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On

PHARMACY PRACTICE AND THERAPEUTICS

Organized by

NIRMALA COLLEGE OF PHARMACY, Mangalagiri, Andhra Pradesh, India

In Collaboration with

WILKES UNIVERSITY, USA & MYONGJI UNIVERSITY, South Korea

19th & 20thAugust, 2020

CONFERENCE PROCEEDINGS

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About the Conference

International E-Conference on **"Pharmacy Practice and Therapeutics"** organized by Nirmala College of Pharmacy, Mangalagiri in collaboration with Wilkes University, USA & Myongji University, South Korea held on 19th & 20th August, 2020. The Conference main objectives are to illustrate innovative research ideas on Nanomedicine and Nanotechnology, Pharmaceutical technology, Drug Delivery, Medical Devices for Drug Delivery, Biotechnology and Nanorobots. This conference deliver an incredible research out comes by international experts. To provide interdisciplinary platform to deliver and discuss about the most recent innovation trends as well as practical challenges encountered and solutions adopted in the field of Nanomedicines, Nanotechnology and advanced research.

In the two day deliberations of Resource Persons from Abroad highlighted about Oxalate Homeostasis, Kidney stone research on Oxalate transportation; Bio-Nanotechnology applications in Pharmaceutical Sciences. Higher education and Career options of Pharma professionals in USA and also in other countries. The above discussions facilitated to the delegates to aware about role of Clinical Toxicologist, advances happening in healthcare profession and novel strategies in Pharmacy Practice.

Many researchers are contributed their extensive research work to publish articles in our partnered reputed Scopus indexed journal **"Journal of Global Trends in Pharmaceutical Sciences"**. On behalf of Organizing Committee, International advisory committee and Peer Review Committee; we would like to thank all the authors for their efforts for making our International E-Conference a grand success. We would like to extend our sincere thanks to the Editorial team of Journal of Global Trends in Pharmaceutical Sciences for publishing our e-conference proceeding in a form of Special Issue.

Prof. SK. Abdul Rahaman M. Pharm, Ph.D, FIC
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NACP 01

STUDIES ON THE HEPATOPROTECTIVE EFFECTS OF THE STEM EXTRACTS OF *EUPHORBIA HETEROPHYLLA*

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Abstract

Background: Hepatic problems are also one of the serious health hazards faced by mankind, liver being the important organ serving in metabolism. Natural products act as alternative therapy in the treatment of liver disorders. **Aim:** The present investigation was focussed on investigation of hepatoprotective effects of the hydroalcoholic and acetone stem extracts of *Euphorbia heterohylla* by carbon tetrachloride-induced hepatotoxicity in Wistar rats. **Methods:** The marker enzymes used in the assay to assess hepatic function were alanine aminotransferase, aspartateaminotransferase,and alkaline phosphatase followed by histopathological studies. **Results:** The hydroalcoholic extract significantly ($p<0.01$, $p<0.05$ and $p<0.001$) reduced the elevated enzyme levels compared to acetone extract. The study was further supported by histopathological studies where regeneration of hepatocytes was observed. **Conclusion:** The extracts have shown a tremendous decrease in the elevated enzyme levels compared to positive control. Further studies can be carried out to study the mechanism of action and phytochemicals responsible to eilicit the hepatoprotective effect.

Keywords: Hepatotoxicity, marker enzymes, histopathology, hydroalcoholic extract

NACP 02

ASSESSMENT FOR ANTI-BACTERIAL ACTIVITY OF UNRIPE FRUITS OF MORINDA CITRIFOLIA

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Abstract

Introduction:Active principles derived from natural products are offering a great opportunity to evaluate novel lead compound and potentially relevant mechanisms of action. Morinda citrifolia , known as Noni, belongs to the Rubiaceae family native to Southeast Asia and used as traditional medicine. Indian mulberry is widely used in complementary medicine due to its antioxidant, anti inflammatory and antitumor effects against diseases such as cancer and ulcers. Indian mulberry has proven commercial value and it has been used for prophylactic for various diseases. Here would like to evaluate its anti microbial activity.Methodology:Morinda Citrifolia fruits are shade-dried and powdered. They're extracted with different solvents of varying polarities like Hexane, Isopropanol, Methanol and Water. Each extract is evaluated for antibacterial properties against E.coli, Streptococcus and Staphylococcus by cup-patemethod.Results:Indian mulberry is indigenous plant uses in Ayurveda and unani system of medicine in the cure and treatment of various infectious diseases. Results are increase of the bacteria which will help for its growth.

NACP 03

FARNESOL AS A POTENTIAL INHIBITOR IN NEUROPATHOLOGY OF ALZHEIMER'S DISEASE: AN *in-silico* STUDY

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Abstract

Objective: To estimate in silico studies on farnesol as a potential inhibitor of Acetylcholinesterase (AchE), Butyrylcholinesterase (BchE), Angiotensin converting enzyme (ACE) in the treatment of Alzheimer's disease. **Methods:** In the present in silico study, bioactive terpene farnesol were analysed for their inhibitory role on Acetylcholinesterase, Butyrylcholinesterase, Angiotensin converting enzyme activity by molecular docking studies. The in silico docking studies were carried out by using Accelrys Discovery Studio 4.1 client.**Results:** The CDOCKER energy of farnesol with Acetylcholinesterase showed binding energy -32.06 kcal/mol whereas Galantamine(S) showed binding energy 0.364 kcal/mol. Farnesol with Butyrylcholinesterase showed binding energy -34.21kcal/mol whereas Tacrine(S) showed binding energy 12.60 kcal/mol. Farnesol with Angiotensin converting enzyme showed binding energy -33.12 kcal/mol whereas Lisinopril(S) showed binding energy 38.65 kcal/mol. **Conclusion:** The present study reported that the bioactive terpene farnesol have good binding interactions with Acetylcholinesterase, Butyrylcholinesterase, Angiotensin converting enzyme when compared to the standard drugs Galantamine, Tacrine and Lisinopril respectively.

Keywords: Alzheimer's disease, In silico study, Acetylcholinesterse, cholinesterase, Butyryl Angiotensin converting enzyme, Accelrys discovery studio 4.1 client

NACP 04

ADVANCED METHODS IN CANCER TREATMENT

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Abstract

A term for diseases in which abnormal cells divide without control and can invade nearby tissues. In 2019, 1,762,450 new cancer cases and 606, 880 cancer deaths are projected to occur in the United States. Over the past decade of data , the cancer incidence rate (2006-2015) was stable in women and declined by approximately 2% per year in men.Early detection of cancer greatly increases the chances for successful treatment and the death rate of person may be reduced. There are two major components of early detection of cancer, education to promote early diagnosis and screening. The improvement of genomic acid and surveillance technologies, which leads to more precise imaging and the ability to characterize blood- based tumour markers of greater specificity offers opportunities for major progress in cancer screening.

NACP 05

CRYOTHERAPY: AN EVOLUTION IN CANCER TREATMENT

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Abstract

The abnormal growth of cell – cancer. There are more than 100 types present worldwide like lung cancer, breast cancer, colorectal cancer, pancreatic cancer, leukemia, brain tumour, prostate cancer, cervical cancer etc. The chemotherapy and radiation therapy are mostly used which have more side effects. Cancer is the one of the leading causes of death. Cryotherapy is an evolution cancer therapy. It is a new therapy with less side effects. It is also called as cryosurgery. It is used since 1850's in England. It depends mainly on 4 criteria. James Amott's salt solution which can reach a temperature upto - 18°C to - 24 °C is adequate in removal or breakdown of cancer cells or tissue. Argon and helium gases are used in this therapy. The development of cryosurgery was begin in late 1940's and early 1950's. There are two different cryogenic pathways for the destruction of tumour cell. They are direct cell injury and vascular injury. The currently used cryogen is liquid nitrogen, which is a coldest cryogen(196^0C) . It is a radiation free therapy. It is used in treating side effects of 5 Fluoro Uracil. It is also used in decreasing the oral cancers. This cryosurgery is mostly used in the treatment of prostate cancers, oral tumours. Cryotherapy is also effective in treating pain and depression.

Keywords: Cancer, Criteria of Cryotherapy, Evolution of cryotherapy, Pathways of cryosurgery.

NACP 06

A CASE STUDY ON PREVALENCE OF CACHEXIA IN PATIENTS DIAGNOSED WITH CANCER.

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Abstract

Background : Cancer cachexia is a wasting syndrome characterised by weight loss, anorexia, asthenia and anemia. Patients diagnosed with cancer are checked for the presence of cachexia with the aid of 4 parameters i.e. B.M.I, Serum albumin, haemoglobin and appetite.**Method :**It is an epidemiological study conducted respectively including patients of age 18-80 years who are newly diagnosed or having history of cancer are included in the study.**Results and Discussion :** Among 180 patients who met the inclusion criteria of the study, 46 patients were male (i.e. 26%) and 134 patients were female (i.e. 74%). B.M.I, Haemoglobin, Serum albumin levels was found to be decreased in 34%, 54%, 18 % of patients. The average age of patients with cachexia was found to be > = 60 years. Cachexia may not be widely treated since very few patients take prescription hormones, anabolic steroids, or appetite stimulants and there is no FDA approved treatment for cachexia. Due to this, physicians may believe that available treatments are not effective or appropriate for long- term use and hence treatment with these drugs is not largely employed.**Conclusion :** There are many currently available therapeutic approaches which shows evidence that drugs such as corticosteroids and progestogens (eg. Megestrol acetate, medroxy progesterone acetate) improve the patients cachectic condition. As the study considers only 4 parameters (i.e. BMI, haemoglobin, serum albumin and appetite) significant conclusion could not be made. The study concludes that extensive research is necessary for defining, evaluating and treating cachexia.

