plants, which are used for medicinal purposes around the world. Among these 2500 species are in India, out of which 150 species are used commercially on a fairly large scale. India is the largest producer of medicinal herbs and is called as botanical garden of the world. *Azadirachta indica*, commonly known as neem, has attracted worldwide prominence in recent years, owing to its wide range of medicinal properties. Neem has been extensively used in Ayurveda, Unani and Homoeopathic medicine and has become a cynosure of modern medicine. Neem elaborates a vast array of biologically active compounds that are chemically diverse and structurally complex. More than 140 compounds have been isolated from different parts of neem. All parts of the neem tree- leaves, flowers, seeds, fruits, roots and bark have been used traditionally for the treatment of inflammation, infections, fever, skin diseases and dental disorders. The medicinal utilities have been described especially for neem leaf. Neem leaf and its constituents have been demonstrated to exhibit immunomodulatory, anti-inflammatory, antihyperglycaemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic and anticarcinogenic properties. This study reviews about the anti cancerous effect of neem in the management of cancer.

Keywords: *Azadirachta indica*, cancer, anti cancerous effect, management.

PC- 02**ANTI CANCEROUS EFFECT OF WITHANIA SOMNIFERA****Prasanthi *, Lakshmi. T., Anitha Roy, Ezhilarasan Devaraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Withania somnifera (ashwagandha, WS) is widely used in Ayurvedic medicine, the traditional medical system of India. It is an ingredient in many formulations prescribed for a variety of musculoskeletal conditions (e.g., arthritis, rheumatism), and as a general tonic to increase energy, improve overall health and longevity, and prevent disease in athletes, the elderly, and during pregnancy. Many pharmacological studies have been conducted to investigate the properties of ashwagandha in an attempt to authenticate its use as a multi-purpose medicinal agent. Over 35 chemical constituents have been identified, extracted, and isolated. The biologically active chemical constituents are alkaloids (isopelletierine, anaferine), steroidal lactones (withanolides, withaferins), saponins containing an additional acyl group (sitoindoside VII and VIII), and withanolides with a glucose at carbon 27 (sitoindoside IX and X). WS is also rich in iron. Our study aims to study the anti cancerous effect of Withania somnifera.

Keywords: withania somnifera, cancer, anti cancer effect, alkaloids

PC- 03

EFFECTS OF SIDDHA DRUGS FOR CANCER MANAGEMENT

Prasanthi *, Lakshmi. T., Anitha Roy, Jyothi Priya, Preetha, Gayathridevi

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Traditionally, it is taught that the siddhars laid the foundation for this system of medication. Siddhars were spiritual adepts who possessed the ashta siddhis, or the eight supernatural powers. Agastyar is considered the first siddha and the guru of all siddhars; the siddha system is believed to have been handed over to him by Murugan, son of Shiva and Parvati. The Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy of the Government of India coordinates and promotes research in the fields of ayurveda and Siddha medicine. Alternative cancer treatments are alternative or complementary treatments for cancer that have not been approved by the government agencies responsible for the regulation of therapeutic goods. Alternative cancer treatments are typically contrasted with experimental cancer treatments – which are treatments for which experimental testing is underway – and with complementary treatments, which are non-invasive practices used alongside other treatment. All approved chemotherapeutic cancer treatments were considered experimental cancer treatments before their safety and efficacy testing was completed.

Keywords: Ashta siddhis, Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy.

PC- 04

ROLE OF ASHWAGANDA IN ORAL CANCER

Godlin Jeneta*, Firdus Fareen, Anitha Roy, Lakshmi. T, Ezhilarasan Devaraj

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Oral cancer, also known as mouth cancer, is a type of head and neck cancer and is any cancerous tissue growth located in the oral cavity. It may arise as a primary lesion originating in any of the tissues in the mouth, by metastasis from a distant site of origin, or by extension from a neighboring anatomic structure, such as the nasal cavity. Ashwagandha root and leaf extracts contain components that prevent cancer, enhance the effectiveness of cancer therapies, and alleviate the side effects of radiation and chemotherapy. Ashwagandha selectively inhibits cancer cells using five signaling pathways. It has proven effective against multiple types of cancers including brain, prostate, skin, renal, and breast cancer.

Keywords: Metastasis, Ashwagandha, Radiation, Chemotherapy

PC- 05

NOVEL V'S HERBAL DRUGS FOR CANCER TREATMENT

Geethika*, Lakshmi. T., Anitha Roy, Jyothi Priya, Preetha, Gayathridevi

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Chemotherapy is one of the most powerful tools we must treat cancer, and research continues to find new chemotherapy drugs as well as new uses for existing ones. At the same time, newer types of drugs are continually being developed that work in different ways to attack cancer cells. The FDA evaluates evidence from testing to decide whether the drug's benefits outweigh any known risks. A review published by the American Journal of Clinical Oncology found that common herbal remedies such as garlic, ginkgo, echinacea, ginseng, kava and St John's wort, can interact with cancer treatments. Some herbals treatments might affect the way drugs are broken down or carried around in your body. There can be little doubt that herbs are very potent and powerful. Although, as yet, research is limited on herbs, it is growing, and many are shown to have powerful anti-cancer properties without the damaging side-effects of drugs.

Keywords: Garlic, ginkgo, echinacea, ginseng, kava, anti-cancer property.

PC- 06**EFFECTS ON NATURAL PRODUCTS ON ORAL CANCER****Anirudh Menon*, Lakshmi T., Anitha Roy, Jyothi Priya, Preetha, Gayathridevi**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Oral cancer is one of the most common and deadliest of diseases all over the world. In worldwide 400,000 people are newly diagnosed with oral cancer per annum. In 2005, according to a study of the World Health Report, the incidence rates for oral cancer vary in men from 1 to 10 cases per a population of 100,000 in many countries. In India, the rate of oral cancer is 12.6 per a population of 100,000. In India 30-35% of the population is affected with oral cancer which mostly affects the men. Natural products-derived extracts and compounds are frequently reported to discover therapeutic agents for disease and cancer. Dietary supplements like fruits and vegetables, which are rich in phytochemicals, provide a variety of antioxidants like vitamin A, C, E. Spirulina, Selenium, Green tea, Neem, Tomatoes, Turmeric, and some medicinal mushrooms, are also used as chemopreventive and chemotherapeutic agents. In patients who have had either premalignant or malignant oral lesions that have been successfully treated in order to prevent recurrence of the treated initial lesion or to prevent the development of a second or a separate primary lesion. Antioxidant nutrients can play a significant role in the prevention of oral cancer by increasing cytokine production which results in prolonged activation of immune response. The possible uses of antioxidants for oral mucosal lesions include prevention of lesions in high-risk individuals with mucosa that clinically appear normal, with no history of either premalignant or malignant lesions and for the treatment of premalignant oral lesions.

Keywords: Cancer, Oral mucosa, Antioxidant, Dietary supplements.

PC- 07

CURCUMIN IN MANAGEMENT OF CANCER**Kadambari *, Lakshmi T., Anitha Roy, Ezhilarasan Devaraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Over 100 types of cancers affect humans. Cancer is an age-related disease, the risk of diagnosis increases the longer one lives, making it the second leading cause of death in this country. Many treatment options for cancer exist. The primary ones include surgery, chemotherapy, radiation therapy, hormonal therapy, targeted therapy and palliative care. Which treatments are used depends on the type, location and grade of the cancer as well as the patient's health and preferences. Curcumin is a powerful antioxidant, also anti-viral and anti-bacterial. It seems to have great potential to fight cancer in a number of ways. Curcumin has powerful epigenetic properties. Curcumin has emerged as a potent cancer-preventing agent, with 240 published studies appearing in the global scientific literature. Importantly, the spice can stop the action of the enzyme COX-2, known to increase chronic inflammation in the body. In human cancer patients, curcumin doses as high as 3,600/day have been shown to induce the favorable anti-cancer effects. It has also been shown to inhibit vascular epithelial growth factors, inhibit metastases, prevent the regrowth of cancer stem cells, increase the effectiveness of certain drugs, while inhibiting their toxicity to healthy cells. Curcumin is strongly effective against colorectal cancer. Even aggressive tumors of the head and neck, often smoking, are proving responsive to curcumin treatment.

Keywords: Cancer, Curcumin, Treatment, epithelial growth, antioxidant.

PC- 08

CANCER IS NOT A DISEASE BUT A DEFICIENCY?

Meera. T*, Lakshmi.T, Anitha Roy, Elzhilarasan Devaraj

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

The control and prevention for cancer, it being the second leading cause of death worldwide, may benefit from the reality that resides in many sources of therapies. The primary carcinogens stems are from a variety of agricultural, industrial, and dietary factors. Conventional therapies cause serious side effects and, at best, merely extend the patient's lifespan by a few years. There is a need for utilizing alternative concepts and approaches for the prevention of cancer. There are many natural products that have been implicated in cancer prevention and are found to be promoting human health without recognisable side effects. But what if this is not about a deadly disease, but just a deficiency. Recently this controversy topic has become the most famous talk among the people. Soon this will be proved. My paper is based on this controversial topic which will soon be proved.

Keywords: Cancer, prevention, carcinogen, deadly disease.

PC- 09

PERSONALIZED MEDICATION FOR THE MANAGEMENT OF ORAL CANCER

Nadhirah Faiz*, Sahil Choudhari, Lakshmi T., Anitha Roy, Elzhilarasan Devaraj

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Oral cancer has been found to be to a prevalent form of cancer seen in this world. The precancerous states for oral cancer are many. For example, oral submucous fibrosis and leukoplakia are oral diseases which can lead to cancer if progression occurs. Leukoplakia is a condition in which thick, white patches form on your tongue and the lining of your mouth. Smoking is the most common cause. But other irritants can result in this condition as well. Mild leukoplakia is usually harmless and often goes away on its own. More serious cases may be linked to oral cancer. Treating cancer can be done but this can be done by extreme methods like chemotherapy and radiotherapy. These treatment techniques cause harm over a longer time. It is therefore very important to look for natural medicines for the treatment to reduce the side effects of the treatments present in the field currently. The aim of the poster presentation is to manage oral cancer by means of personalized medication and to indicate its action.

PC- 10

NATURES WEAPON AGAINST CANCER

**Jembulingam Sabarathinam*, A. Sandhya, Anitha Roy, Lakshmi. T, Elzhilarasan
Devaraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

There is various day to day products which can be used to prevent and cure cancer. Some of them include antioxidant, fruits and vegetables. The pigment of tomato called lycopene is very effect in treatment of cancer. While gingerol, an active component gingerol is effective in killing of tumor cells. Many natural products help in combating against the inevitable disease cancer. Natural products play a vital role in anticancer medicinal discovery and many products have been proven to have potential anticancer effects. Most of the medicines and extracts affecting the angiogenic process are already used routinely in supporting the conventional treatment of many diseases that are considered angiogenic such as cancer. Hence the aim of the poster is to review the natural products that fight against the cancer cells.

Keywords: Gingerol, tumor, natural products, angiogenesis, conventional treatment.

PC- 11

NANOTECHNOLOGY: A BOON IN ORAL CANCER DIAGNOSIS AND THERAPEUTICS**Amanthi Ganapathi*, Prashaanthi Nagaraj, Elzhilarasan Devaraj, Lakshmi.T,****Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Oral cancer is a destructive cancer that invades local tissue, cause metastasis and has a high mortality rate. Conventional treatment strategies, such as surgery and chemoradiotherapy, have improved over the past few decades; however, they remain far from optimal. Currently, cancer research is focused on improving cancer diagnosis and treatment methods. Various drug delivery systems have been practiced achieving better success in improving the survival rate of the patient. Until date, targeted drug delivery systems *via* nanoparticles are expected to be promising multi-functional platform in cancer therapeutics. Nanotechnology is considered to be a rapidly developing subdivision of technology that effects on many fields. Medicine is also influenced by nanotechnology. Modifications of this method can be used in cancer treatment. It can assist to have better diagnosis with less harmful substance. The use of optical nanoparticles provides efficient drug delivery to tumor cells with liposomes and functionalized micelles. Nanotechnology can be also used in molecular imaging with tomography and photoacoustic imaging of tumors and therapy of cancer as photothermal and radiotherapy. Nanotechnology a next generation technique has many advantages to treat cancer patients from diagnosis to treatment. Nanotechnology, which involves the design, characterization, production, and application of nanoscale drug delivery systems. It involves medicines such as polymeric nanoparticles, solid lipid nanoparticles, nanostructured lipid carriers, gold nanoparticles, hydrogels, cyclodextrin complexes, and liquid crystals, which are promising tools for diagnostic probes and therapeutic devices. The objective of this review is to present a systematic effect of nanotechnology-based drug delivery systems for oral cancers.

Keywords: Targeted delivery, oral squamous cell carcinoma, oral cancer treatment

PC- 12

LUNG CANCER –PHARMACOLOGICAL PERSPECTIVE**Nithya Karpagam*, Ashik Ahamed, Lakshmi.T., Elzhilarasan Devaraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Lung cancer is the top cancer killer and smoking remains the leading preventable cause of death in the US. Furthermore, major disparities in smoking and lung cancer exist by education, income, and race/ethnicity. While tobacco control policies are the most effective strategies to prevent lung cancers, lung cancer computed tomography (CT) screening has also been shown to reduce lung cancer risk among heavy current and former smokers. The Cancer Intervention and Surveillance Modelling Network (CISNET) lung group develops and applies population models for lung cancer, quantifying the impact of tobacco control and CT screening on lung cancer and all-cause mortality. To date, this work has focused on the country as a whole and has yet to account for tobacco and lung cancer disparities by subgroup and region. This proposed work will extend existing CISNET lung models to investigate the synergistic impacts of tobacco control policies and lung cancer screening in the US and in middle-income nations, focusing on disparities in both smoking behavior and lung cancer risk. The smoking and lung cancer models will incorporate other factors that reflect different smoking risks such as race/ethnicity, education, income, and geographic location. This will allow for analyses of the effects of tobacco control policies on US smoking prevalence in relevant high-risk groups, and estimation of the impact of policies on health disparities in smoking and lung cancer outcomes.

Keywords: Lung cancer, death, smoking, tobacco, risk group

PC- 13

LAB-ON-A-CHIP FOR ORAL CANCER SCREENING AND DIAGNOSIS**Keerthana.R*, Palak Shah, Anitha Roy, Elzhilarasan Devaraj, Lakshmi T.**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Oral squamous cell carcinoma (OSCC) is a dis guring and deadly cancer. Despite advances in therapy, many patients continue to face a poor prognosis. Early detection is an important factor in determining the survival of patients with OSCC. No accurate, cost-efficient, and reproducible method exists to screen patients for OSCC. As a result, many patients are diagnosed at advanced stages of the disease. Early detection would identify patients, facilitating timely treatment and close monitoring. Mass screening requires a rapid oral cancer diagnostic test that can be used in a clinical se ing. Current diagnostic techniques for OSCC require modern laboratory facilities, sophisticated equipment, and elaborate and lengthy processing by skilled personnel. lab-on-chip technology holds the promise of replacing these techniques with miniaturized, integrated, automated, inexpensive diagnostic devices. is article describing lab-on-chip devices for biomarker-based identification of oral cancer. Similar methods can be employed for the screening of other types of cancers.

Keywords: oral cancer, lab-on-a-chip, micro uidics, biomarkers, screening

PC- 14

MANAGEMENT OF ORAL CANCER WITH *BACOPA MONERI***Nivesh Krishna*, Vaishnavi Sivakali Subramanian**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer is uncontrolled growth of abnormal cells in the body. Nowadays, cancer is considered as a human tragedy and one of the most prevalent diseases in the wide, and its mortality resulting from cancer is being increased. Control survival and death of cancerous cell are important strategies in the management and therapy of cancer. Herbal drugs include plants, herbal complexes and herbal products or plant or even a combination of plants which were used thousand years before inventing modern drugs. Therefore, we chose one such herbal plant which have phytochemical complexes like tannins, alkaloids, steroids, saponins, glycosides, flavonoids, resins, amino acids, carbohydrates, fats and fixed oils, protein and starch. *Bacopa monnieri* is a small and creeping herb commonly known as Brahmi. It belongs to the Scrophulariaceae family. It has been approved by several ancient Ayurvedic treatises for the enhancement of memory capacity and remedy of mental disorders. Herbs could enhance the anti-tumour activity in several cancer cell lines including KB. Therefore, *bacopa moneri* has the genotoxicity and cytotoxicity potential targeting on KB cells rather than on normal cells, the extract of *Bacopa monnieri* acts against oral cancer (KB) cells which may be due to the synergetic effect of the secondary metabolites such as flavonoids present in the extract. Thus, the anticancer activity of *Bacopa monnieri* may be useful in the treatment of patients with oral carcinoma

Keywords: Cancer, Herbal drugs, *Bacopa monnieri*

PC- 15

CANCER PROTECTIVE PROPERTIES OF COCOA**Vishnu*, Harish**, Lakshmi.T, Anitha Roy, Elzhilarasan Devaraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Due to their high concentration of catechins and procyanidins, bioactive compounds with distinct properties, cocoa and chocolate products may have beneficial health effects against oxidative stress and chronic inflammation, risk factors for cancer and other chronic diseases. In moderation, cocoa products may offer strong antioxidant effects in combination with a pleasurable eating experience. The benign profile of its fatty acids in combination with the low content of sugar of dark chocolate should lessen concerns about the adverse effects of cocoa products. Future nutritional trials need to assess a larger number of biomarkers that may be relevant for cancer risk, whereas epidemiologic studies require valid dietary assessment methods to examine the association of cocoa products with cancer risk in larger populations and to distinguish possible cancer protective effects of cocoa products from those due to other polyphenolic compounds.

Keywords: Cocoa products, antioxidant, cancer, polyphenolic compounds.

PC- 16

CANCER STEM CELLS AND NANOMEDICINE**Nivetha, Hansika*, Anitha Roy, Lakshmi T, Elzhilarasan Devaraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Circumstantial evidence suggests that most tumours are heterogeneous and contain a small population of cancer stem cells (CSCs) that exhibit distinctive self-renewal, proliferation and differentiation capabilities, which are believed to play a crucial role in tumour progression, drug resistance, recurrence and metastasis in multiple malignancies. Given that the existence of CSCs is a primary obstacle to cancer therapy, a tremendous amount of effort has been put into the development of anti-CSC strategies, and several potential approaches to kill therapeutically-resistant CSCs have been explored, including inhibiting ATP-binding cassette transporters, blocking essential signaling pathways involved in self-renewal and survival of CSCs, targeting CSCs surface markers and destroying the tumour microenvironment. Drug delivery technology-based approaches hold great potential for tackling the limitations impeding clinical applications of CSC-specific agents, such as poor water solubility, short circulation time and inconsistent stability. Properly designed nanocarrier-based therapeutic agents offer new possibilities of penetrating CSC niches and significantly increasing therapeutic drug accumulation in CSCs, which are difficult for free, drug counterparts. A perspective on innovative therapeutic strategies and the potential direction of Nano medicine-based CSC therapy in the near future is also presented.

Keywords: Cancer stem cells, Nanomedicine, drug delivery, tumour progression.

PC- 17

OPIOID ANALGESICS IN THE TREATMENT OF CANCER**Keerthana Balaji*, Kalaivani, Anitha Roy, Lakshmi.T, Ezhilarasan Devaraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Opioids are widely used for treatment of pain in patients with cancer because of their safety, multiple routes of administration, ease of titration, reliability, and effectiveness for all types of pain (ie, somatic, visceral, neuropathic). Although neuropathic pain may be more difficult to treat, a favorable response to opioid-based analgesia is often possible. Opioids are also potentially abusable drugs. The public health consequences of opioid abuse drive the imperative that all physicians assume responsibility for risk management when these drugs are prescribed for legitimate medical purposes. These issues are discussed elsewhere. Assessment of cancer pain, a review of specific cancer pain syndromes, general principles of cancer pain management, an overview of risk management in patients treated with opioids, prevention and management of opioid side effects, the clinical use of non-opioid analgesics (including NSAIDs and adjuvant analgesics), non-pharmacologic methods of cancer pain management, management of acute pain (in the patient chronically using opioids, and issues surrounding pain management in the last weeks of life are covered elsewhere.

Keywords: Opioids, cancer, pain management, acute pain, medical.

PC- 18

GENOTOXICITY ANALYSIS OF BROMELAIN ON ORAL CANCER CELL LINES BY DNA FRAGMENTATION**Anisha A. Mahtani*, Kadambari Sriram**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Genotoxicity describes the property of chemical agents that damages the genetic information within a cell resulting in mutations, which may subsequently lead to cancer. It is a property possessed by some substances known as genotoxins that makes them harmful to the genetic information contained in organisms. Bromelain is a complex mixture of substances that can be extracted from the stem and core fruit of the pineapple. Among dozens of components known to exist in this crude extract, the best studied components are a group of protein-digesting enzymes called cysteine proteinases. Vitamin C is also a major component of the extract. These changes can be observed using DNA fragmentation. The oral cancer cell lines are maintained, and Bromelain is added to it. This is followed by DNA isolation and DNA fragmentation in a step-wise manner. Agarose gel electrophoresis is done, and the DNA is viewed using ethidium bromide under the UV light. DNA fragmentation occurred in all the three concentrations. Bromelain was proved to contain anti-cancerous properties. The aim of the study is to assess the genotoxicity of Bromelain derived from pineapple extract on oral cancer cell line by DNA fragmentation.

Keywords: Genotoxicity, bromelain, DNA fragmentation, anti cancerous

PC- 19

**PRELIMINARY PHYTOCHEMICAL AND CYTOTOXIC ANALYSIS OF BACOPA
MONNIERI ON ORAL CANCER CELL LINES**

Jerusha Santa*, Lakshya Rani

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Since immemorial time, utilization of medicinal plants has been in practice by the practitioner to treat variety of ailments without knowing the active bio-compound which lead to the reduction or elimination of symptoms of the disease. Recent advancement in technologies became a turning point in health care setting where many medicinal plants which are gifted from the nature were being employed in research to synthesized variety of phytochemical compounds which were responsible for the various pharmacological properties of the plants. Few compounds which are plant derivative have been patented for the commercial use to treat illness. In this review, bacopa monnieri related to few pharmacological properties like phytochemical and cytotoxic constituents were reviewed and documented. Advancement in technologies and also research fundings provide the suitable platform for the researchers to conduct extensive research on the medicinal plants.

Keywords: Phytochemical and cytotoxic properties, bacopa monnieri

PC- 20

NANOTECHNOLOGY IN BLADDER CANCER

Oviya*, Harini, Anitha Roy, Lakshmi.T, Ezhilarasan Devaraj

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer nanotechnology is an interdisciplinary area of research in science, engineering, and medicine with broad applications for molecular imaging, molecular diagnosis, and targeted therapy. The basic rationale is that nanometer-sized particles, such as semiconductor quantum dots and iron oxide Nano crystals, have optical, magnetic, or structural properties that are not available from molecules or bulk solids. When linked with tumor targeting ligands such as monoclonal antibodies, peptides, or small molecules, these nanoparticles can be used to target tumor antigens (biomarkers) as well as tumor vasculatures with high affinity and specificity. Recent advances have led to bio affinity nanoparticle probes for molecular and cellular imaging, targeted nanoparticle drugs for cancer therapy, and integrated Nano devices for early cancer detection and screening. These developments raise exciting opportunities for personalized oncology in which genetic and protein biomarkers are used to diagnose and treat cancer based on the molecular profiles of individual patients.

Keywords: Cancer, Nanotechnology, Nano crystals, Nano devices

PC- 21

**COMPLEMENTARY AND ALTERNATIVE MEDICINE FOR MANAGEMENT OF ORAL
CANCER**

Vaishali S, Keerthika*, Anitha Roy, Lakshmi T, Ezhilarasan Devaraj

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Quality of life (QoL) encompasses the physical, psychosocial, social and spiritual dimensions of life lived by a person. Cancer pain is one of the physical component has tremendous impact on the QoL of the patient. Cancer pain is multifaceted and complex to understand and managing cancer pain involves a tool box full of pharmacological and non-pharmacological interventions but still there are 50-70% of cancer patients who suffer from uncontrolled pain and they fear pain more than death. Aggressive surgeries, radiotherapy and chemotherapy focus more on prolonging the survival of the patient failing to realize that the QoL lived also matters equally. This paper reviews complementary and alternative therapy approaches for cancer pain and its impact in improving the QoL of cancer patients.