NACP 07

RISK OF DEVELOPING T2DM AMONG STUDENTS OF GRADUATION AND UNDER-GRADUATION COURSES IN ANDHRA PRADESH: AN EVALUATION USING INDIAN DIABETES RISK SCORE (IDRS)

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Abstract

Diabetes Mellitus is a major public and clinical health concern. It is a basic knowledge that T2DM causes a serious decline in normal Quality Of Life, where late identification in later ages is the major challenge. The main motive of this study was to evaluate pre-existing multivariate risk factors for the development of Type 2 Diabetes Mellitus in youth.**Aim:**To predict and assess the risk and risk factors for Type 2 Diabetes Mellitus.**Methods:**The study was designed to be a cross-sectional epidemiological study.

It was conducted in the students of graduation and under graduation courses in Guntur District, Andhra Pradesh over 6 months from 1st September to 1st February which includes 2524 students with a response rate of 92.5%. Students are enrolled based on Inclusion and exclusion criteria. Specially designed data collection form used to obtain the data required for the study.**Results:**In our study we have collected data from 2524 students where, 1088 students (34.50%) were males and 1435 (65.49%) were females. Diabetes risk was assessed using validated tool, Indian Diabetes Risk Score.**Conclusion:** We came to a conclusion that most of the students have moderate to low risk of diabetes mellitus, with significantly contributing risk factors like family history, low PA.

Keywords: Diabetes mellitus; youth; family history; IDRS.

NACP 08

EVALUATION OF THE ACUTE TOXICITY STUDY OF METHANOLIC LEAFEXTRACT OF GOSSYPIUM HIRSUTUMIN ALBINO MICE

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Abstract

Aim: The present study was carried out to evaluate the acute oral toxicity of methanol extract of *Gossypium hirsutum* leaves in male albino mice. **Method**: For the acute toxicity study, mice were orally administered single dose of 100, 500, 1000 mg/kg bw methanol extract of G. hirsutum and observed for behavioral changes and mortality, if any. During 14 days of study mice were observed daily for any change in their body weight, food and water consumption. At the end of 14 days mice sacrificed for hematological and biochemical analyses.**Results**: The extract at highest dose of 1000mg/kg bw did not produce mortality in any of tested animals during study period. Therefore, the LD50 of this plan was estimated to be more than 1000mg/kg bw. Hematology reveals that the extract has hemolytic activity. Liver and Kidney functions were assessed by determining serum parameters like creatinine, transeaminase bilirubin, and urea. All these parameters were significantly abnormal and indicate liver and kidney dysfunctioning. **Conclusion**: The results of the study showed that the extract was categorized as *slightly toxic* and provides valuable data on the toxicity profile of plant.

Key words: Gossypium hirsutum, acute oral toxicity, Albino mice, Biochemical parameters

NACP 09

CORONA VIRUS: PATHOLOGY, TEARTMENT, VACCINATION.

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Abstract

Aim: To describe about the pathology of the virus and to scrutinize the treatment of the patients and the occurrence of vaccine. **Risk Factors:** The incidence of SARS-COV-2 infection is seen majorly in adult male patients with the average life span of 34 to 59 years. It majorly infects the patients with chronic diseases like cardiovascular, cerebrovascular and diabetes. Severe symptoms may also include with infections of bacteria and fungi. **Treatment:** Throughout the arena the disorder has brought on various stages of illness. Patient indicates numerous signs and symptoms generally fever, cough, sore throat, breathlessness, fatigue, and malaise. The disorder is being cured through general treatment, symptomatic treatment, through the use of antiviral drugs, oxygen remedy and through the immune system. **Vaccination:** The candidate vaccine mRNA-1273 encodes the stabilized perfusion SARS-CoV-2 spike protein. **(a) Method:** In vaccine preparation out a section 1, dose-escalation, open-label trial together with forty five wholesome adults, 18 to fifty five years of age, who acquired vaccinations, 28 days apart, with mRNA-1273 in a dose of 25 μg, one hundred μg, or 250 μg. There have been 15 contributors in every dose group. **(b) Result:** After the first vaccination, antibody responses are extorionate with higher dose. After the second vaccination, the titers increased, serum-neutralizing activity was discovered by 2 methods in all the participants. Adverse effects that occurred in more than half of the patients include fatigue, chills, headache, myalgia, and ache on the injection site. Systemic adverse reactions are more commonly seen after second vaccination more majorly with higher doses.**Conclusion:** The World Health Organization declared the radical coronavirus outbreak "A public fitness emergency of global concern" on January30.The mRNA-1273 vaccine induced anti–SARS-CoV-2 immune responses in all participants, and no trial-limiting safety concerns were identified. These findings support further development of this vaccine.

Key words: Corona virus, Risk factors, Treatment, Vaccination

NACP 10

A PERSPECTIVE STUDY ON PAIN ASSESSMENT IN WOMEN AFTER CESAREAN

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Abstract

Child birth is one of the most emotional experiences of women. It is the involvement of contraction of uterus and acceleration of uterine involution during post-partum period. Cesarean has been a most common part of human cultures since ancient times, which is effectively under practice among all the abdominal surgeries. Post operative pain is most common problem observed after CS which is noted as a major risk factor for post partum depression and traumatic stress disorder. With advances in clinical practice, CS has become more safer. Labor pain has always been considered as a normal phenomenon as the pain is unique, intense and expected. Pain assessment was carried out by using numeral, visual and quality assessment scale. From these pain scores, maximum frequency had the moderate pain at about 73 out of 153 whereas Wong-Baker pain rating scale rated 55% had a little more severities. Age and BMI has less impact on pain whereas physical activity does. Though there is no difference between primipara & multipara women about expression of pain, primipara women experience little severity in pain index compared to multipara. Based on studies, pain has more interference with physical health as women with pain don't expose to physical activities. Simple body movements with some precautions are to be suggested as the post operative activities. Adherence to medication has lead a role after cesarean section for earlier recovery from pain so we must improve the communication between health care professionals and patients.

Key words: Cesarean, Multipara, Primipara.

NACP 11

DETERMINATION OF DOPAMINE ANTAGONIST ACTIVITY OF CENTELLA ASIATICA ON MUSIC ADDICTION AND MENTAL HEALTH

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Abstract

Background: Music is nowadays becoming an alternative to drug addiction worldwide by inducing increased dopamine release in the brain. This effect can be corrected by natural products for safe and effective therapy. **Aim:** To investigate the effect of music in mental health and to determine the dopamine antagonistic activity of Centella asiatica linn, on dopamine release in brain. **Method:** Theoretical study was carried out to identify the effect of Centella asiatica on mental illness like mental fog, depression, dizziness associated with music addiction. The dopamine rise in brain on listening to music was also analyzed. **Results:** The extract of Centella asiatica shows neurostabilization by reduction of dopamine release in corticomesolimbic system. The inhibition of reward system in nucleus accumbens and ventral tegmental area prevented patients to experience peak emotion to music. This results in reduced mental implications associated with music. Centella asiatica extractis also known to show low toxicity in model organisms and humans.**Conclusion:** Treatment with Centella asiatica extract improved mental health by significantly controlling dopamine levels in the brain. Moreover, Centella asiatica might be a safe drug for administration in comparison to other synthetic drug substances in order to overcome the addiction to music.

Key words: Music addiction; Centella asiatica linn; Theoretical study; Mental health; Reward system; Low toxicity

NACP 12

SURGICAL PROPHYLAXIS OF ANTIBIOTICS IN ORTHOPEDIC PROCEDURES

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Abstract

Background: Appropriate utilization of antimicrobial specialists is imperatively significant from clinical points. Present anti-microbial agents are one of very crucial for clinical consideration and assume a significant job profile, both in prophylaxis and treatment. Not with standing, their abuse is an overall issue with the degree of the issue being more prominent in the developing nations. **Aim:** To observe the utilization of antimicrobials for prophylaxis and treatment among patients who have underwent orthopedic surgical procedure. **Methodology:** A Prospective and observational examination was led on 300 clinical records of orthopedic patients. **Result:** It was observed that the most commonly used antimicrobials classes were cephalosporin's (76.43%) and cefuroxime (67.40%), for prophylaxis and treatment, respectively. It was found out 37.67% for prophylaxiswere inappropriate whereas around 71.07 % of antibiotics treatment neglected to hold fast to guidelines. **Conclusion:** Generally, this investigation includes the maximum numbers of patients from open reduction internal fixation (ORIF) and total hip replacement surgeries, respectively. The results of study observed the some degree of inappropriateness to some extent in case of surgical prophylaxis during orthopedic procedures.

Keywords: Antibiotics; Surgery; Prophylaxis; Inappropriateness, ORIF.

NACP 13

ADVANCES IN ADAPTIVE CELL THERAPY IN TREATING CANCERS

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Abstract

Background: Immunostimulatory therapies have great impact in treating cancer. Adaptive cell therapy(ACT), is one such example generally involves genetically modified T Cells to target specific antigens present on tumor surface to destroy cancers. ACT involves Tumor-Infiltrating Lymphocyte (TIL), Engineered T Cell Receptor (TCR), Chimeric Antigen Receptor (CAR) T Cell and Natural Killer (NK) Cell Therapies. ACT gained its attention after the approval of Axicabtagene ciloleucel (Yescarta) and Tisagenlecleucel (Kyrmriah) in 2017 developed by Kite pharma and Novartis respectively are CD19-targeting CAR T cell immunotherapies to treat hematological cancers. Recently Brexucabtagene autoleucel (Tecartus) from kite pharma received accelerated approval from FDA to treat Non-Hodgkin's lymphoma. **Preparation:** ACT preparation generally involves Apheresis, a method of obtaining T cells, Activation of T cells, gene transduction by means of viral or non-viral vectors, expansion and cryopreservation of prepared cells. Where the cells can be allogenic or autologous.**Mode of action:** Modified T cells binds to specific antigens on tumor cells and stimulate signals that trigger downstream phosphorylation cascades and results in cytotoxicity.**Challenges:** The major challenge is gene transfer done by viral vectors which are oncogenic and storing of these modified cells till use.**Adverse effects:** The major problems involved are problems from immune system like anaphylaxis, on target off target toxicity, tumor lysis syndrome insertional oncogenesis, cytokine release syndrome.**Conclusion:** Scientists today are aiming on identifying new antigens specific and confined to tumors only, and developing additional approaches to engineer T cells to improve anti-tumor activity.