Keywords: Cancer pain, Complementary and Alternative Medicine, Quality of life

PC- 22

CERVICAL CANCER AMONG WOMEN –ITS PREVALENCE

Aishwarya S*, Shivanni S.S., Anitha Roy, Lakshmi.T, Ezhilarasan Deveraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cervical cancer is the second most common malignancy in women worldwide with a high incidence in under-developed countries. It may be completely asymptomatic in early stages. However, it may present as persistent pelvic pain, unexplained weight loss, bleeding between periods and after sexual intercourse, unusual vaginal discharge, and pain after sexual intercourse in its advanced stage. The treatment of cervical cancer varies with the stage of the disease. For early invasive cancer, surgery is the treatment of choice. In more advanced cases, radiation combined with chemotherapy is the current standard of care. In patients with disseminated disease, chemotherapy or radiation provides symptom palliation. The treatment options include Combined external beam radiation with brachytherapy, listitem para, childcount:0Radical hysterectomy with bilateral pelvic lymphadenectomy.

Keywords: Cervical cancer, malignancy, treatment, invasive

PC- 23

WE WILL SURVIVE CANCER –A THERAPEUTIC CHALLENGE

Kalyani P*, Sarvesh, Anitha Roy, Lakshmi T, Ezhilarasan Deveraj**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer has emerged as one of the most feared diseases among the commons. This fear can be attributed to the lack of awareness about the chances of cancer survival. Cancer isn't always malignant. There are benign tumors with some having the chances to regress. However, the people diagnosed with cancer are at most times unaware of such facts and develop unwanted fear about the survival rates. With advancements of early diagnosis and newer treatment facilities, the survival rates for different cancers are increasing every year. Our prime motive is to create awareness among the population in fighting cancer, which includes statistics on survival rates, cancer prevention, drugs in cancer therapy, and cancer care kit. The aim of the poster is to motivate the cancer patients and create an awareness to increase the confidence level and reduce the morbidity as well as mortality.

Keywords: Cancer, awareness, survival, mortality, morbidity

PC- 24

**AWARENESS ON ORAL CANCER AMONG THE RURAL PEOPLE IN SOUTH CHENNAI
REGION**

Priadarsini.T, * Ilankizhai**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

The major causes of oral cancer worldwide remain tobacco in its many different forms, heavy consumption of alcohol, and, increasingly, infection with certain types of Human papilloma virus (HPV). Although the relative contribution of risk factors varies from population to population, oral cancer is predominantly a disease of poor people. Prevention of this devastating disease can come from fundamental changes in socioeconomic status, as well as from actions to reduce the demand, production, marketing, and use of tobacco products and alcohol. A healthy diet, good oral and sexual hygiene, and awareness of the signs and symptoms of disease are important. Success depends on political will, intersectoral action, and culturally sensitive public health messages disseminated through educational campaigns and mass media initiatives. The aim of the poster to present the results conducted by this cross-sectional survey about the awareness of the public about the oral cancer occurrence and its prophylactic measures.

Keywords: Oral cancer, Prophylaxis, awareness, risk factors, public health.

PC- 25

EPIDEMIOLOGY OF CANCER –A REVIEW

Hemashree.J*, Aparna, ** Lakshmi T, Ezhilarasan Devaraj, Anitha Roy

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer epidemiology is the branch of epidemiology concerned with the disease cancer. Therefore, this definition is as valid to cancer epidemiology as it is to epidemiology in general. This area of study must contend with problems of lead-time bias and length time bias. Lead time bias is the concept that early diagnosis may artificially inflate the survival statistics of a cancer, without really improving the natural history of the disease. Length bias is the concept that slower growing, more indolent tumors are more likely to be diagnosed by screening tests, but improvements in diagnosing more cases of indolent cancer may not translate into better patient outcomes after the implementation of screening programs. A related concern is over diagnosis, the tendency of screening tests to diagnose diseases that may not actually impact the patient's longevity. The aim of the poster is to review the epidemiological aspects of cancer and its prevalence.

Keywords: Epidemiology, Cancer, diagnosis, screening, tumors.

PC- 26

ROLE OF ANTIOXIDANTS IN CANCER THERAPY

Reshma Thiru*, Hilal Sheriff, Lakshmi T., Ezhilarasan Devaraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Antioxidants are supposed to keep your cells healthy. That is why millions of people gobble supplements like vitamin E and beta-carotene each year. From recent studies, many have suggested that there is increasing, and the cancer is known to be sensitive to the effects of free radicals. The antioxidant N-acetylcysteine (NAC) to mice that had been genetically engineered to be susceptible to melanoma. Addition of NAC or a form of vitamin E to cultured human melanoma cells, they confirmed that the antioxidants improved the cells' ability to move and invade a nearby membrane. alpha-tocopheryl was the most effective form of vitamin E in reducing proliferation rate and inducing cell lethality in melanoma cells. antioxidants and cancer show that the selection of antioxidants and the importance of their dosages is available at present. vitamin E alone can increase the risk of chemical-induced cancer in an animal model and vitamin C at lower doses can stimulate the growth of some cancer cells.

Keywords: Antioxidants, beta carotene, alpha tocopheryl, lethality, cancer.

PC- 27

PREGNANCY AND CANCER RISK**Jayakeerthana*, Kiruthika P**, Lakshmi.T, Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Studies have shown that a woman's risk of developing breast cancer is related to her exposure to hormones that are produced by her ovaries. Reproductive factors that increase the duration and/or levels of exposure to ovarian hormones, which stimulate cell growth, have been associated with an increase in breast cancer risk. These factors include early onset of menstruation, late onset of menopause, and factors that may allow breast tissue to be exposed to high levels of hormones for longer periods of time, such as later age at first pregnancy and never having given birth. At present, the factors known to increase a woman's chance of developing breast cancer include age, a family history of breast cancer, an early age at first menstrual period, a late age at menopause, a late age at the time of birth of her first full-term baby, and certain breast conditions. Obesity is also a risk factor for breast cancer in postmenopausal women. The aim of the poster is to present the different factors that influence the risk of cancer in pregnancy.

Keywords: Pregnancy, cancer, risk factor, breast cancer, obesity.

PC- 28

ASSOCIATION OF COFFEE CONSUMPTION WITH CANCER

Gokul G*, John Rosaraj, Lakshmi T., Anitha Roy, Ezhilarasan Devaraj

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer causes 20% of deaths in western countries. With more than 3 million new cases and 1.7 million deaths each year, cancer is the most significant cause of death and morbidity in India and western countries after cardiovascular disease. There has been an ongoing debate about the relationship between coffee consumption and cancer since the early 1970s, following the publication of a study that suggested coffee was positively associated with cancer. The debate became a major topic in 1981, when two publications suggested that coffee caused pancreatic cancer. Numerous studies and meta-analyses published since IARC's last evaluation of coffee in 1991 have shown that there is no significant association between coffee consumption and total cancer mortality. In fact, the body of scientific evidence suggests that, overall, moderate coffee drinking is not associated with an increased risk of developing cancer and in the case of certain cancers, may be associated with reduced risk.

Keywords: Coffee, consumption, Cancer, morbidity, cardiovascular disease.

PC- 29

CARCINOPHOBIA –CLINICAL APPROACH**Janhvi Manohar*, Lakshmi T., Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Tobacco use is the cause of about 22% of cancer deaths. Another 10% are due to obesity, poor diet, lack of physical activity, and excessive drinking of alcohol. Other factors include certain infections, exposure to ionizing radiation and environmental pollutants. In the developing world nearly 20% of cancers are due to infections such as hepatitis B, hepatitis C and human papillomavirus infection. These factors act, at least partly, by changing the genes of a cell. Typically, many genetic changes are required before cancer develops. Approximately 5–10% of cancers are due to inherited genetic defects from a person's parents. Cancer can be detected by certain signs and symptoms or screening tests. It is then typically further investigated by medical imaging and confirmed by biopsy. Many cancers can be prevented by not smoking, maintaining a healthy weight, not drinking too much alcohol, eating plenty of vegetables, fruits and whole grains, vaccination against certain infectious diseases, not eating too much processed and red meat, and avoiding too much sunlight exposure. Early detection through screening is useful for cervical and colorectal cancer. The benefits of screening in breast cancer are controversial. Cancer is often treated with some combination of radiation therapy, surgery, chemotherapy, and targeted therapy. Pain and symptom management are an important part of care. Palliative is particularly important in people with advanced disease.

Keywords: Tobacco use, cancer, alcohol, biopsy, palliative

PC- 30

ROLE OF ALLIUM SATIVUM IN CANCER THERAPY**Sowndarya B*, Lakshmi T., Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Allium sativum (garlic, lasun) is used to treat a wide variety of diseases in India. Allicin is a major component of garlic is a product of the rearrangement of alliin. Its cytotoxic effect has been tested using human primary fibroblasts, a permanent, nontumorigenic cell line derived from baby hamster kidney cells and a tumorigenic lymphoid cell line derived from a Burkitt lymphoma. The cytotoxic action was in the range 2-50 µg/ml. Some organo-sulfur compounds from garlic, like S-allylcysteine, are reported to retard the growth of chemically induced and transplantable tumors in several animal models. Administration of garlic (250 mg/kg, p.o., thrice a week) in male wistar rats, has been significantly suppressed 4-nitro quinoline-1-oxide induced tongue carcinogenesis as revealed by the absence by the carcinomas in the initiation phase and their reduced incidence in the post initiation phase. The aim of the poster is to present the effects of *Allium sativum*.

Keywords: *Allium sativum*, garlic, burkitts lymphoma, tumors.

PC- 31

ASTRAGALUS MEMBRANACEUS IN CANCER THERAPY**Subashri A*, Lakshmi T., Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Astragalus membranaceus is used by the Chinese doctors to treat advanced cases of the liver cancer. Swainsonine, a derivative of *Astragalus membranaceus*, is known to prevent metastases. A study showed a higher survival rate in the patients of advanced stage liver cancer after administration of *Astragalus membranaceus* along with conventional treatment as compared to those patients, who were given the conventional treatment alone. *Astragalus membranaceus* protects the liver from toxic effects of chemotherapy. *Astragalus membranaceus* is often used in combination with *Panax ginseng*. Ginseng- *Astragalus* combination (GAC) has a regulatory effect on the natural killer cells. Studies have also shown that this extract protects the body from toxic side effects of chemotherapy and enhances activity of the immune cells

Keywords: Liver cancer, Astragalus, Chemotherapy, Ginseng

PC- 32

ANTICANCER HERBAL DRUGS

Rushabh S Kamdar*, Lakshmi.T, Ezhilarasan Deveraj, Anitha Roy

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Herbal drugs such as plants have been used for the treatment of various diseases for thousands of years. Terrestrial plants have been used as medicines in India and Greece from ancient times and an impressive number of modern drugs have been developed from them. According to World Health Organization, 80% of the people living in rural areas depend on medicinal herbs as primary healthcare system. The synthetic anticancer remedies are beyond the reach of common man because of cost factor. Herbal medicines have a vital role in the prevention and treatment of cancer and medicinal herbs are commonly available and comparatively economical. A great deal of pharmaceutical research done in technologically advanced countries like USA, Germany, France, Japan and China has considerably improved quality of the herbal medicines used in the treatment of cancer. Some herbs protect the body from cancer by enhancing detoxification functions of the body.

Keywords: Herbal drugs, Cancer, remedies, quality, advanced.

PC- 33

EMBLICA OFFICINALIS IN MANAGEMENT OF CANCER**Ahmed Hilal Sheriff*, Lakshmi.T, Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Emblica officinalis contains ellagic acid, gallic acid, quercetin, kaempferol, emblicanin, flavonoids, glycosides and proanthocyanidins. *Emblica officinalis* is valued for its unique tannins and flavanoids, which possess powerful antioxidant and anticancer properties. Ellagic acid isolated from *Emblica officinalis* is a powerful antioxidant and has the ability to inhibit mutations in genes. Ellagic acid also repairs chromosomal abnormalities. Quercetin, isolated from *Emblica officinalis* has hepatoprotective effect. Emblicanin A and B (tannins) possess strong antioxidant and anticancer properties. The aim of the paper is to review the antioxidant and anticancer profile.

Keywords: Ellagic acid, Quercetin, tannins, flavonoids, hepatoprotective.

PC- 34

GLYCYRRHIZA GLABRA IN CANCER MANAGEMENT**Trishala A*, Lakshmi.T, Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Glycyrrhiza glabra Linn. is a commonly used herb since the period of Ayurveda. Common name is Liquorice and belongs to family Leguminosae. Liquorice has extensive pharmacological effects for human being. The most Common medical use liquorice is for treating upper respiratory ailments including coughs, hoarseness, sore throat and bronchitis. Long-term licorice administration for hepatitis C infection was effective in preventing hepatocellular carcinoma. Flavonoids (flavones, flavonals, isoflavones, chalcones, licochalcones and bihydrochalcones), derived from *Glycyrrhiza glabra* possess strong anticancer, antioxidant, antimutagenic, antiulcer, anti-HIV and hepatoprotective properties. Licochalcone-A isolated from *Glycyrrhiza glabra*, inhibits growth and spread of various cancers particularly the androgen-refractory prostate cancer by inducing apoptosis and arresting cancer cells division. Licoagrochalcone possesses strong anticancer activity against cancers of breast, lung, stomach, colon, liver, kidney and leukaemia.

Keywords: Liquorice, bronchitis, antioxidant, Cancer, hepatoprotective.

PC- 35

PANAX GINSENG AND ITS EFFECTS ON CANCER CHEMOTHERAPY**Jitesh S., * Lakshmi T., Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Ginseng root, slow growing perennial plant that is widely used for its adaptogenic, immunomodulatory, antineoplastic, cardiovascular, CNS, endocrine, and ergogenic effects. Studies suggest that ginseng may lower the risk of cancer in humans. *Ginseng* inhibits growth of cancer by interfering with the DNA synthesis. *Panax ginseng* contains several active constituents; the main active ingredients in ginseng root are thought to be a family of 6 triterpene saponins called ginsenosides. Other active constituents that may help reduce cancer risk include flavonoids, polysaccharides, and polyacetylenes, essential oils, phytosterols, amino acids, peptides, Vitamins and minerals. *Panax ginseng* regenerates the natural killer cells, which are damaged by chemotherapy and radiotherapy, stimulate the macrophages and promote production of the antibodies. *Ginseng* seemed to be most protective against cancer of the ovaries, larynx, pancreas, esophagus, and stomach and less effective against breast, cervical, bladder, and thyroid cancers.

Keywords: Ginseng root, Perennial, Cancer, ginsenosides, killer cells.

PC- 36

PHARMACOLOGICAL EFFECTS OF *SOLANUM NIGRUM***Gayathri R Menon *, Lakshmi T., Ezhilarasan Deveraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Solamargine and solasonine, isolated from *Solanum nigrum* inhibit growth and spread of various cancers including that of the breast, liver and lung. Steroidal glycosides (spirostane, furostane, spirosolane and pregnane), isolated from *Solanum nigrum* inhibit growth and spread of colon cancer and pheochromocytoma. Glycoproteins isolated from *Solanum nigrum* have antiproliferative and apoptotic effects on colon and breast cancers. Polysaccharides isolated from *Solanum nigrum* have significant inhibitory effect on growth of cervical cancer. *Solanum nigrum* inhibits growth and spread of liver cancer by two distinct anticancer activities, *i.e.* apoptosis and autophagy. Higher doses of *Solanum nigrum* induce apoptotic cell death while lower doses lead to autophagocytic death of cancer cells. Lunasin, isolated from *Solanum nigrum* is a cancer-preventive peptide. *Solanum nigrum* and *Solanum lyrati* inhibit growth and spread of stomach cancer, sarcomas, malignant ascites and leukaemia.

Keywords: *Solanum nigrum*, growth, liver cancer, leukaemia.

PC- 37

MANAGEMENT OF OCULAR TUMORS –RECENT ADVANCES

Oviya VJ*, Lakshmi T., Ezhilarasan Deveraj, Anitha Roy

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

The management of intra ocular tumors is an important area to focus. Way back retinoblastoma (RB) used to be treated exclusively with external beam radiation, it has been pushed down to the last of the list of options in the present era. Major advances have taken place in the administration of chemotherapy. This poster gives an insight to the management options for intra ocular tumors. Chemotherapy mainly focus on the observation, Laser photocoagulation, Cryotherapy, radiation. Surgical management by Iridectomy, eye wall resection. Echography is mandatory to check the intraocular tumors.

Keywords: Retinoblastoma, chemotherapy, surgical management, Laser

PC- 38

STEM CELLS AND CANCER THERAPY

Haritha*, Lakshmi T., Ezhilarasan Deveraj, Anitha Roy

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Autologous and allogenic stem cells are two different types of stem cells. In a stem cell transplant for any cancer very high doses of radiation are used, sometimes along with radiation therapy, to try to kill all the cancer cells. This treatment also kills the stem cells in the bone marrow. Soon after treatment, stem cells are given to replace those that were destroyed. These stem cells are given into a vein, much like a blood transfusion. Over time they settle in the bone marrow and begin to grow and make healthy blood cells. Autologous transplant is mainly used to treat certain leukemias, lymphomas, and multiple myeloma. It's sometimes used for other cancers, like testicular cancer and neuroblastoma, and certain cancers in children.

Keywords: Ocular stem cell, allogenic, transplant, neuroblastoma, cancer cells.

PC- 39

ACACIA CATECHU AND ITS ANTICANCER EFFECTS

Geethika,* Lakshmi T., Ezhilarasan Deveraj, Anitha Roy

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Acacia catechu is also known as kattha or kadhira. It is indigenous in India, other Asian countries, and East Africa. Traditionally, *A. catechu* has been used as an antimicrobial, anti-inflammatory and antifungal, coagulant, vermifuge, antidiarrheal, and astringent, and has also been employed to heal wounds, treat obesity and diabetes, and maintain oral hygiene. This poster reviews the therapeutic profile of *Acacia catechu* and its anticancer effect against oral squamous carcinoma cell line and hepg2 cells. *A. catechu* heartwood extract against a human breast adenocarcinoma cell line and DMBA-induced mammary carcinoma in mice. The extract was shown to exhibit a dose-dependent, potent antitumor activity

Keywords: *Acacia catechu*, oral squamous carcinoma, cell line.

PC- 40

ZINGIBER OFFICINALIS AND ITS USE IN CANCER THERAPY

Kiruthika P*, Lakshmi T., Ezhilarasan Deveraj, Anitha Roy

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Zingiber officinale ethanol extract was investigated to find out its antitumor effects in skin tumorigenesis model. Pre-application of *Zingiber officinale* ethanol extract onto the skin of mice resulted in significant inhibition of 12-0-tetradecanoylphorbol- 13-acetate (TPA)-caused induction of epidermal ODC, cyclo oxygenase, and lipoxygenase activities and ODC mRNA expression in a dose dependent manner. Ginger's natural bio-actives, specifically ginger extract and 6-gingerol, have also been investigated for their *in vitro* inhibition of two key aspects of colon cancer biology, cancer cell proliferation and angiogenic potential of endothelial cell tubule formation. These active ginger constituents linked to a direct effect on cancer cells. The poster represents the effects of Zingiber for further proceedings.

PC- 41

CARALLUMA FIMBRIATA - A MAGIC PLANT WITH ANTICANCER POTENTIAL**Nurazman Bin Abdul Salim*, AnithaRoy, Lakshmi T and Ezhilarasan D**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Caralluma fimbriata (Apocynaceae) is an edible succulent cactus is a perennial herb growing in dry parts of Tamil Nadu, India. Medicinal plant used as an appetite suppressant and has also been used to treat diabetes, pain, fever, and inflammation. It has anti-inflammatory and antitumor activity, anticancer, cytoprotective and antiulcer activity, antinociceptive, antioxidant, hypolipidemic, antihyperglycemic, antidiabetic, treating paralysis and joint pains, antipyretic. The plant contains alkaloids, phenolic compounds. flavonoids, saponins, glycosides and quinone. The plant is with proven effects in Lung cancer cell line, colonic cancer and oral cancer. The poster highlights the various anticancer activity. The anticancer potential of *Caralluma fimbriata* is highlighted in this poster.

Keywords: Caralluma, cactus, anticancer

PC- 42

METFORMIN - A NEW GATE WAY TO CANCER THERAPY**Nurul Husniyah Binti Che Soh*, Anitha Roy, Lakshmi T, Ezhilarasan D.**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Diabetes is known to be associated with insulin resistance and an impaired immune response against various pathogens. Metformin is one of the most widely prescribed oral anti-diabetic medications. It is the first line therapy for type 2 diabetes mellitus. It has an anti-hyperglycemic effect which is mediated by inhibiting gluconeogenesis. It decreases glucose absorption from the small intestine and also increases the glucose uptake in cells, and decreases plasma free fatty acid concentration. Metformin also increases insulin induced translocation of glucose transporters to the cellular plasma membrane, thus reducing insulin resistance. Use of metformin has been found to be generally safe, with mild gastrointestinal symptoms being the most common adverse effects. The immune system responds to the proliferating tumor cells by increasing production of tumor specific lymphocytes which check tumor growth by various mechanisms. Metformin is presently being evaluated as an anti-cancer agent for endometrial cancer. Metformin is being assessed in combination with various anti-cancer agents for the treatment of pancreatic cancer. metformin can significantly impact markers of tumor proliferation. The use of metformin with a decrease in the risk of developing cancer and a reduced cancer related mortality

Key words: Anticancer, Antidiabetic, Metformin

PC- 43

IMATINIB AND ITS ANTINEOPLASTIC POTENTIAL**Cheri Nauma Hafeez*, Anitha Roy, Lakshmi T., Ezhilarasan D**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Imatinib is an anticancer drug with targeted action. Imatinib inhibits tyrosine kinases. Deregulated protein tyrosine kinase activity is central to the pathogenesis of human cancers. It has revolutionized the treatment of chronic myeloid leukemia (CML) in 2001. It has a miracle effect in other cancers where tyrosine kinases were overexpressed. Tyrosine kinases are important mediators of the signaling cascade, determining key roles in diverse biological processes like growth, differentiation, metabolism, and apoptosis in response to external and internal stimuli. Deregulation of protein kinase activity has been shown to play a central role in the pathogenesis of human cancers. Anaplastic Thyroid Cancer, Steroid-Refractory Chronic Graft-versus-Host Disease Recurrent Epithelial Ovarian Cancer, Chordoma, AIDS-Related Kaposi's Sarcoma, Malignant Melanoma, Aggressive Fibromatoses, Systemic Mastocytosis, Hyper eosinophilic Syndromes/Chronic Eosinophilic Leukemia. Philadelphia Chromosome-Positive Acute Lymphoblastic Leukemia. Dermatofibrosarcoma Protuberans, Gastrointestinal Stromal Tumors, Chronic Myeloid Leukemia, the major drawback with Imatinib is development of resistance which is therapeutically challenging. This poster highlights the various aspects of imatinib in cancer therapy.

Key words: Antineoplastic. Imatinib, Tyrosine kinase

PC- 44

MUSHROOMS AND ANTICANCER ACTIVITY**Pamella Sylvia Ann Kelasi*, AnithaRoy, Lakshmi T., Ezhilarasan D**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer is a leading cause of death worldwide. The anticancer drugs used currently are not target specific and cause several side-effects and complications in clinical management of various forms of cancer. Mushrooms are known to complement chemotherapy and radiation therapy by countering the side-effects of cancer, such as nausea, bone marrow suppression, anemia, and lowered resistance. Many anti-tumor agents, have been identified from various mushrooms. The various phytochemicals present include polysaccharides, proteins, fats, ash, glycosides, alkaloids, volatile oils, tocopherols, phenolics, flavonoids, carotenoids, folates, ascorbic acid enzymes, and organic acids. Lentinan, krestin, hispolon, lectin, calcaelin, illudin S, psilocybin, *hericium* polysaccharide a and b, ganoderic acid, schizophyllan, laccase are the active components in mushrooms responsible for conferring anti-cancer potential. Polysaccharides are known for their anti-tumor and immunomodulating properties. The polysaccharide, β -glucan is the most versatile metabolite due to its broad spectrum biological activity. Hispolon, an active polyphenol compound, is known to possess potent anti-neoplastic properties and potentiate the cytotoxicity of chemotherapeutic agents. The anti-cancer potential of mushrooms with examples are included in this poster.