Key words: immunostimulatory, apheresis, oncogenesis.

NACP14

NUTRITION AND PHYSICAL ACTIVITY FOR PREVENTION OF CANCER

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Abstract

People nowadays are often highly motivated to seek information about food choices physical activity, and dietary supplements to improve overall survival and preventing cancer. To address the concerns, the American Cancer Society (ACS) convened a group of experts. In nutrition physical activity and cancer survivorship to evaluate the scientific evidence and best clinical practices related to optimal nutrition and physical activity of cancer .This report conclude their findings and is intended to present health care providers with the best possible information with which to help to prevent cancer and make informed choice related to nutrition and physical activity guide line that are important issues for cancer preventions ,focusing largely on the needs of the population of individuals who are disease free or who have stable disease following their recovery from treatment. it also discuss select nutrition and physical activity issues such as body weight ,food choices ,food safety ,and dietary supplements and common questions about diet and physical activity.

Key words:- Cancer, nutrition, physical Activity, Preventive Measures.

NACP 15

EPIDERMOLYSIS BULLOSA: A SKIN DISORDER

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Abstarct

Epidermolysis bullosa is a group of rare genetic conditions that result in easy blistering of the skin and mucous membrane. It was first described by the Hebra under the name 'erblichen pemphigus'. Its severity can range from mild to fatal. Usual onset of this disease from birth and often lifelong. Sufferers of Epidermolysis bullosa have compared the scores with third – degree burns. Those with mild cases may not develop symptoms until they start to crawl or walk. Epidermolysis bullosa is also known as Butterfly children. It is due to a mutation in at least one of 18 different genes. Some types are autosomal recessive. There are four different types : Epidermolysis bullosa simplex , Dystropic Epidermolysis bullosa , Junctional Epidermolysis bullosa and Kindler syndrome. Complications may include esophageal narrowing , squamous cell skin cancer , loss of limb function and the death rate is 87% for the first year of infants.There is no cure for the condition. Management involves wound care , pain control , controlling infections , nutritional support , prevention and treatment of complications. About half a million people are affected globally. It occurs both in males and females. Epidermolysis bullosa can be diagnosed either by a skin biopsy at the edge of a wound with immunofluorescent mapping or via blood sample and genetic testing.

Keywords : Blisters, Biopsy, Genetic, Autosomal

NACP 16

PHARMACOLOGICAL TARGETS FOR TREATMENT OF COVID-19 INFECTION

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Abstract

Novel coronavirus, which was named as coronavirus disease 2019 (COVID-19) by the WHO on the February 11, 2020, has rapidly increased in epidemic scale since it first appeared in Wuhan, China, in December 2019. On the same day, the international virus classification commission announced that the novel coronavirus was named as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Just in the past two decades, coronaviruses have caused three epidemic diseases, namely, COVID-19, severe acute respiratory syndrome (SARS), and Middle East respiratory syndrome (MERS). SARS-CoV-2 is a positive-sense, single-stranded RNA virus. The SARS-CoV-2 virion is about 50-200 nm in diameter and consists of four main structural proteins; spike (S), envelope (E), membrane (M), and nucleocapsid (N). The S protein allows the virus to enter the host's cell membrane. The angiotensin-converting enzyme 2 (ACE2) receptors on host cells are the target of S proteins. Coronaviruses are enveloped viruses with a positive-sense single-stranded RNA genome (26-32 kb). In the case of SARS CoV, the transmission is through droplet infection (respiratory secretions) and close person to person contact. It can also spread through sweat, stool, urine, and respiratory secretions. When a virus enters into the body, it binds to the primary target cells such as enterocytes and pneumocytes. Thereby establishing a cycle of infection and replication. Other target cells of CoV are epithelial renal tubules, tubular epithelial cells of the kidney, immune cells, and cerebral neuronal cells. The beta-coronavirus genome encodes many structural proteins, including the spike (S) protein that functions as a major inducer of host immune responses. This S protein mediates host cell invasion by both SARS-CoV and SARS-CoV-2 via binding to a receptor protein called angiotensin-converting enzyme 2 (ACE2) located on the surface membrane of host cells. Currently, some drugs are helpful in Corona like Favipiravir (Approved in India by DCGI), dexamethasone is recently studied that is also helpful and several studies are going on this SARS Cov-2 treatment.

Keywords: Covid-19; SARS Cov-2; Coronavirus; ACE-2.

NACP 17

PLANT BASED MOSQUITO REPELLENT

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Abstract

Repellents are the major tool developed against arthropods. As there is no perfect vaccine against arthropod-borne diseases, mosquitoes are the common spreading dreadful diseases like dengue, malaria and yellow fever. Huge efforts have been made in developing effective repellent against mosquitoes and other various arthropods. Synthetic repellents are widely used but their use cause several environmental issues and human health issues. Various natural source like plant essential oils (EOs) are widely preefered for their less side effects and effective activity against mosquitoes. Thus pant essential oils are used as alternatives for synthetic repellents. The current technology and research trends developed effective and safe repellents from plant EOs are well detailed in this review.

NACP 18

PARACETAMOL INDUCED ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS- A RARE CASE REPORT

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Abstract

Acute generalized exanthematouspustulosis (AGEP) is a rare cutaneous adverse drug reaction characterized by rapid occurrence of dozens to thousands pinhead-sized, non-follicular, sterile pustular eruptions. AGEP is infrequent with an incidence of one to five millions per year. The clinical course of AGEP is characterised by spontaneous resolution on drug withdrawal. Resolution is marked by a characteristic desquamation. Diagnosis of AGEP depends on morphology of skin lesions, presence of fever, laboratory and histopathological findings. Factors that favour the diagnosis of AGEP include onset of pustules within few hours or in few days after the causative agent is administered. The most frequent causative drugs are Aminopenicillins, ampicillin, amoxixillin, sulphonamides, pristinamycin, quinolones, hydroxychloroquine, terbinafindiltiazem. In some cases it is induced by bacterial, viral or parasitic infections. In our case, a 50 year male patient developed multiple pus filled lesions, burning sensations all over the body caused by administering paracetamol drug where, the lesions desiccated immediately after cessation of offending drug in two daysleaving exfoliations .Upon diagnosis the white blood cell count was increased indicating lymphocytosis. He was administered with antihistamines, emollients and corticosteroids during his course of stay in hospital. Pustular rashes were reduced and patient recovered with treatment. Paracetamol is one of the most widely used safer drug worldwide, herein draws special attention that no drug is completely safe hence proper medication history interview would be recommended to overcome the drugs causing adverse drug reactions, that can be possibly dangerous and life threatening.

Keywords: AGEP, paracetamol, ADR, pustular eruptions, corticosteroids

NACP 19

PLASMA THERAPY FOR COVID-19 TREATMENT

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Abstract

Background : As most of the people within the world are now acutely aware, an epidemic of COVID-19 and was detected in China in December of 2019. The explanation for this outbreak may be a new virus, referred to as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on Feb 12th 2020, WHO officially named the disease caused by novel coronavirus as Coronavirus Disease 2019 (COVID-19). **Method :**As per the present situation plasma therapy is the one of best option to recover from the COVID. Plasma therapy may be a procedure that uses the blood of a recovered patient to make antibodies on those infected individuals. Medically referred to as convalescent plasma therapy, this treatment uses antibodies found within the blood taken from the recovered Covid-19 patient. It is then used to treat those with severe SARS-CoV-2 infection to aid recovery. **Result :**Currently it has shown positive results in Delhi and Mumbai where COVID cases are spiking high. It has also proven to enhance the power of an individual to get over the disease. And some risk also found that i.e transmitting a prevalent virus from recovered patient and a risk of contraction of infection. **Conclusion :**convalescent plasma therapy can be given to people with severe covid-19 to boost their ability to fight the virus. It also might help keep people who are moderately ill for becoming more ill and experiencing COVID-19 complications and it may helpful for people with COVID-19 who aren't helped by other treatments or drugs. It could also help other people who may have a higher risk of serious illness, such as people with chronic medical conditions. One of the disadvantage of this treatment is that a method to measure antibody levels against COVID-19 in the blood plasma is not fully developed yet. However, there is more research required to prove full efficacy in different patient types.