Keywords: Cancer, mushrooms, cytotoxicity, immune modulating, polysaccharides

PC- 45

AVERRHOA BILIMBI- NATURE'S STORE FOR ANTICANCER ACTIVITY**Nur Masitah Binti Mohamed Shukri*, Anitha Roy, Lakshmi T., Ezhilarasan D.**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Averrhoa bilimbi (family *Oxalidaceae*) is traditional medicinal plant with many pharmacological effects. The different parts of the plant are used for various uses. Its fruits and leaves have antibacterial, astringent, postpartum protective efficiency and has been used for the treatment of fever, mumps, inflammation of rectum, diabetes, rheumatism, whooping cough, hypertension etc. *A. bilimbi* fruit extract could be considered as a promising chemotherapeutic agent in cancer treatment. *A. bilimbi* fruits are rich in oxalic acid, vitamin C, tannins, and minerals. Nearly. fifty-three volatile components, consisting mainly of the aliphatic acids, hexadecanoic acid, 9-octadecanoic acid, esters, butyl nicotinate and hexyl nicotinate have been found in the fruits. *Averrhoa bilimbi* can be a source of bioactive compounds which can be used as a potential chemotherapeutic agent against colorectal carcinoma by virtue of its chemopreventive and chemotoxic properties. *A. bilimbi* fruit and leaves extract inhibit the proliferation of MCF-7 breast cancer cells. The fruit extract of *A. bilimbi* showed a better activity towards MCF-7 cell lines. This poster explains the anticancer activity of this wonderful plant.

Keywords: *Averrhoa bilimbi*, bioactive compounds, chemotoxic

PC- 46

ROLE OF SIRTUINS IN CANCER**Hanshika Ravi*, Ezhilarasan Devaraj, LakshmiT., Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Cancer is an age-associated disease, and sirtuins may have a considerable impact on a plethora of processes that regulate tumorigenesis. Sirtuins are present from bacteria to humans. Although they have diversified and acquired new functions throughout evolution, their main functions seem to be to detect changes in the redox state of the cell resulting from stress (whether oxidative, metabolic, or genotoxic) and to coordinate an adequate response. The role of sirtuins in cancer biology has become increasingly apparent, and growing evidence demonstrates that sirtuins regulate many processes that go awry in cancer cells, such as cellular metabolism, the regulation of chromatin structure and the maintenance of genomic stability. Studies have also suggested that sirtuins may modulate epithelial plasticity by inducing transcriptional reprogramming leading to epithelial-mesenchymal transition (EMT), invasion, and metastases. However, the mechanisms underlying these apparently contradictory activities are not well understood, although recent findings suggest that sirtuins play both initiator and inhibitors of cancer and they might actually be two sides of the same coin.

Key words: Cancer, Epithelial-mesenchymal transition, Invasion, Metastases

PC- 47

BIOLOGICAL ROLE OF SIRTUINS**Thanish Ahamed S.*, Ezhilarasan Devaraj, Lakshmi T., Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

The human sirtuins (SIRT1–SIRT7) enzymes are a highly conserved family of NAD⁺-dependent histone deacetylases, which play a critical role in the regulation of a large number of metabolic pathways involved in stress response and aging. The 7 mammalian sirtuins (Sirts) belong to a family of histone deacetylases (HDACs) that are ubiquitously expressed in different tissues and are classified as class I (Sirt1, Sirt2, and Sirt3), class II (Sirt4), class III (Sirt5), and class IV (Sirt6 and Sirt7). Sirt1 seems to have a more complex role in control of metabolism. Sirt2 plays an important role in controlling cell cycle; in fact, an increase of Sirt2 activity significantly delays cell cycle progression. Sirt3 is able to regulate adaptative thermogenesis and activate many cellular pathways by regulating mitochondrial genes. Sirt4 is a mitochondrial sirtuin lacking *in vitro* deacetylase activity and inhibits the mitochondrial glutamate dehydrogenase (GDH), thus regulating glutamine and glutamate oxidative metabolism and amino acid-stimulated insulin secretion. Sirt5 catalyzes ammonia to urea and reduces the production of oxidative stress having a cellular protective effect. Sirt5 catalyzes ammonia to urea and reduces the production of oxidative stress having a cellular protective effect. Sirt7 is the only sirtuin localized in the nucleolus and regulates the transcription of rDNA in mammal cells.

Key words: Cancer, Metabolism, Oxidative stress, Cell cycle

PC- 48

SILIBININ IS STILL A PROMISING DRUG CANDIDATE FOR CANCER**Reshma Thirunavukarasu*, Ezhilarasan Devaraj, Lakshmi T., Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Silymarin and its major constituent, Silibinin, are extracts from the medicinal plant *Silybum marianum* (milk thistle) and have traditionally been used for the treatment of various liver diseases. Recently, these orally active, flavonoid agents have also been shown to exert significant anti-neoplastic effects in a variety of *in vitro* and *in vivo* cancer models, including skin, breast, lung, colon, bladder, prostate and kidney carcinomas. silibinin is effective both alone and in combination with other agents (e.g. chemotherapeutic and epigenetic agents) in significantly inhibiting the growth of cancer cells. Silibinin appraised for its myriad biological effects by regulating cancer cells growth, proliferation, apoptosis, angiogenesis and many other mechanisms. Currently, silibinin is tested for clinical studies against various cancers including hepatocellular carcinoma, lung, prostate cancers etc.

Keywords: *Silybum marianum*, Silymarin, Apoptosis, Angiogenesis

PC- 49

PLANT DERIVED ANTICANCER DRUGS: MYTH OR MIRACLE**Rinisha Nair R Baskaran *, Ezhilarasan Devaraj, Lakshmi T., Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Plants have had an essential role in the folklore of ancient cultures. In addition to the use as food and spices, plants have also been utilized as medicines for over 5000 years. Two remaining living traditions, the traditional Chinese medicine (TCM) and Ayurveda, the traditional Indian medicine (TIM) have provided most of the current knowledge related to medicinal plants. Cancer is among the leading causes of morbidity and mortality worldwide. The number of new cases is expected to rise by about 70% over the next two decades. Thus, there is a real need for new efficient anti-cancer drugs with reduced side effects, and plants are a promising source for such entities. The plants contain phytochemical such as secondary metabolite constituents into alkaloids (caffeine, nicotine), terpenes (ginkgo, ginseng, valerian, *Melissa officinalis*, sage), and phenolic compounds (curcumin, resveratrol, epigallocatechin-3-gallate, *Hypericum perforatum*, soy isoflavones) are known to be cytotoxic *in vitro* studies. Moreover, these active compounds isolated from herbal plants have been used as adjuvants along with the standard anticancer drugs showing promising anticancer effects and used to improve the survival of the patients with minimal adverse effects.

Keywords: Complementary alternative medicine, Phytochemicals, Flavonoids, secondary metabolites

PC- 50

HERBAL MEDICINES FOR CANCER**Miloni Suresh Shah*, Lakshmi T., Ezhilarasan Devaraj, Anitha Roy**

Saveetha Dental College & Hospitals, Saveetha University, Chennai, India

ABSTRACT

Complementary and Alternative Medicine (CAM) is commonly used worldwide. Herbal medicines are the most preferred ways of CAM. It possesses a long history of its use, patient tolerance, cheaper cost, fewer side effects and easily available in countries rich in agro culture conditions. World Health Organization stated that about 80% of the world population is reported to rely on CAM for their primary health care needs. Phytochemicals such as flavonoids, polysaccharides, lactones, alkaloids, diterpenoids and glycosides, present in these medicinal plants, have been implicated for their wide margin of therapeutic effects. Even in the developed countries, herbal medicine usage is gaining popularity. Several plant-derived compounds have been identified as an important source of several clinically useful anti-cancer agents. For instance, vinblastine, vincristine, camptothecin derivatives, topotecan and irinotecan, etoposide (derived from epipodophyllotoxin), and paclitaxel (taxol®). A number of promising new agents are in clinical development based on selective activity against cancer-related molecular targets, including flavopiridol and combretastin A4 phosphate. Herbal medicines that are the most preferred ways of CAM. Hence, this chapter throws light on herbal medicines are commonly employed in current research against several cancer types in experimental as well as clinical trials. Moreover, this chapter focuses on impact and interactions of the phytochemicals present in these medicinal plants on cancer signaling pathways, angiogenesis, etc.

Keywords: Herbal Medicine, Phytochemicals, Cancer, Complementary and Alternative Medicines, Medicinal Plants

PC-51

PHOTODYNAMIC THERAPY IN ORAL CANCER AND PREMALIGNANT LESIONS

Rubiya R¹, Dhanavardhini K¹, Agnishwar Girigoswami, Koyeli Girigoswami*

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Hospital and Research Institute, Chettinad Academy of Research and Education, Kelambakkam, Chennai-603103, Tamilnadu

¹These authors have equal contribution

ABSTRACT

Oral cancer is a global health issue with significantly poor survival. Due to the development of local recurrence, regional failure and the formation numerous tumours, there is not much improvement in the survival rates using the current modalities. Therefore, an alternative approach is needed in the management of oral cancer. Photodynamic therapy (PDT) is a method to treat the cancer where a light sensitive drug is administered followed by light irradiation at its λ_{\max} for the generation of reactive oxygen species (ROS). These light sensitive drugs are known as photosensitizers and they are highly efficient to stop the growth of cancer cells. The present review explores the advancement of PDT and applications of it in oral cancer therapy.

Keywords: Oral cancer, photodynamic therapy, nanobiotechnology.

PC-52

A20 PLAYS AMBIGUOUS ROLE IN TUMOR DEVELOPMENT**ABSTRACT**

A20 is identified as an inhibitor protein and belongs to zinc finger family as it contains a zinc finger domain. It is known commonly as TNFAIP 3 and it is an inhibitor of NF- κ B pathway thereby directly preventing the inflammation caused by this pathway. On the other hand, it also inhibits the TNF induced apoptosis. A20 has zinc finger domain which is more than enough to inhibit the TNF induced apoptosis. Although A20 expression is determined by NF- κ B it is involved in negative feedback regulation of NF- κ B activation. It is already known that A20 is a zinc finger that binds to the TRAF 2 and chaperone 14-333. But according to the recent studies these are not necessary for the activation of A20. A20 also inhibits the JNK's which are involved in both pro and anti-apoptotic activities. A20 is ubiquitin editing enzyme that removes the poly ubiquitination chains in TRAF6 in OTU domain whereas poly ubiquitination is essential for NF- κ B signaling. Thus, it has both ubiquitin ligase and deubiquitinase activities, is involved in the cytokine-mediated immune and inflammatory responses. Interestingly recent studies on the knockdown of A20 in tumor site inhibited tumor growth at least through inducing the apoptosis of MDSCs. Thus, understanding the various roles of A20 in various cancers might be eye opener that A20 would be a potential target in cancer therapy.

Keywords: A20, TNF, JNK, inflammation, apoptosis, NF- κ B signaling, ubiquitination, MDSC

PC-53

**ANTICANCER ASSESSMENT OF BIOSYNTHEZIZED SILVER NANOPARTICLES USING
KALANCHOE PINNATA EXTRACT ON LUNG CANCER TREATMENT****S. Venkat Kumar and S. Rajeshkumar**

School of Bio-Sciences and Technology, VIT University, Vellore- 632014, TN, India

ABSTRACT

The green synthesis of the metal silver (Ag) nanoparticles was successfully performed by one step procedure of using reducing agents of *K. pinnata* extract. The rod-shaped of size 20-60 nm Ag nanoparticles was used in the medical application of lung cancer under optimized conditions. The characterization of the biosynthesized nanoparticles was done using UV-Vis spectroscopy, scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR) and Energy dispersion analysis of X-ray spectroscopy (EDAX). The FTIR analysis confirms the occurrence of functional groups which proved to be responsible for the stabilization or reduction of these nanoparticles. The Ag nanoparticles in dose-dependent manner was persistent in inhibiting the lung cancer cell line A549 growth which was evaluated using the MTT assay which was evaluated with the IC₅₀ value of 50µg when compared with the standard commercialized drug.