Keywords : Covid-19, Alphacoronavirus, Betacoronavirus, Plasma therapy

NACP 20

SAFETY MEASUREMENTS FOR HEALTH CARE PROVIDERS AND PATIENTS AT INDIAN HOSPITAL SETTINGS IN COVID-19 PANDEMIC DAYS

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Abstract

Background: The severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is responsible for the COVID-19 pandemic gripping the globe in 2020. **Aim :** To enhance the role of clinical pharmacist in taking safety measures in times of pandemic of COVID-19. **Methods:** Dietary supplements which enhance the immunity against COVID-19 such as VITAMIN C - includes scavenging oxygenated free radicals which decrease gene expression of proinflammatory cytokines to prevent common cold. VITAMIN D - fat-soluble vitamin and is found in food supplements as vitamin D2 and Vitamin D3 it enhances antimicrobial peptide expression and increases our innate immunity. ZINC- trace mineral act by inhibiting viral replication and reduces common cold. ELDERBERRY- consists antiviral properties, ability to modulate inflammatory cytokines and its phenolic acid components exhibit antiviral activity against human coronavirus. CDC's guidelines for disinfection and sterilization is followed primarily. Engineering control includes physical barriers like curtains between patients and air borne infection isolation room with proper ventilation. HEPA filter must ensured. Surgical mask ,PPE kits reduces the possibility of transmission. Oxymeter is easy way to check saturation of O_2 and one can also use spirometre for healthy lungs. **Results:** The outcomes of vitamins C, D, zinc and elderberry to management of cold and build immunity against COVID-19. **Conclusion:** the clinical pharmacist should aware the people about healthy dietary supplements and preventive measures.

Keywords : corona virus, vitamin C, vitamin D, Zinc, Elderberry, PPE, Mask.

NACP 21

ANTI INFLAMMATORYACTIVITY BY MORINGA OLEIFERA LEAF EXTRCT

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Abstract

Herbal medicine has been commonly used over the years for treatment and prevention of diseases and health promotion as well as for enhancement of the span and quality of life. The holistic approach to health care makes herbal medicine very attractive to many people, but it also makes scientific evaluation very challenging because so many factors must be taken into account. Herbal medicines are in widespread use and although many believe herbal medicines are safe, they are often used in combination and are drawn from plant sources with their own variability in species, growing conditions, and biologically active constituents. Herbal medicines have various properties like anti- oxidant, anti -inflammatory, antibacterial etc., and some of them reduces pain. The current investigation focuses on the development of anti-inflammatory ointment using Moringa leaves and its pharmacological evaluation.Moringa oleifera commonly known as the drumstick tree or the horseradish tree is one of the most widely cultivated and best known of the thirteen species of the family Moringaceae.Moringa oleifera is known as a 'Miracle tree' as almost every part of it is useful for humans. It is often attributed as" natural nutrition for the tropics" for its high nutritional value. The formulation has no side effects, and it shows good spreadability, reduces the inflammation and the formulation also posses humectant activity.

Key words: Anti-inflammatory, Moringa oleifera.

NACP 22

PREDICTING MORTALITY OF COVID PATIENTS AND ITS IMPACT ON FUTURE EXISTENCE

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Abstract

Background-The novel corona virus disease 2019 (covid-19) presents an important and urgent threat to global health. Since the outbreak in the early December 2019 in the Hubei province of the People's Republic of China, the number of patients confirmed to have the disease has exceeded 8,963,350 in 188 countries, the number of people infected is probably much higher. More than 4, 68,330 people have died from covid-19 (upto 22 June 2020).**Method:** On February 18, 2020 a New York Times article cautioned against excessive optimism about the crisis peaking, even though there were close to 50 days since the virus had been identified. Unfortunately, there is no currently prognostic biomarker to distinguish patients that require immediate medical attention and to estimate their associated mortality rate. **Results:** Overall, 208 consecutive patients with confirmed COVID 19 who presented to 2 centers were enrolled from 20 January through 22 February 2020, and the follow up period ended 18 March 2020. The average age was 44.0 + or – 16.3 years, the average hospitalization time was 17.5 to 8.2 days. **Conclusion:** A novel scoring model named as CALL was established, using the cut-off of 6 points the positive and negative predictive were 50.7% and 98.5% respectively. By using this CALL model clinicians can improve the therapeutic effect and reduce the mortality of COVID-19 with more accurate and efficient use of medical resources.

Keywords: Corona virus, COVID-19, Prediction of Mortality rate.

NACP 23

A STUDY ON TYPES OF POISONING CASES IN TERITARY CARE HOSIPTAL

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Abstract

Background: Poisoning is known medical emergency in different parts of the world which increases day by day in developing countries. Since most of the death are recorded due to poisoning. **Aim**: To assess the types of poisoning cases admitted in hospital. **Method**: Observational study is carried out for a period of three months from August 2019 to October 2019 in Government general hospital, vijayawada.By which the study includes sample size of 17 cases and patients are analyzed by age, gender, type of poison ingredient consumed. **Results:** Out of 17 cases of acute poisoning, a single poisoning agent is used in all patients and preferable route of poison admin is Oral in suicidal cases. According to gender, 59% were males, 41% were females. Majority of poisoning cases registered in age group of 21-30 years i.e.; 7 cases. Organophosphorus are 5 cases(29.41%),Harpic liquid are 2cases(11.76%), Benzodiazepine over dose,Rodenticide,Belaching powder which individually comprises up to 1case (5.88%) and poisonous snake bite cases are 7(41.17%) . 52.94% are suicidal, 47.05% are accidental. **Conclusion**: Acute poisoning is common all over the world and urgent medical problem. The study highlighted the need to provide better patient counseling in tertiary care hospital to improve their self esteem and problem solvingcapacity.

Key words: Poisoning, Organophosphorus, Benzodiazepine, Rodenticide.

NACP 24

A CLINICAL REVIEW ON PANDEMIC DISEASE: CORONA VIRUS (COVID-19)

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Abstract

Corona viruses are a large group of viruses can cause respiratory infections in both humans and animals. The new corona virus has spread rapidly in many parts of the world On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic. A pandemic occurs when a disease that people are not immune to spreads across large regions. Corona virus originated from bats or pangolins. Then the virus spread through person-to-person contact. The severe acute respiratory syndrome (SARS) virus strain known as SARS-CoV is an example of a corona virus. SARS spread rapidly in 2002–2003. The new strain of SARS-COV 2 first case reported on 8th December 2019 in Wuhan city, china. The first case in India was reported on Jan 30 in Thrissur, Kerala. Symptoms include respiratory symptoms, fever, and cough, shortness of breath, pneumonia and breathing difficulties.Corona virus diagnosed by RT-PCR test. There is no specific treatment for corona, but symptoms can be reduced. The drugs are antiviral like Lopinavir and Ritonavir and corticosteroids like methylprednisolone and antimalarial drugs like hydroxychloroquine is used. New drugs include favipiravir, remdesivir. plasma therapy used as one of treatment option it means transfuse the plasma from who have developing antibodies against corona virus so that patient will develop passive immunity. Early detection of corona virus prevents the transmission to the others so that creating awareness is most important because prevention is better than cure. To overcome disease outbreak self-quarantine is necessary so that make the best shelter and maintain social distance. Stay home…. stay healthy.

Key words: SARS CoV, WHO, Favipiravir, Remdesivir, Ritonavir, Lopinavir.

NACP 25

PSYCHOLOGICAL STATUS DURING COVID-19:A REVIEW ON PANDEMIC RESEARCH

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Abstract

Introduction: The unpredictable and uncertain COVID-19 outbreak has adversely affecting the psychological health . Currently all efforts are focused on the understanding of epidemiology, clinical features, mode of transmission and other challenges of global health, while crucially significant mental health has been overlooked in this endeavor.**Aim and Methods:** This review evaluates the recent effects on mental health faced not only by the infected but also by frontline workers and community alike. This review was based on all types of research articles published in last few months. **Findings**: The research reveals that when the global focus has mostly been on finding a cure and preventing transmission; people are going through a lot of psychological problems in adjusting to the current lifestyles and fear of the disease. Some healthcare workers are unfortunately experiencing avoidance by community owing to stigma or fear. This can make an already challenging situation far more difficult. we also need to pay attention to the psychological status of ordinary people during pandemic. The migrants are more prone to emotional trauma such as problems related to food, shelter, fear of getting infected or spreading the infection, loss of wages, concerns about the family, anxiety.Conclusion:It is necessary to implement adequate steps to tackle these effects by creating awareness regarding importance of mental health as we health care providers play an important role in adressing these outcomes .

Key words: COVID-19, Mental health, Pandemic, Frontile workers.

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NACP 26

APPROPRIATE PRESCRIBING OF ANTIEMETICS WITH ORAL ONCOLYTIC THERAPY

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Abstract:

Background: Nausea and vomiting caused by the administration of cancer chemotherapy (CINV) is one among the foremost common and distressing side effects of cancer treatment**.** The development of effective combination chemotherapy regimens couldn't proceed until the parallel development of effective CINV prevention and treatment strategies. **Aim:** The target of this quality improvement study was to review the acceptable prescribing of antiemetics with OOT. **Methods:** All patients ordered for OOT between January and December 2018 to the Hospital of the University of Pennsylvania specialty pharmacy was reviewed for concurrent antiemetic prescriptions. Patients who were identified to have a discordant antiemetic: OOT prescribing ratio was evaluated for adverse events. **Results:** A complete of 1,630 OOT prescriptions were written for 354 patients. 268 patients were excluded. Due to OOT and antiemetics were not ordered within the same office visit 86 patients were included. Of the $n = 26$ without antiemetics, $n = 4$ - no requirement of antiemetics, while $n = 22$- lack prescriptions.**Conclusions:** CINV is a unique risk occurs due to OOT, which is becoming increasingly common. Thus, this is the plan to increase the involvement of pharmacist in prescribing and counseling of new OOT to promote communication between patients and providers, to improve supportive care measures and potential avoidance of patient harm and to improve quality of life.

Keywords: CINV, Antiemetics, oral chemotherapy, oral oncolytic therapy

NACP 27

ORGAN DONATION

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Abstract

Organ Donation is the process of removing tissues or organs from a live, or recently dead, person to be used in another person.It is mainly of two types with an Opt-in, one has to sign to donate whereas in Opt-out, one has to quote specific request to make organs not to be taken.Organ Procurement and Transplantation Network (OPTN) generates a list of potential recipients by ranking criteria. Educate people by involving Media, Government, Hospital and Institutions.Various foundations work vigorously not to profit but to promote Organ Donation around India. You don't have to be a Doctor to save others life, be a DONAR to impact others lives.