Keywords: green synthesis; silver nanoparticles; lung cancer; MTT assay; *K. pinnata*

PC-54

ANTI-MIR THERAPY AGAINST BREAST CANCER

ABSTRACT

Breast cancer is the cancer of the breast cells. Cancer that begins in the lactiferous duct (milk duct), known as ductal carcinoma, is the most common type and Cancer that begins in the lobules known as lobular carcinoma, is much less common. The first symptoms of breast cancer are usually an area of thickened tissue in the woman's breast, or a lump. The majority of lumps are not cancerous; however, women should get them checked by a health care professional. Women who carry the BRCA1 and BRCA2 genes have a considerably higher risk of developing breast and/or ovarian cancer. These genes can be inherited. TP53, another gene, is also linked to greater breast cancer risk. Micro-RNAs (miRs) are a recently described class of genes, encoding small non-coding RNA molecules, which primarily act by down-regulating the translation of target mRNAs. miRs are involved in a range of normal physiological processes, notably differentiation and cell type determination. miRNAs contribute to breast carcinogenesis by altering the expression of oncogenes and tumor suppressors, affecting cell proliferation, apoptosis, motility, and invasion. miR dysregulation plays a key role in the pathogenesis of breast cancer. One such miR, (miR-155) is closely related with breast cancer progression by promoting metastasis. Antimir developed against this particular miRNA has the potential to fight breast cancer.

PC-55**APOPTOTIC INDUCING ROLE OF MARINE SPONGE ASSOCIATED BACTERIAL
EXTRACT AGAINST LIVER CANCER CELL LINE****Gayathrikanam, A. Madankumar**

Cancer Biology Lab, International Research Centre, Sathyabama University

ABSTRACT

Marine sponge associated bacteria produce wide range of unique metabolites that enable them to survive in challenging environment, which makes them important source of candidate in the drug discovery against many diseases including cancer. The present study was initiated in finding new drug molecule for liver cancer from marine associated symbionts. 21 bacterial extracts were derived from sponges collected from southern coastal region in Tamilnadu, India. Antioxidant activity was determined using 2,2-diphenyl-2-picrylhydrazyl (DPPH) and the potential cytotoxic effect of each bacterial extract was determined by 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium (MTT) assay against HepG2 liver cancer cell line. Among 21 extracts, MNRU36 had the highest antioxidant activity; its effective dose (EC50) was 15.63 µg/mL. The MTT assay revealed that MNRU36 had the highest cytotoxic activity against HepG2 cells [inhibitory concentration (IC50) = 100 µg/mL]. These data revealed that the extract MNRU36 has maximum growth inhibitory effect at minimal toxicity. Also the apoptotic inducing effect of MNRU 36 was demonstrated by cell staining methods such as PI(propidium iodide) staining for identification of morphological changes and AO/EB (Acryladine orange/Ethidium bromide) staining for identifying early and late apoptosis. Further Apoptosis-related proteins Bcl2, Cyt-c and caspase 2 expressions were analyzed by western blotting in HepG2 cells treated with MNRU36 extract. These results indicate that the mechanisms responsible for anticancer effect of MNRU36, will be useful starting points for further fractionation and purification of the active molecule.

PC-56**APPLICATION OF SUSCEPTIBILITY-WEIGHTED MR IMAGING (SWI) IN BRAIN TUMOUR DIAGNOSIS AND SURGICAL INTERVENTIONS – A REVIEW****Poornima G, Padmapriya V¹ and Karunanithi Rajamanickam²**

¹Department of Medical Bionanotechnology, ²Department of Medical Biotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education (CARE), Kelambakkam, Kanchipuram District, Tamilnadu – 603 103.

ABSTRACT

Susceptibility weighted imaging (SWI) is a novel imaging technique which has the ability to show microvascular structures in the brain. SWI highlights the hemorrhagic components by means of susceptibility effects. This method helps to grading and monitoring various stages of brain tumours. Vascular malformations occur as a result of chronic tumours or acute stroke. SWI method has the potential to reveal the changes in the blood flow and guide in monitoring the recovery. Magnetic susceptibility of the substance in our body like haemoglobin behave differently in de-oxy state (paramagnetic: strong-magnetic property) and oxy-state (diamagnetic: week-magnetic property) and alters local magnetic field and produces hyper-intense (darker than the surrounding) and hypo intense (brighter than the surrounding) in the MR image. Since the contrasts in the images are inherent due to natural physiological activities, SWI does not require any contrast agents. Further, SWI is highly sensitive in showing micro-vascular abnormalities and thus helps to surgical interventions in deep brain tissue when comparing to conventional MRI. However, SWI has some limitations, like long image acquisition time, demanding higher magnetic field strength, bone tissue interfaces leading to susceptible artefact etc. However, considering the advantages of this technique, it could be applied in neuro-oncology for diagnosing brain tumour, staging the tumour follow-up on therapeutic effect, etc.

PC-57

**EPIGENETIC ALTERATIONS AS BIOMARKERS FOR RELIABLE DIAGNOSIS OF
COLORECTAL CANCER**

Ramadevi S^{1#}, Deepika Sree^{1#}, Ramakrishnan V^{2*}

¹ Medical Genetics, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Kelambakkam-603103, Tamil Nadu, India

²Genetics Laboratory, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Kelambakkam-603103, Tamil Nadu, India

Equally contributed

ABSTRACT

Colorectal cancer (CRC) is one of the major health problem globally and often diagnosed at the final stage. The worldwide burden of CRC is expected to increase by 60% to more than 2.2 million new cases and 1.1 million deaths by 2030. The signs and symptoms of the disease include change in bowel habits, diarrhea, constipation, rectal bleeding, dark stools, and weight loss. The screening methods include fecal occult blood testing, flexible sigmoidoscopy, and colonoscopy. There is growing evidence in early detection of this disease with novel screening modalities to reduce compliance and increase specificity of available methods. There are several markers such as DNA, serum and fecal biomarkers that can predict CRC and polyps. DNA based methods are used as promising marker in disease diagnosis. Overall sensitivities for detection by fecal DNA markers ranged from 53 to 90%, while a panel of serum protein markers provides a sensitivity/specificity up to 78% for CRC. Epigenetic changes such as DNA methylation has been shown at early stages of tumor development making differentially methylated regions (DMRs) highly reliable for biomarker development. However, potential biomarkers for CRC diagnosis based on patterns of the DNA methylation show drastic changes in their genomic region, so-called copy number alterations, leading to robust diagnosis. The screening method offers the possibility to detect DMRs in colorectal specimens. These biomarkers can be correlated with clinical parameters, such as CIMP (CpG island methylator phenotype), histology and enables an early diagnosis of CRC.

PC-58

IDPs – A KEY TARGET TO CANCER

ABSTRACT

IDPs are intrinsically disordered proteins containing long disordered regions with greater than 30 amino acid residues found in most of the regulatory proteins. Disordered proteins are characterized by an enormous amount of structural plasticity which makes them promiscuous in binding to different partners and multi-functional in cellular activity. Disorder-to-order transition induced by the IDP binding to a specific partner defines many signaling interactions. The functions the IDPs involved in (e.g., regulation, signaling, and control) are mostly the ones that require high specificity–low- affinity interactions. IDPs may lead to misidentification or mis-signalling in bio molecular recognition could serve as the root cause of some extremely complex human diseases including cancer, diabetes, amyloidoses, and cardiovascular and neurodegenerative diseases which makes them the favorable drug target. The IDPs/IDRs mainly contain abundant charged amino acids that show disorder promoting propensity. This sequence biasness has been used to develop several disorder predictors, such as PONDER (predictor of naturally disordered region), IUPred, GlobPlot, SPRITZ, DisoPred, and DisEMBL. These predictors have been used to analyze the frequency of intrinsic disorder in 3 kingdoms of life.

PC-59

**INTEGRIN: A PATHWAY FOR SMART NANO BASED DRUG DELIVERY OF
ANTICANCER AGENTS****Priya. R, Soniya. P and Shoba Narayan**

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Chettinad Hospital and Research Institute, Kelambakkam-603103

ABSTRACT

Cancer recurrence can be managed when angiogenesis can be controlled by a double-edged sword manner. Targeting and controlling angiogenesis is one such strategy to combat cancer disease. The need of nutrients and oxygen for the progression of tumor results in the formation of new blood vessels a process called angiogenesis. Integrins being membrane receptors are highly expressed during cancer because of angiogenesis. So, targeting angiogenesis for cancer treatment is very vital for increasing the survival rate. Multifunctional drug delivery agents are required to fight against cancer and to minimize side effects. Such double-edged sword systems are found by the use of nanoparticles as efficient carriers for drugs like doxorubicin. Modifying nanoparticles with ligands that can specifically bind to integrin receptors can reduce the dose of drugs used in cancer treatment. Arginine-glycine-aspartic acid a very short peptide called RGD has strong affinity for integrin receptor. Several types of nanocarriers like liposomes, mesoporous silica nanoparticles, polymeric nanoparticles, biopolymeric nanoparticles, metal based nanoparticles and bacteriophage tagged to RGD peptide have been used successfully to encapsulate doxorubicin and deliver the drug to the site specific via the integrin pathway. DOXIL a liposomal formulation of doxorubicin is a drug that is clinically administered. Enhanced uptake of RGD tagged to nanoparticles encapsulated with clinically used anticancer agents has been successfully demonstrated. The excellent properties of such designed systems have shown higher tumor inhibition and with the promise of RGD peptide entering clinical trials, such conjugated design in translation medicine is not far away.

Keywords: Integrin, RGD, Doxorubicin, nano carriers, cancer

PC-60

MARINE MACROALGAE (*PADINA TETRASTROMATICA*) MEDIATED SYNTHESIS OF GOLD NANOPARTICLES FOR ANTIOXIDANT AND ANTICANCER ACTIVITY**S. Rajeshkumar and S. Venkat Kumar**

School of Bio-Sciences and Technology, VIT University, Vellore- 632014, TN, India

ABSTRACT

Applications of gold nanoparticles for the biomedical field developing arena in this modern globe. In this present investigation we used marine brown seaweeds *Padina tetrastromatica* for the biosynthesis of gold nanoparticles. The biosynthesized gold nanoparticles are characterized morphologically by Scanning electron microscope (SEM) and transmission electron microscope (TEM). The gold nanoparticles were analyzed using UV-vis spectrophotometer and Fourier transform infrared spectrophotometer (FT-IR) for surface plasmon resonance and bio-metabolites responsible for nanoparticles green synthesis respectively. Finally, the eco-friendly gold nanoparticles were tested for its antioxidant property by free radical scavenging activity through DPPH and metal chelating assay and anticancer activity colon carcinoma cell lines.

Key words: gold nanoparticles, Anticancer, Antioxidant, *Padina tetrastromatica*

PC-61

**NANOTECHNOLOGY-BASED DRUG DELIVERY SYSTEMS FOR TREATMENT OF ORAL
CANCER****Sangamithra. N Divya. A and Thangavel Muthusamy**

Cellular and Molecular Biochemistry Lab, Faculty of Allied Health Sciences, Chettinad
Academy of Research and Education (CARE), Chettinad University, Kelambakkam, Chennai-
603103, Tamil Nadu, India

ABSTRACT

Introduction: Oral cancer (oral cavity and oropharynx) is a common and aggressive cancer that invades local tissue, can cause metastasis, and has a high mortality rate. Conventional treatment strategies, such as surgery and chemoradiotherapy, have improved over the past few decades; however, they remain far from optimal. Methods: Currently, cancer research is focused on improving cancer diagnosis and treatment methods (oral cavity and oropharynx) nanotechnology, which involves the design, characterization, production, and application of nanoscale drug delivery systems. Nanoparticles fabricated from polysaccharides, proteins, and biocompatible/biodegradable polymers, such as polyethylene glycol (PEG), polycyanoacrylate, chitosan, gelatin, and sodium alginate. In medicine, nanotechnologies, such as polymeric nanoparticles, solid lipid nanoparticles, nanostructured lipid carriers, gold nanoparticles, hydrogels, cyclodextrin complexes, and liquid crystals, are promising tools for diagnostic probes and therapeutic devices. Results: Research studies revealed that biocompatible and biodegradable hyper branched poly (ether ester) polymers that possess many hydroxyl and carboxyl functional groups available for functionalization, including the covalent attachment of drug molecules. Conclusion: The objective of this study is to present a systematic review of nanotechnology-based drug delivery systems for oral cancers.