Key Words: Organ Donation, Cadaver Transplant, Donar, Recipient, Brain Dead.

NACP 28

IMPACT OF DIABETES ON COVID-19

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Abstract

Diabetes has been identified as a pre-existing adequacy be prostrated initiate kindred with respect to worse outcomes following coronavirus disease 2019 infection. Down we do research the connection between hyperglycaemia and thither shrewd disorder, the full force of the widespread on diabetes facilitate supervision, and the resultant opportunities for innovation.There is a bidirectional relationship between Covid-19 and diabetes. On the one hand, diabetes is associated with an increased risk of severe Covid-19. On the other hand, new-onset diabetes and severe metabolic complications of preexisting diabetes, including diabetic ketoacidosis and hyperosmolarity for which exceptionally high doses of insulin are warranted, have been observed in patients with Covid-19.1-3 These manifestations of diabetes pose challenges in clinical management and suggest a complex pathophysiology of Covid-19–related diabetes

Keywords: Coronavirus, COVID-19, Diabetes, Hyperglycaemia, Service development

NACP 29

IMPACT OF COVID-19 ON CARDIAC PATIENTS

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Abstract

The coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 that has significant implications for the cardiovascular care of patients. First, those with COVID-19 and pre-existing cardiovascular disease have an increased risk of severe disease and death. Second, infection has been associated with multiple direct and indirect cardiovascular complications including acute myocardial injury, myocarditis, arrhythmias, and venous thromboembolism. Third, therapies under investigation for COVID-19 may have cardiovascular side effects. Fourth, the response to COVID-19 can compromise the rapid triage of non-COVID-19 patients with cardiovascular conditions. Finally, the provision of cardiovascular care may place health care workers in a position of vulnerability as they become hosts or vectors of virus transmission. We hereby review the peer-reviewed and pre-print reports pertaining to cardiovascular considerations related to COVID-19 and highlight gaps in knowledge that require further study pertinent to patients, health care workers, and health systems.

Keywords: cardiovascular therapy, coronavirus health system.

NACP 30

THERAPEUTIC ROLE OF VITAMIN-C AND ITS EFFECT OF INFUSION IN ORGAN FAILURE

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Abstract

According to experimental data the intravenous vitamin C may attenuate vascular injury associated with sepsis and Acute Respiratory Distress Syndrome [ARDS]. Vitamin-C is a potent anti-Oxidant and have good effects on skin and immune function.It is vital for bones,teeth,connective tissue,collagen synthesis and blood vessels. Vitamin-C helps the body to absorb non-heme iron, form foods such as spinach,beans,quinoa. It is an anti oxidant prevents oxidative stress and fight against the free radicals by activating body's defensive mechanism and promotes healthy aging. The daily requirement of vitamin-C is 65-90mg/day for an adult men and 75mg/day for women.The maximum upper limit is 2000mg/day.Side effects of vitamin C are very rare.>2000mg/day of vitamin-C is not recommended. Increase in dosage may leads to stomach upset and diarrhea. Vitamin C deficiency may leads to anemia, gingivitis, rarelybleeding gums, decreased wound healing, drying and splitting of hair, bruising, nose bleeds, swollen and painful joints, weakend tooth enamel and rough,dry,scaly skin.The severe form of vitamin-C deficiency is known as scurvy,which affects mainly the older malnourished adults.Vitamin-C is therapeutically used inn skin injuries, cancer treatment and prevention, prophylactic therapy in chronic diseases, cardiovascular diseases, stroke, immunity and other medical conditions.Among patients with sepsis and ARDS the high dose vitamin-C infusions compared with placebo did not significantly reduce organ failure scores at 96 hours or improve biomarker levels at 168 hours. Pure ascorbic acid can be acidic can be too acidic and hence using supplements of vitamin-C added to Na, Ca are safe{Mg,Cr,Zn,Mn,Mb}. The cow's milk naturally has little vitamin-C, heating this milk may destroy the vitamin-C which may cause deficiency when it is given to infants.

Key words: Ascorbic acid, Acute Respiratory Distress syndrome, Anti oxidant, Scurvy, Defensive mechanism.

NACP 31

A SURVEY ON AWARENESS OF COVID-19 - INDIAN POPULATION

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Abstract

Aim: Main aim of this study is to assess awareness of covid-19 regarding disease, mode of spread, symptoms, diagnostic test, preventive measures, incubation period, treatment, effect on age groups among Indian population.**Method:** A total of 473 individuals from Andhra Pradesh and Telangana participated in this survey study and given their responses to questionnaire regarding the awareness of covid-19. **Result:** The study revealed that considerable percentage of people are having detail knowledge regarding covid-19 symptoms, mode of spread, preventive measures but considerable percentage of people are not having idea regarding effect of corona virus on different age groups, diagnosis and treatment though most of the information regarding covid-19 reached public through social media and news.**Conclusion:** Upon taking into consideration of result few people are having good knowledge regarding covid-19 symptoms, mode of spread, preventive measures but there is lack of awareness regarding effect of corona virus on different age groups, diagnosis and treatment. This survey will help health care professionals to create more awareness about effect on different age groups, diagnosis and treatment.

Key words: Covid19, age groups, mode of spread, virus, symptoms, diagnosis, treatment.

NACP 32

NEPHRO-PROTECTIVE ACTIVITY OF BERRY POWDER OF *"Hippophae rhamnoides"* AGAINST CISPLATIN INDUCED NEPHROTOXICITY"

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Abstract

Background: Nephrotoxicity associated with anti cancer drugs like cisplatin is rapidly increasing throughout the world. Medicinal plants have been identified and used since the ancient times with long history of safety and efficacy. Plants have the property of treatment of several biological. **Objective:** To investigate and report the nephro-protective role of the berries of *"Hippophae rhamnoides"* (berry powder of Sea Buckthorn) against cisplatin induced nephrotoxicity in albino wistar rats. **Methods:** In the present study, the extract of berries (200 mg & 400 mg/kg b.w) were examined for its nephro-protective effect against cisplatin induced renal injury in rats. 36 healthy male and female albino rats (150–200 g weight) were choosen and divided into six groups. The experiment was conducted for 10 days, after treatment time , the urine and blood samples were collected for analysis and were analysed. The urine parameters are U_{TP}, creatinine clearance. Blood parameters are serum creatinine, BUN. Histopathological characters were examined after scarifying and dissecting the kidneys of albino rats. **Results:** Cisplatin (6 mg/kg) significantly elevated the level of serum markers, urinary protein excretion and is also used for reduction in urine to serum creatinine ratio and creatinine clearance alone.In curative regimen, the extract significantly reduced the elevated serum creatinine and urea levels. Renal antioxidant defense systems, depleted by cisplatin therapy were restored to normal.**Conclusion-**On evaluating biochemical parameters like U_{TP}, BUN, creatinine clearance, serum creatinine it was found that the berry extract of "*Hippophae rhamnoides"* showed nephro-protective activity in cisplatin induced nephrotoxicity.

Keywords- Cisplatin, Nephrotoxicity, *"Hippophae rhamnoides"*

NACP 33

NOVEL APPROACHES FOR DETECTION OF DEPRESSION USING NON-INVASIVE EEG BIOMARKERS

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Abstract

Depression is a mood disorder characterized by persistently sadness, loss of interest in all the activities causing significant impairment in daily life. The main etiology is a combination of biological psychological and social sources of distress. The main symptoms would interfere with the concentration, cognitive, motivation which would have caused patients to have daily functional impairment.Increasingly these factors cause changes in brain function including altered activity of certain neural circuits in the brain. Majority of the people suffer from mood disorders in India these days so, the advanced technique known as electroencephalography can detect the electrical activity in the brain and can diagnose depression with the help of bio markers such as band power, alpha symmetry, signal based features, network based features, evoked potentials etc. Each bio marker respond to changes in the brain and can detect depression easily.Since it is a non-invasive technique it does not require surgical procedure and has a great temporal resolution and used to classify depression with high accuracy. EEG can evaluate the hyperactive level due to abnormal regulation of inner tension and can decide the number of patients that might be responding to psycho stimulant treatment.in addition the vigilance regulation pattern is used to identify depression patients. EEG supported the promising role of frontal regions such as anterior cingulate cortex,Dorsolateral prefrontal cortex, orbito frontal cortex in the bio marker exploration especially for the sleep electroencephalogram to detect bio markers in major depressive disorders.

Keywords: Band power, evoked potentials, EEG, alpha symmetry, network based features, depression.

NACP 34

MUTATION: A CAUSE OF UNPREDICTABLENATUREIN SARS-COV-2

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Abstract

The Covid-19 pandemic is caused by infection with the SARS-CoV-2 virus(coronavirus). The virus can be classified into many types -O, A2, A2a,A3, B, B1 and so on.Coronaviruses, like other RNA viruses, can develop mutations in three different ways: by mistake from copying errors during viral replication, through interactions with other viruses infecting the same cell, or they can be induced by RNA modification systems which are part of host immunity.Currently,11 types of mutations has been distinguished, including type O which is the “ancestral type” that originated in Whuan,China.The major mutation (A2a) detected in the SARS-CoV-2 viral envelope spike protein ,which is responsible for virus attachment to the host and also the main target for host antibodies, is a mutation of an aspartate(D) at position 614 found in Chinese strains to a glycine(G).It has been shown that in multiple cell lines, including human lung epithelial cells, that S-virus carrying the D614G mutation is up to 8 fold more effecting at transducing cells than wild type S-virus. This provides functional evidence that the D614G mutation in the spike protein increases transduction in human cells and also increases infectivity. Furtherthis mutant variant is more resistant to cleavage in vitro and in human cells. Theseresults imply that G614 is more pathogenic strain of SARS-CoV-2, which may influence to develop vaccines and to determine the presence of co-existence of type A2a with other types.

Keywords: SARS-CoV-2, mutation, transduction,

NACP 35

MEASURING MEDICINE PRICES, AVAILABILITY AND AFFORDABILITY OF COMMONLY USED ESSENTIAL MEDICINES

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Abstract

Methods:the surveyed medicines were selected based on the criteria of WHO/HAI methodology. Data was collected forOriginator brand (OB) and Lowest Priced Generic (LPG). Prices were compared to International Reference Prices (IRP) expressed as Median Price Ratio (MPR). Availability was determined only on the day of data collection. Affordability was calculated using daily wage of lowest paid unskilled government worker. **Results:**MPRs for OBs and LPGs were 2.20 and 1.53;2.20 and 1.47in Independent and Chain pharmacies respectively. MPR was 0.29 for LPGs in Jan Aushadhi Kendra. Availabilityin Independent, Chain pharmacies and Jan aushadhi Kendra was 95.8%, 94.4% and 71.2 % for LPGs respectively. Prices are affordable in Jan Aushadhi Kendra i.e., lowest paid unskilled government worker requires less than a day wage to purchase LPGs. **Conclusion:**The survey revealedreasonable prices and high availability of medicines in Independent and Chain pharmacies. Medicines with low prices and good availability was found in Jan Aushadhi Kendra. But a few number of drugs (Tab. Ciprofloxacin, Inj. Ceftriaxone, Tab. Acyclovir, Tab. Carbamazepine, Tab. Amitriptyline, Cap. Amoxicillin + Clavulanic Acid, Inh. Salbutamol) were totally unavailable in Jan Aushadhi Kendra. Policy evaluation must be directed to cut medicine prices in Independent and Chain pharmacies to make affordable and create awareness about Jan Aushadhi Kendra.

Keywords: Medicine Prices, Availability, Affordability.

NACP 36

HAEMOGLOBINNON-INVASIVE METHOD FOR MEASURMENT OF HAEMOGLOBIN

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Abstract

Haemoglobin is a respiratory pigment found in red blood cells, which supply oxygen to body parts. In conventional method small amount of blood is withdrawn for measuring haemoglobin. Measurement of haemoglobin by spectroscopic analysis of eyelid photography is a non-invasive, painless method .Researchers at Purdue University and university of Indianapolis, collaborated with university school of medicine in Kenya to develop an innovative method for haemoglobin measurement. This method helps for rapid screening of haemoglobin levels.

NACP 37

ASTRAGALUS POLYSACCHARIDES ATTENUATES MITOCHONDRIAL OXIDATIVE STRESS IN CORONARY ARTERIAL ENDOTHELIAL CELLS

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Abstract

Background: The production of hyperglycemia-induced mitochondrial reactive oxygen species (mtROS) is a key event in the development of diabetic complications.*Astragalus* polysaccharides (APS) are one of the main bioactive components extracted from *Astragalus membranaceus*. **Aim:** To investigate the activity of APS in both the mitochondrial injury caused by the continuousproduction of free radicals and selective oxidative damage.**Methods:** Specific pathogen-free BALB/c male mice (8 weeks old, 17-20 g). 40 mice were chosen and randomly divided into four groups: (i) sedentary (SED) group, (ii) sedentary with APS supplementation group (100 mg/kg/day), (iii) endurance exercise group, (iv) endurance exercise with APS supplementation (100 mg/kg/day) group. **Results:** APS attenuates both steady-state and high glucose (30 mM) induced mtROSproduction in coronary arterial endothelial cells (CAECs), an effect that was prevented by the knockdown of the protein deacetylase silent information regulator 2/sirtuin 1 (SIRT1). APS and SIRT1overexpression significantly reduced cellular H_2O_2 levels and attenuating mtROS production. APS upregulated MnSOD expression and increased cellular GSH content in a concentration-dependent manner.**Conclusion:** APS may ameliorate mitochondrial dysfunction through Sirt1 pathwayby activation of SIRT1 and the upregulation ofantioxidant defense mechanisms, attenuates mtROS production, suggesting the potential for new treatment approaches targetingendothelial mitochondria in metabolic diseases.

Key words: Mitochondrial reactive oxygen species; Astragalus polysaccharides; diabetic

NACP 38

SYSTEMATIC REVIEW ON EVALUATION OF CARDIOVASCULAR PROBLEMS BY ANTIPSYCHOTICS

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Abstract

Background: Antipsychotics are highly effective drugs used for the treatment of various psychiatric disorders. The use of antipsychotics have been linked to some adverse cardiac effects, including life threatening arrhythmias and sudden cardiac death. **Method:** In this study, a systematic review was conducted to evaluate various cardiovascular problems caused by the use antipsychotics. The review was conducted to identify the common antipsychotic drug(s) that is responsible for majority of the cardiovascular problems and the most common cardiovascular problem(s) caused by the use of antipsychotics. **Results:** The results of the study showed that the most common drugs in the first generation antipsychotics associated with cardiovascular problems were Thioridazine, Mesoridazine, Droperidol, Pimozide, Haloperidol, Chlorpromazine and the common drugs among the second generation antipsychotics associated with cardiovascular problems were Clozapine, Olanzapine, Ziprasidone, Aripiprazole, Lurasidone Quetiapine, Risperidone, Paliperidone and Amisupride. The most commonly associated cardiovascular problems were orthostatic hypotension, reflex tachycardia, hypertension, QT interval prolongation, myocardial infarction, myocarditis, Brugada phenotype syndrome and sudden cardiac death. **Conclusion:** Cardiovascular adverse effects were more common while using second generation antipsychotics with the common drugs being Clozapine and Olanzapine and the most common cardiovascular problems was found to be QT interval prolongation and the resulting increase in the risk of torsades de pointes and sudden cardiac death.

Keywords: Antipsychotics, Cardiovascular, Systematic review

NACP 39

ASSESSMENT OF COMMUITY PHARMACIST'SKNOWLEDGE, ATTITUTE AND PRACTICE ON ANTIBIOTIC USE AND RESISTANCE

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Abstract

Background: Antimicrobial resistance is a major public health problem all over the globe. A cross sectional study in different zones of Hyderabad city was conducted with the aim of evaluating community pharmacist'sknowledge, attitude and practice (KAP) on antibiotic use and resistance. **Methods:** A self-administered questionnaire was developed as data collection tool. Responses were recorded and scored using 5-Point Likert Scale. Descriptive statistics, frequencies and percentages were used to analyse the data. Data were collected from 54 community pharmacists. **Results:** Results showed that the community pharmacist had poor knowledge on antibiotic use.But they showed poor antibiotic dispensing practice. About 78% of pharmacists never heard about the term antimicrobial resistance and 80% agreed that tackling antibacterial resistance is solely the responsibility of the physician. Most of the pharmacists (50%) agreed that antibiotics can be dispensed without prescription. In the case of dispensing of antibiotics, 75% of the respondents always screen the prescription before dispensing antibiotics and around 71% of respondents dispense antibiotics without prescription on request of the patient, 21% of the community pharmacists told that they had the competency to treat common infections.**Conclusion:** The study highlights that there is a need for the communitypharmacists to update their knowledge and improve their awareness on antibiotic resistance. Short term, intensive programs are needed to improve their knowledge and practice regarding antibiotic use and resistance.

Keywords: antimicrobial resistance, knowledge, Practice

NACP 40

A STUDY ON POTENT PHARMACOLOGICAL ACTIVITY OF VALUABLE MEDICINAL PLANT *TRIBULUS TERRESTRIS*: A REVIEW

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Abstract

Background: Nature is the prime source of potent medicinal herb to cure the ailment of mankind. About 85% of peoples of the world used traditional medicinal herb partially or directly for initial remedies of various diseases. Now COVID-19 is spreading fast all over the world and people want to boost up their immunity. The herbal plants can play key role to improve our immunity *Tribulus terrestris* is one of the important medicinal plants which are being used from ancient time. Common name of *Tribulus terrestris* is "Gokshur" belongs to the family Zygophyllaceae. It is mainly found in India, China, Mexico, Spain, Bulgaria. It is marked as a precious plant of the Indian system of medicine. It has a huge impact on Indian Ayurveda Shastra. **Aim:** The main motive of this study article is to emphasize different phytochemicals and pharmacological activities of *Tribulus terrestris* based on various scientific literature surveys. **Methods**: Articles and research papers were searched in Pubmed, Google Scholar. At first 90 papers were selected to read. Then 40 articles were selected for the study. **Result:** The major pharmacological activities showed by this plant are antioxidants, cardio tonic, central nervous system, hepatoprotective, anti-inflammatory, analgesic, antispasmodic, anticancer, antibacterial, anthelmintic, aphrodisiac, immunomodulatory, antidiabetic, absorption enhancing and antimicrobial. **Conclusions:** Therefore, it can be concluded that the *Tribulus terrestris* is an important source of pharmacologically active ingredients which could be used for the new herbal formulations development. Though, detailed study and experiments are essential to prove the safety profile of this important medicinal plant.