Keywords: Nanoparticles, targeted delivery, oral squamous cell carcinoma, oral cancer treatment

PC-62

**NANO BASED IPILIMUMAB AS A CHECK POINT BLOCKADE FOR MELANOMA
TREATMENT****Arjun S, Deepika. A and Shoba Narayan**

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Chettinad Hospital and Research Institute, Kelambakkam-603103

ABSTRACT

Melanoma is a manipulative type of cancer that can rapidly alter the microenvironment of surrounding cells creating an unpredictable surrounding. There are lacunae in the current methods of treatment to resist melanoma. Integrating materials with biomedicine is one of the active emerging fields of medicine. Nanomedicine has revolutionized the manner in which a disease is managed or treated. Immunotherapy, gene therapy, photothermal or photodynamic therapy have all emerged as an alternative to chemo and radio therapy. Many recent clinical trials have shown success in immunotherapy that can modulate the innate immune system to fight cancer. Checkpoint blockade, anti-CTLA-4 has emerged as a major strategy in treating melanoma. Ipilimumab which is a FDA approved drug is used as a potential candidate in treating metastatic melanoma. Regrettably, the side effects due to immuno treatment with ipilimumab are enormous which includes inflammation in the bowel, neurotoxicity and cardiac toxicity. The advantage of using nano based drug delivery is to minimize the side effects caused by first line drugs. Tagging monoclonal antibody with dacarbazine has shown to improve the efficacy and specificity of melanoma treatment. Reports on the co-delivery of bioactive peptides coupled with polymeric nanoparticles have shown the prospective of polymeric nanoparticles as a delivery vehicle in inhibiting metastatic melanoma. Research on the co-delivery of siRNA conjugated to metal nanoparticles has shown excellent inhibition of tumor growth. Based on the above findings, nano based immunotherapy is an important area for management of melanoma.

Keywords: Immunotherapy, Melanoma, Drug delivery, Checkpoint blockade

PC-63

NANOCOMPOSITE DRUG CARRIERS FOR INCREASING EFFICACY OF TREATMENT OF ORAL CANCER**Subitha Palaniraj¹, Shoba Narayan², Murugesan Ramachandran³**

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Chettinad Hospital and Research Institute, Kelambakkam-603103

ABSTRACT

Oral cancer is an important health issue and the worldwide economic burden is a concern. Advent of nanotechnology and engineering materials with biomimetic approaches have been emerged as a major inclusion in the variety of oral health care products which has multifunctional properties. This promising approach is inspiring and has opened the doors to nanomedicine in future clinical studies that can incorporate multiple functionalities/drugs within nanomaterials. Nanocomposites consisting of many materials, for instance polymeric and metal based nanoparticles have been recently explored for diagnosis and therapy. The advantage of using polymeric system can result in controlled release of drug with proper dosage with the advantage of reducing the toxic side effects. The present therapy for management of oral carcinoma involves photodynamic, photothermal, chemotherapy and radiotherapy. Recent reports have shown successful inhibition of tumor recurrence by combining photothermal and chemotherapy based on nanocomposites. Recently, targeting oral cancer with short peptides that can bind to the tumor site has shown excellence in inhibiting the tumor growth. Many such nanoparticles like NBTXR3 have entered clinical trials to fight against cancer. Here, we review progress in the development of injectable nanocomposite gel that could provide a sustained release of drug and suppress the tumor growth with advanced properties.

Keywords: Oral cancer, Nanocomposites, NBTXR3, Drug Delivery, Tumor Growth

PC-64

**PREPARATION AND CHARACTERIZATION OF CHITOSAN-FIBRIN
NANOCOMPOSITES FOR DRUG DELIVERY AND WOUND TREATMENT**

Nishakavya S, Shalini T and Weslen S Vedakumari*

Department of Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad
Academy of Research and Education, Kelambakkam, Chennai 603103, India

ABSTRACT

The present study efforts at fabricating chitosan-fibrin nanocomposites (CF-NC) using wet precipitation method. The prepared CF-NC were characterized using electron microscopy which revealed their size in the range of 24 nm. CF-NC exhibited good anti-bacterial activity against *Escherichia coli* and *Staphylococcus aureus*. Methotrexate (M) was loaded into CF-NC for drug delivery applications. M-CF-NC showed sustained release for up to 96 h. Anti-cancer property of M-CF-NC was determined using MCF 7 breast cancer cells, which showed dose-dependent toxicity. Wound treating property of CF-NC was studied by creating open excision wounds in albino rats. When CF-NC was applied topically onto the surface of wounds for once in two days, complete wound contraction was seen on day 14, whereas control group took 22 days for complete wound closure. From this study, we propose that CF-NC can be used as excellent system for drug delivery and wound treatment.

PC-65**pHLIPS AS SMART DRUG DELIVERY AGENTS TO THE TARGETED SITE****Monisha S, Nikitha Shalom. R and Shoba Narayan**

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Chettinad Hospital and Research Institute, Kelambakkam-603103

ABSTRACT

Understanding the environment of the diseased site is very important to deliver agents in a sustained manner. The advantage of nanodrug delivery system can help in exploring the cancer environment so as to tune the nanodrug complex so as to act in a smart manner. Acidity is one important biomarker for cancer and researchers everywhere. The protons and acid present in the milieu of disease state keeps the activity of the cancer cell different from other cells. pHLIP which is called as a pH low insertion peptide is a membrane bound peptide that has the capability to recognize target environment. The structure of this 36 aminoacids peptide sequence changes in such a way that under low pH, protonation of aspartic acids residues of the peptide paves way to the C-terminus of the peptide to insert by transformation of the peptide structure to helical form. Tagging of pHLIP to the nanoparticle surface helps in the delivery of the cargo selectively. This strategy has advantage of coupling photodynamic and photothermal therapy. Gold nanoparticles have been successfully functionalized with pHLIPs to target acidic tissues. The selective accumulation of diagnostic agents tagged to pHLIPs has also been reported. Delivery of antimicrobial peptides that is tailored to pHLIPs has demonstrated an efficient way these peptides can induce apoptosis to solid tumors. Successful experiments based on the low insertion peptide have cleared the path for the clinical trials. Based on the leads pHLIP technology is considered as the future theranostic advancement.

Keywords: pHLIPs, nanotechnology, cancer therapy, drug delivery

PC-66

**POLYSACCHARIDE MEDIATED CO-DELIVERY OF DRUGS AND EGFR INHIBITORS
FOR SYNERGISTIC TUMOR THERAPY****Bavadharini S, Sriraam K S and Shoba Narayan**

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Chettinad Hospital and Research Institute, Kelambakkam-603103

ABSTRACT

Polysaccharides as carrier-mediated drug delivery systems are advanced and reliable therapeutics for targeted delivery with improved efficacy and safety from potent cytotoxic drugs. Biocompatibility of polymers has registered improvement in solubility of many anticancer agents that can be encapsulated or coated on these polymers. Among polymers, biopolymers from natural origin have shown improved drug delivery properties. Natural biopolymers include in drug delivery systems such as chitosan, dextran, collagen, alginate and gelatin. For example, folate conjugated chitosan nanoparticles have been reported as an effective anticancer agent via targeted drug delivery of erlotinib. Such drugs are known to inhibit molecules that bind on epidermal growth factor receptor. A broad spectrum of cancer has shown upregulation of EGFR that is involved in progression and pathogenesis of cancer. Targeting or inhibiting these receptors along with chemotherapeutic drugs will not only result in killing of cancer cells but also can prevent the metastatic cancer. In this regard, studies have demonstrated that molecules like NAP-C (N-acetyl penicillamine-chitosan) that can act on EGFR encapsulated with doxorubicin proved to be an excellent carrier with synergistic effects. Other studies include hybrid nanoparticles based on alginate and chitosan with improved targeting ability. Gelatin abased nanoparticles tailored with ligands that can bind to EGFR and encapsulated with anticancer drugs can also be administered via inhalation. Lapatinib, gefitinib, cetuximab, erlotinib and panitumumab are commercially available for the treatment of wide range of cancers that can inhibit EGFR. Designing a biodegradable polymeric nanoparticle with chemotherapeutic drug that can inhibit EGF receptor can result in tumor suppression and inhibition of tumor progression.

Keywords: Polysaccharides, EGFR, Synergistic effect, Biocompatibility

PC-67**ROLE OF *OLDENLANDIA DIFFUSA* EXTRACTS IN THE TREATMENT OF BREAST
CANCER****Preetha Devi N B^{1#}, Dhareni J^{2#}, Ramakrishnan V^{1*}**

¹ Medical Genetics, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Kelambakkam-603103, Tamil Nadu, India

² Medical Biotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Kelambakkam-603103, Tamil Nadu, India

² Genetics Laboratory, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Kelambakkam-603103, Tamil Nadu, India

Equally contributed

ABSTRACT

Breast cancer is the malignant tumor that can grow and destroy the tissues. The symptoms of this disease include lump or mass, swelling, skin irritation, nipple pain, retraction, scaliness and discharge. Worldwide, it has been estimated 508 000 women died in 2011 due to breast cancer and almost 50% of cases and 58% of deaths occur in lesser developed countries. Breast cancer is treated with many different modalities, including chemotherapy, radiotherapy which is given as a single agent or in combination. Patients experience adverse effects from these types of treatment leading to distress and severe economic burden. *Oldenlandia diffusa* (OD) is a well-known medicinal plant used to prevent and treat many types of cancers. The herb is known to have anti-cancer properties and studies have revealed that it is also a chemo preventive agent. It possesses bioactive immunomodulators as their main constituents producing anticancer effects via activation of lymphocytes (epigallocatechin-3-gallate, quinic acid, and ginsan). In particular, EGCG interacts with phospholipids and proteins of the plasma membrane which in turn regulate the signal transduction pathways and Autophagy. OD extracts enhance the tumor suppressor p53 expression as a result of an increased binding of ER α /Sp1 complex to the p53 promoter region. These findings suggest that *Oldenlandia diffusa* might be a potential natural plant based chemotherapeutic agent for the control of breast cancer. Further studies will be required to identify the molecular mechanisms which could be useful for better treatment.

PC-68**SALIVARY BIOMARKERS FOR FEASIBLE DIAGNOSIS OF ORAL CANCER****B.K. Prema¹, P. Vidhya¹, Gannakkummar¹, Shiek SSJ Ahmed^{2*}**Department of Medical Biotechnology, Chettinad Hospital & Research Institute,
Kellambakkam, Tamil NaduDrug Discovery Studio, Faculty of Allied Health Science, Chettinad Hospital and Research
Institute, Kellambakkam, Tamil Nadu**ABSTRACT**

Cancer is one of the leading causes of death worldwide, with 14 million new cases every year. Of various cancer, oral cancer is one of the most fatal health issue in India due the cultural and addictive habits. Currently several risk factors such as tobacco, alcohol, genetic predisposition and hormonal factors are suggested to be causative for oral cancer. Diagnosis of oral cancer is challenging due to insignificant understanding of disease mechanism. This study was aimed to review the saliva based biomarkers for the diagnosis of oral cancer on multi-omics prospective to *provide* a broad overview of a diagnostic strategies for easy and rapid detection. Suitable literatures were retrieved from PubMed, Science Direct, Scopus, and Web of Science using multiple keywords related with "salivary markers" and "oral cancer". All collected literature was separated based on molecular classification into miRNA, Protein and metabolite markers. Systematic review of proteins showed the presence of IL-8, IL-6 and TNF- α in most of the literature. The levels of these IL-8, IL-6 and TNF- α proteins were altered in saliva of oral cancer compared to controls. In addition, we identified few major metabolites that predominant mainly expressed in saliva, which support that possibility of oral cancer diagnosis. Overall, the analysis of each literature classes provides the possible clue for the diagnosis of oral cancer and that demonstrate the its role in signaling pathways in the development of oral cancer.