Key words: *Tribulus terrestris,* Anthelmintic, Antispasmodic, Anticancer

NACP 41

A REVIEW ON ANTIBODY BLOCKADE THAT REVERSES VITILIGO

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Abstract

Vitiligo is an autoimmune disease of the skin mediated by CD8+ T cells that kill melanocytes and create white spots. Skin lesions in vitiligo frequently return after discontinuing the treatments, thus the hypothesis that autoimmune memory is formed at these locations. It was found that lesional T cells in mice and humans with vitiligo, display a resident memory (TRM) phenotype, similar to those that provide rapid, localized protection against reinfection from skin and mucosal-tropic viruses. Interleukin-15 (IL-15)–deficient mice reportedly have impaired resident memory formation. Both human and mouse T cell resident memory expresses the CD122 subunit of the IL-15 receptor and that keratinocytes up-regulate CD215, the subunit required to display the cytokine on their surface to promote activation of T cells. Targeting IL-15 signaling with an anti-CD122 antibody reverses disease in mice with established vitiligo. Short-term treatment with anti-CD122 inhibits T cell resident memory production of interferon-γ, and long-term treatment depletes TRM from skin lesions. Short-term treatment with anti-CD122 can provide durable repigmentation when administered either systemically or locally in the skin. On the basis of this data, targeting CD122 may be a highly effective and even durable treatment strategy for vitiligo and other tissue-specific autoimmune diseases involving T cell resident memory.

Keywords: Vitiligo, T cell resident memory, IL- 15 signaling blockade, Anti-CD122.

NACP 42

NIPAH: A DEADLY ZOONOTIC DISEASE

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Abstract

Nipah virus infection is an emerging zoonotic infection which presents with Acute Encephalitis and Respiratory Distress Syndrome. Nipah virus (NiV) is a member of Paramyxoviridae family and belongs to genus Henipavirus. It shows high mortality rate and classified as Biological Safety Level 4 (BSL) in view of its features which make it a potential agent for Bioterrorism. Rapid diagnosis and implementation of infection control measures are essential to treat outbreaks. A number of serological and molecular diagnostic techniques have been developed for diagnosis and surveillance. Until now there is no antivirals for its treatment. Ribavirin and 4-Azidocytidineis found effective against Paramyxoviridae but Ribavirin usage was not well defined. Several types of process are done to prepare vaccine but they show promising results in animals and trials are not started in humans. One of the new strategy is identified to treat Nipah viral Infection by synthesize the models of Nipah virus proteins 3D-structures but still it was not implemented.

Key words: Nipah Virus, NiV, Paramyxoviridae, Zoonotic infection, Ribavirin.

NACP 43

EVALUATION OF ANTIBACTERIAL ACTIVITY OF *DECHASCHISTIA CROTONIFOLIA*

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Abstract

The leaves of *Dechaschistia crotonifolia* was evaluated for antibacterial activity. The leaves were subjected for drying and extracted by hot percolation process using ethanol as solvent. The antimicrobial activity of ethanolic leaf extract of *Dechaschistia crotonifolia* (EEDC) was assayed by cup plate method. The strains were used for the current study is B. subtilis, E. coli, P. aeruginosa and S. aureus The Minimum Inhibitory Concentration of leaf extract of Dechaschistia crotonifolia was analysed for different concentrations from 1µg to 10 µg. the antimicrobial activity was tested for the concentrations viz., 10 µg, 20 µg, 30 µg, 40 µg and 50 µg. The results shown that the Minimum Inhibitory Concentration is found to be around 10 µg. The ethanolic leaf extract of *Dechaschistia crotonifolia* was effective at the concentration 50 µg against all the strains.

Keywords: Dechaschistia crotonifolia, Percolation, cup plate, Minimum Inhibitory Concentration.

NACP 44

A REVIEW ON PHARMACOLOGICAL ACTIVITIES OF *PUNICA GRANATUM* (LYTHRACEAE): NATURE'S GIFTS

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Abstract

Background: Nowadays, medicinal plants are very popular than synthetic drugs. As the whole world is suffering from the Novel corona virus pandemic, it is important to boost up the immunity power of the human body to survive during this situation. Many herbal plants play a major role to improve immunity power in humans. *Punica granatum* is one of the medicinal plants which are being used from ancient time to till date for boosting human immunity power and treating different health disorders. This plant is commonly known as 'Pomegranate' which is a fruit-bearing deciduous shrub in the family Lythraceae.

Aim: The main objective of this review article is to emphasize different phytochemicals and pharmacological activities of *Punica granatum* based on various scientific literature surveys.

Method: An up to date (till June 2020) search was done in Goggle scholar, PubMed, Science Direct database with several keywords to select all the possible, helpful and informative evidence to be reviewed in this paper. The search yields 158 articles. After exclusion, a total of 55 articles were finally selected to perform the study.

Result: *Punica granatum* is an important source of many active phytochemicals i.e anthocyanins, glucose, ascorbic acid, gallic acid, catechin, epigallocatechin, catechin, amino acids. Its major pharmacological activities are antioxidant, anti-inflammatory, anti-diabetic, anti-cancer, antimicrobial, etc.

Conclusion: Therefore, it can be concluded that the *Punica granatum* is an important source of pharmacologically active ingredients that could be used for the new herbal formulations development.

Key words: *Punica granatum* , Anti-cancer, Anti-diabetic, Anti-microbial, Antioxidant

NACP 45

A REVIEW ON PHARMACOLOGICAL ACTIVITY OF *DILLENIA INDICA* (DILLENIACEAE) :ELEPHANT APPLE

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Abstract

Background: In the current era, people suffering from numerous diseases and taking synthetic drugs, which show several side effects and damage our precious body. *Dillenia indica* is one of the important medicinal plants which is used to treat different human health disorders. **Aim:** The main objective of this review article is to emphasize different phytochemicals and pharmacological activities of *Dillenia indica L.* based on various scientific literature surveys. **Method:** An up to date (till June 2020) search was done in Google Scholar, Pubmed, and Science Direct database with several keywords to select all the possible and informative evidence to be reviewed in this paper. The search yields 114 articles. After exclusion, a total of 51 articles were finally selected to perform the study.

Results: The plant *Dillenia indica* belongs to the family Dilleniaceae, contains several classes of active phytochemical compounds such as phenols, tannins, alkaloids, flavonoids, saponins, sugars, etc. It is an ethno medicinal important plant used for the treatment of many severe diseases like fever, cancer, diarrhea, mouth disorders, indigestion, and weakness. It has other pharmacological activities like antioxidant, antimicrobial, analgesic, anti-inflammatory, anti-diabetic, antinociceptive activity, anxiolytic, etc. **Conclusion:** Therefore, it can be concluded that *Dillenia indica* may be claimed as a natural source of many pharmacologically active ingredients and may be useful for the development of herbal medicines. Through, a detailed study is required to establish the safety profile of this important medicinal fruit.

Key words: *Dillenia indica* L, Anti diabetic, Antioxidant , Anticancer.

NACP 46

KNOWLEDGE, ATTITUDE AND PRACTICE RELATING TO ANTIBIOTIC USE AMONG PHARMACY STUDENTS IN SOUTH INDIA

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Abstract

Aim: The aim of the study is to investigate the knowledge, attitude and practice towards antibiotic use among pharmacy students of south India. **Materials and methods:**This study involved 700 participants from 40 different pharmacy colleges, who participated and responded willingly. All participants in the study were given with the standard knowledge-attitude-practice questionnaire using google forms which was validated at trial site with 30 questions for educational intervention and their percentage value was analyzed and the number with percentage was calculated for categorical variables. **Results:** The knowledge domain reveals that 99.86% of participants consider antibiotic resistance is an important and serious public issue and 90.80% strongly agreed that schedule H1 drugs should not be dispensed without prescription, only 57% are aware of antibiotic escalation and de-escalation. Attitude questionnaire shows 61% of health care professionals feel confident about knowledge and practice in the area of antimicrobial prescribing and 97% reported that anti-microbial stewardship programs must be made mandatory. Practice Questionnaire data suggests that 99% of the participants check the expiry date of the antibiotic before using it whereas 15% participants advise self- medication in case of antibiotic use. **Conclusion**: Our study found that KAP study improves communication about antibiotic appropriateness between healthcare professionals and patients. Most of the participants considered that antibiotic resistance is an important and serious public issue and it is recommended to conduct anti microbial stewardship programmes which help in curbing the proliferation of antimicrobial resistance and creating the awareness about the usage of antibiotics in public.

Key words: Anti Microbial Resistance, Hospital Pharmacist, KAP Study

NACP 47

COMPARISON OF MENTAL HEALTH STATUS AMONG THE SOUTH INDIAN HEALTH CARE PROFESSIONAL STUDENTS DURING COVID-19 PANDEMIC'S QUARANTINE PERIOD: A CROSS-SECTIONAL STUDY

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Abstract

Aim: The outbreak of COVID-19 caused a major panic among the public and the social distancing measures were primary risk factors for mental health-related issues. The present study compares the mental health status among the health care professional students of South India during quarantine period of the pandemic. **Methodology:** This study is a cross-sectional, web-based online survey which consists of 21-item DASS questionnaire. This was used to assess the emotional states of depression, anxiety, and stress. Using Google Forms, the questionnaire was randomly distributed among the health care professional students of selected pharmacy, dental and nursing colleges. Mean with standard deviation was calculated for continuous variables and the number with percentage was calculated for categorical variables. **Results:** A total of 600 responses (200 each from three different professions) were collected through questionnaire. More than half of the responses were received from females (75%). On assessment it was found that overall, 34.1% of total respondents reported severe to extremely severe depressive symptoms (with 22%, 33% and 47.5% among the dental, pharmacy and nursing students); 45.6% of total respondents reported severe to extremely severe anxiety symptoms (with 31%, 46 % and 61%), and 27.5% reported severe to extremely severe stress levels (18%, 26%, 40%).**Conclusion:** A significant number of students were found to have an impact on mental health due to the outbreak of COVID-19 and were observed to have higher levels of stress, anxiety, and depression. The study findings showed the need of implementing appropriate psychological interventions to improve mental health among the students during the quarantine period.