PC-69

**SERUM miRNA SIGNATURES OF GASTRO-INTESTINAL CANCERS FOR EASE AND
RAPID DIAGNOSIS**

Suruthi. B¹, Anushiya R¹, Meena Lochini M¹, Athira Anirudhan¹, Shiek SSJ Ahmed^{2*}

Department of Medical Biotechnology, Chettinad Hospital & Research Institute,
Kellambakkam, Tamil Nadu

¹Drug Discovery Studio, Faculty of Allied Health Science, Chettinad Hospital and Research
Institute, Kellambakkam, Tamil Nadu

ABSTRACT

Gastro-Intestinal (GI) cancers are global health problem with high morbidity and mortality worldwide. Diagnosis of GI tract cancers are difficult because most patients are asymptomatic at its early stage. However, recent advancement in the molecular techniques provide to clue for early diagnosis of GI cancers. MicroRNAs (MiRNAs) are small endogenous RNA molecules and have emerged as novel serum diagnostic biomarkers for several diseases including cancers due to their stability and detection at minute quantities. In this study, we have reviewed the miRNA expression profile of selected five major GI tract cancers such as oesophagus, liver, pancreas, stomach, and colon to identify the common and unique miRNA signature of Gastro-Intestinal Cancers for ease and rapid diagnosis. The miRNA and GI cancer related literatures were retrieved from PubMed, Science Direct, Scopus, and Web of Science using multiple keywords related with "miRNA" and "GI cancers". From the retrieved literature, the collected MiRNAs were classified based on GI cancer types. Comparing the MiRNAs profile between the GI-tract cancers demonstrates unique and common mechanism between the cancers. Further, systematic mapping of MiRNAs in serum body fluid showed the possible clue for specific detection of GI cancers.

PC-70**STRATEGIES TO DEVELOP A NOVEL NANOBASED PLATFORM TO TARGET FURIN A PROTEIN HIGHLY EXPRESSED IN RHABDOMYOSARCOMA****Kanal A S, Keerthana V and Shoba Narayan**

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Chettinad Hospital and Research Institute, Kelambakkam-603103

ABSTRACT

Numerous protein precursors in the secretory pathway is activated by the mammalian proproteinconvertases. Within nine different members of proproteinconvertases, furin is one of the identified and potential targets widely expressed in the secretory pathway. The role of furin and its role in tumor progression is well established in all cancers including rhabdomyosarcoma. One of the most common soft tissue sarcoma in children is rhabdomyosarcoma. Recent studies have shown that the therapy for rhabdomyosarcoma is limited to radiotherapy and chemotherapy and also the progression is metastatic. Silencing of furin can play a significant role in tumor reduction. Recent reports have indicated that reduced activity of furin have led to decrease in tumor migration and invasion abilities. A study design indicated that nanoparticles resulted in switching on the fluorescence signal when there is enzyme disassembly due to fluorescence because of increase in furin levels under tumor environment. A superior graphene based carrier system was developed that can efficiently deliver doxorubicin and specifically target furin. In another study, gadolinium based magnetic resonance imaging contrast agent showed unique properties of assembling into nanoparticles in the presence of furin clearly indicating it as a biomarker for cancer. Form these it can be suggested that any molecule that can inhibit furin can be used for reducing tumor progression. Small molecules or peptides that can specifically bind or block the activity of furin can be tagged or encapsulated into nanoparticles along with anticancer agents. Such designed strategy can not only the help in the reduction of drug dosage but also can prevent many long-term side effects especially in children.

Keywords: Furin, Rhabdomyosarcoma, nanoparticles, small molecules

PC-71

PLANTS AGAINST CANCER: NATURAL PHYTOCHEMICALS IN PREVENTING AND TREATING CANCERS**B. Swathi, A. Ruby Shelin and Kurunchi C. Divya**Department of Allied Health Sciences, Chettinad Academy of Research and Education,
Kelambakkam, Chennai**ABSTRACT**

Cancer is one of the most debilitating diseases seriously affecting mankind. It is the second most leading causes of death after cardiovascular diseases. In 2016, there were 15 million new cases and 8.5 million cancer-related deaths worldwide. It has been estimated that around 2.5 million people are affected in India. The advancement of modern chemotherapies has improved the standard of health of a cancer patient but advanced metastasized cancer still remains challenging. Hence safer, effective and affordable chemoprevention and treatment becomes indispensable. Cancer chemoprevention with natural phytochemical compounds has been widely accepted to prevent, delay or cure cancer. Natural compounds target cancer cells by inducing extrinsic and intrinsic apoptotic pathways and don't cause adverse side effects. They have high binding affinities for specific receptor systems and their biological action is often highly selective. Phytochemicals such as Vinca Alkaloids, Taxans, Podo phyllotoxins, Campothecins, Amygdalin, Curcumin and Quercetin have been clinically used as potent anticancer agents. About 1574 bioactive compounds have been characterized and *invitro* and *in-vivo* anticancer activity have been studied against 353 cancer cell lines and animal models. Curcumin has been reported to reduce breast, stomach and skin cancers. Recently, Vitamin B17 or Laetrile has become one of the most popular alternative cancer treatments. To evaluate novel treatment approaches involving natural compounds, we must also understand how coding and non-coding RNAs, oncogenes, downregulated tumor suppressor genes, and mutated genes respond to these drugs. Recent evidence suggests that differential gene expression in different cancer cell lines were induced by flavonoids and alkaloids. Natural dietary phytochemicals have been and will continue to be a promising and active research area soon.

Keywords: Cancer – Natural compounds – anticancer activity – apoptosis

OP-01**ROLE OF WNT SIGNALING IN DETERMINATION OF DIFFERENTIATION POTENTIAL AND FATE OF MESENCHYMAL STEM CELLS: AN IN VITRO APPROACH****Ganesan Jothimani¹, Surajit Pathak¹, Sushmitha Sriramulu¹, Ram Murugesan¹, Madhumala Gopinath¹, Antara Banerjee^{1*}**

¹Faculty of Allied Health Sciences, Chettinad Academy of Research and Education (CARE), Kelambakkam, Chennai-603103, India

ABSTRACT

Introduction: Relatively less is known about the regulatory inputs that enable the MSCs to maintain their undifferentiated phenotype or those that regulate its differentiation into specialized cell types. Wnt proteins are the most pivotal families of signaling molecules in development. The molecular understanding of how Wnt signaling shifts mesenchymal cell fate remains limited. In this study, we tested the hypothesis that canonical WNTs differentially regulate in vitro differentiation in human MSCs. Methods: Stromal cells from human umbilical cord (hUCMSCs) were isolated and treated with Wnt inhibitor/ activator. Characterization of hUCMSCs, CFU-F potential, proliferation potential and differentiation potential of hUCMSC's was assessed. Morphometric changes and gene expression of Wnt target genes and lineage specific genes Ppar γ , Runx2, osteocalcin and pluripotency genes Sox9, nanog was studied. Results: Differentiation potential shift after inhibition of Wnt genes were evident, driving MSCs towards osteogenic lineage after Quercetin treatment whereas LiCl largely impacted cell proliferation without morphological changes. Down regulation in canonical Wnt and negligible change in non-canonical Wnts were evident after Quercetin treatment with no significant difference in pluripotency genes. Conclusion: We attempt to unravel the current understanding of the mechanistic basis of these signaling pathways in MSC biology will greatly intensify our current knowledge of the signaling mechanisms that are the major role player for the maintenance of "stemness", pluripotency and modulation in differentiation ability of mesenchymal stem cells. The findings of this investigation are likely to open an interesting avenue of biomedical research, summarizing the impact of Wnt signaling on multi-lineage differentiation of MSCs.

OP-02

CURCUMIN COATED pH SENSITIVE POLYMER BASED GOLD NANORODS FOR PLASMONIC PHOTOTHERMAL-BIOTHERAPY IN CANCER TREATMENT**Rathi Usha K, Geevaand Shoba Narayan**

Medical Bionanotechnology, Faculty of Allied Health Sciences, Chettinad Academy of Research and Education, Chettinad Hospital and Research Institute, Kelambakkam-603103

ABSTRACT

In cancer treatment nanotechnology based drug delivery systems poly coated on gold nanorods provide a promising therapy such as photothermal therapy with good tissue penetration that can kill cancer cell and replace radiotherapy. Curcumin derived from *Curcuma longa*, an anticancer agent can provide an effective biotherapy for exerting tumor suppressive function and pro-apoptotic signalling pathways. The present study is designed based on the concept of combinational therapy by combining photothermal therapy with biotherapy. Here, curcumin is used as an anticancer agent that is coated on gold nanorods and stabilized by poly ethylene glycol. Poly-L-Histidine is used as a pH responsible agent and VEGF antagonist, a peptide is used to target the VEGFR for controlling of angiogenesis in cancer cells. The prepared drug carrier (gold nanorods) by conjugation chemistry were characterized by UV-Vis spectroscopy where the plasmonic peak of gold nanorods were observed between 722 nm and 734 nm, the hydrodynamic diameter of the rods was determined as 43.8 nm by DLS and TEM revealed the exact size of the gold nanorods. The pH modulated changes in size distribution in phosphate buffer were also determined, FTIR spectroscopic confirmation of the presence of curcumin was observed by vibrational bands shown at 2850, 1660, 1631 cm^{-1} . To understand the cellular uptake of gold nanorods, the cell culture studies were done with cell lines and characterized by ICP-OES analysis. The cellular uptake of gold nanorods was found to be 0.66 $\mu\text{g}/\text{mL}$ and 1.33 $\mu\text{g}/\text{mL}$ of Au with the different formulation. The developed Nano-formulation has the potential to serve as some combinational therapeutics based on the principles of plasmonic photothermal therapy and biotherapy.

Keywords: Curcumin, PPTT, VEGFR, Gold nanorods

OP-03**UMBELLIFERONE ARREST CELL CYCLE AT G₀/G₁ PHASE AND INDUCES APOPTOSIS
IN HUMAN ORAL CARCINOMA (KB) CELLS VIA OXIDATIVE DNA DAMAGE****Annamalai Vijayalakshmi, Ganapathy Sindhu***

Department of Biochemistry and Biotechnology, Faculty of Science, Annamalai University,
Annamalai Nagar, Tamilnadu 608022, India

ABSTRACT

Umbelliferone (UMB) has widespread pharmacological activity, comprising anti-inflammatory, anti-oxidant, anti-genotoxic, and anti-immunomodulatory but the anticancer activity remains unknown in human oral carcinoma (HOC) KB cells. MTT assay determination was revealed that treatment of KB cells with UMB, prevents and reduce the cell proliferation with the IC₅₀ - 200 µM as well as induces loss of cell viability, morphology change, and internucleosomal DNA fragmentation in a concentration dependent manner. Acridine orange and ethidium bromide dual staining assay established that UMB induced apoptosis in KB cells in a dose dependent manner. Alkaline comet assay determination revealed UMB has the potential to increase oxidative DNA damage in KB cells through DNA tail formation significantly ($p < 0.05$). Furthermore, UMB brought a dose-dependent elevation of reactive oxygen species (ROS), which is evidenced by the DCF fluorescence, altered the mitochondrial membrane potential in KB cells. Similarly, we observed increased DNA damage stimulated apoptotic morphological changes in UMB treated cells. Taken together, the present study suggests that UMB exhibits anticancer effect on KB cell line with the increased generation of intracellular ROS, triggered oxidative stress mediated depolarization of mitochondria, which contributes cell death via DNA damage as well as cell cycle arrest at G₀/G₁ phase. The results have also provided us insight in the pharmacological backgrounds for the potential use of UMB, to target divergent pathways of cell survival and cell death. To conclude UMB could develop as a novel candidate for cancer chemoprevention and therapy, which is our future focus and to develop a connectivity map between *in vivo* and *in vitro* activity.

Keywords: Oral cancer, Cell proliferation, Apoptosis, Umbelliferone, Mitochondrial membrane potential, DNA damage