Keywords: Corona virus, Quarantine, Mental Health, Cross sectional, Comparative Study

NACP 48

ANTICANCER ACTIVITY OF SNAKE VENOM

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Abstract

Cancer is one of the most dreaded disease and leading cause of death worldwide. There is urgency for the development of new drugs. Many active secretions produced by animals like snakes, scorpions, spiders etc. have been employed in the development of new drugs to treat cancer. In recent years, remarkable progress has been made for the treatment of cancer. Snake venom has a biodiversity and it is a unique source from which novel therapeutics can be developed. Some of the compounds present in snake venom have a great potential as antitumor agent. When these enzymes and proteins or peptides from the snake venom are isolated and evaluated may bind specifically to cancer cell membranes, affecting the migration and proliferation of these cells. L-amino acid oxidase is a protein toxin commonly found in snake venom. It has many applications, ranging from biotechnology to potential anticancer therapeutics. LAAO converts L-amino acid into alpha keto acid and release ammonia and hydrogen peroxide as by-products. Induction of oxidative stress in cancer cells is one of the cancer treatment strategies as controlled and targeted release of hydrogen peroxide can theoretically induce sufficient oxidative stress to kill cancer cells.

Keywords: Snake venom, tumor, oxidative stress, anticancer.

NACP 49

PERCEPTION ON VACCINES AND ROLE OF PHARMACISTS – A CROSS SECTIONAL STUDY AMONG THE STUDENT PHARMACISTS

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Abstract

Background: Immunization programme is one of the major public health intervention initiated by the governments for the protection of the public and children from the deadly viruses. Healthcare professionals' including pharmacists play a vital role in the advocacy, counselling and referral on immunisation to the public. **Aim:** To outline the perception on vaccines and the connected essential pharmacist role among the student pharmacists. **Method:** A cross-sectional study was carried out in first week of August 2020, using an online questionnaire sent as Google forms to e-mails of students registered in any year of bachelor or diploma pharmacy in government approved colleges. **Results:** The total numbers of participants were 83 and the overall response rate was 97%. The vaccine related knowledge was varying greatly between the year of study of the students and the training or updated studies they have undergone. High scores (80% and above) were achieved by 36 % students and 75% who gained updated information from the social media. 74.7% students accessed the WHO, 52% accessed the government and pharmacy text books to get knowledge on vaccines. **Conclusion:** Students' results clearly show the existence of a negative attitude, discomfort and lack of knowledge on vaccination. In India pharmacists are not utilized in immunisation activities except for the few who participate in Pulse Polio Campaigns. Our study indicates there important areas like continuing pharmacy education, workshops and symposia in addition with the syllabus must made mandatory to develop essential knowledge on vaccines among the studentpharmacists.

Key words: Vaccination, Immunisation, Pharmacist role, Student pharmacist perception, Indian immunisation programs

NACP 50

A SHORT REVIEW ON HERBAL MEDICINES USED IN THE TREATMENT OF CORONA VIRUS

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Abstract

Background: The corona virus disease pandemic imperilled the health system of many countries around the world. The use of some herbal medicines for treating coronavirus was widely accepted by the World health Organisation and health authorities of some governments in an attempt to reduce symptoms, mortality and recurrence rate. This review study in aimed to lists the drugs/formulations, active chemical components and their therapeutic uses. **Method:** A review analysis of the original papers was undertaken to assess the different aspects of Herbal Drug Discovery in the treatment of corona virus. The MEDLINE, Index Copernicus, DOAJ and SCOPUS databases were used as data sources. **Results:** More than 160 combination formulation is available in China and in India nearly 20 plus drugs were widely used. Most of the drugs were single drug formulations. Some of the drugs have called back on the basis of proven adverse effects. WHO has supported clinical trials, leading 14 countries to issue marketing authorization for 89 traditional medicine products met international and national requirements for registration. 43 have been included in national essential medicines lists. Methodological challenges, higher time and effort consumption were the limitation in proving safety and efficacy of the drugs. Conclusion: The herbal drugs have proved positive outcomes in reducing the symptoms, reducing body temperature, reduction in the average hospital stay and increased recovery rates. Still a larger population is needed to prove the results and standardisation techniques and structure elucidation studies are need to bedeveloped.

Key words: Herbal formulations, medicinal plants, virus treatment, Corona virus, natural productions, structure elucidation studies

NACP 51

EVALUATION OF THE IMPACT OF CLINICAL PHARMACIST ADVANCED PATIENT EDUCATION IN INCREASING DIABETIC FOOT ULCER KNOWLEDGE AMONG PATIENTS AND COMMUNITY PHARMACISTS

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Abstract

Background: Diabetic Foot Ulcer (DFU) causes major health issues in diabetes patients. Diabetic Foot Ulcers are the cause for physical disability and poor quality of life among diabetic patients which leads to the loss of limb, major health as well economic sufferings and even death**. Aim:** To prove increase in the understanding and knowledge of DFU among patients and community pharmacists through enhanced clinical pharmacist education**. Method:** A prospective study among community pharmacists (n = 50) and diabetic outpatients (n = 50) conducted by using standard validated questionnaire. Statistical analysis using T-test was done. **Results:** The mean and SD changes of pre and post knowledge assessment score was found to be 05±1.95 and 06.4±3.60 and statistically significant improvement (p-value <0.0001) proved in the pre vs. post knowledge assessment outcome among patients. PreVs. Post-assessment Outcome was found to be 8.8±4.97 and 7.7±4.18 among the community pharmacists and significant difference was <0.0001. **Conclusion:** The goals of diabetic foot care encompassed various domains such as patient advanced education, compliance with medications, maintaining strict glycaemic control, blood pressure, lipid control, self-foot care, and appropriate foot wear usage and lifestyle modifications through verbal counselling and by pictorial brochures which brought best health outcomes in patients with diabetes. Clinical pharmacist advanced patient tailored education improved the knowledge and understanding of DFU among community pharmacists and patients.

Keywords: diabetic foot ulcer, diabetic wounds, clinical pharmacy services, patient counselling, foot care, foot care guideline

NACP 52

A REVIEW ON MENTAL HEALTH BEFORE AND DURING COVID 19 ON STUDENTS.

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Abstract

Background: The potential impact of the covid-19 pandemic on population **psychological state** is **of accelerating** global concern. We examine changes in adult psychological state in india population before **and through** the lockdown. **Introduction**: Covid-19, caused by severe acute respiratory syndrome coronavirus 2, and measures taken to curb its spread, have profoundly affected every aspect of day-to-day life **round the** world. The india government's lockdown, implemented on march 23, 2020, stipulated severe restrictions on social contact, on **the power for several** people **to figure,** and greatly reduced access to services. Early indications suggest a significant impact on employment and livelihoods, income, **and private** debt. **Materials and methods: T**he online based survey program questionnaire, which contained questions from generalized anxiety disorder-7 (gad-7), was utilized for the present study. **Result: A** total of 150 students participated in the survey. Among these students, 72 were female and 78 were male. Furthermore, 37 students (24.6%) who participated in the survey were in a state of anxiety. The majority of students who were in anxiety (n=36) state had mild or moderate states.

Keywords: Covid 19, mental health, students, anxiety disorder.

NACP 53

CORONAVIRUS INFECTIONS AND TYPE 2 DIABETES-SHARED PATHWAYS WITH THERAPEUTIC IMPLICATIONS

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Abstract

Individuals with diabetes are at increased risk for bacterial, mycotic, parasitic, and viral infections. The severe acute respiratory syndrome (SARS)-CoV-2 (also remarked as COVID-19) coronavirus pandemic highlights the importance of understanding shared disease pathophysiology potentially informing therapeutic choices in individuals with type 2 diabetes (T2D). Two coronavirus receptor proteins, angiotensin-converting enzyme 2 (ACE2) and dipeptidyl peptidase-4 (DPP4) also are established transducers of metabolic signals and pathways regulating inflammation, renal and cardiovascular physiology, and glucose homeostasis. Moreover, glucose-lowering agents like the DPP4 inhibitors, widely utilized in subjects with T2D, are known to switch the biological activities of multiple immunomodulatory substrates. Here, we review the fundamental and clinical science spanning the intersections of diabetes, coronavirus infections, ACE2, and DPP4 biology, highlighting clinical relevance and evolving areas of uncertainty underlying the pathophysiology and treatment of T2D within the context of coronavirus infection.

Keywords: angiotensin converting enzyme 2; diabetes; dipeptidyl peptidase-4; obesity; receptor; virus.

NACP 54

CORONAVIRUS

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Abstract

Coronaviruses have a quality morphology, the nominate rude positive outlandish the outer fringe, or “corona” of embedded envelope protein. Skill of the grounding Corona viridae surrogate a adequate sweep of mammal and human diseases. Remarkably, fulfil of the RNA genome take look over the period of a nested wonted of viral mRNA molecules. Impending 2003, coronaviruses attracted short enumeration beyond causing mild upper respiratory tract infections. This additional dramatically in 2003 close by the zoonotic SARS-CoV and the in erstwhile creation of MERS-CoV has hardened the coronaviruses as grown-up causes of dangerous respiratory grief

Keywords: Viral replication severe acute respiratory virus Middle East respiratory virus pathogenesis immunity human coronavirus infections

NACP 55

THE IMPACT OF COVID PANDEMIC ON MENTAL HEALTH - A CROSS SECTIONAL STUDY AMONG THE RESIDENTS OF CHENNAI

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Abstract

Background: World Health Organisation defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. People around the world are staying at homes because of curfew leading to less social interactions and performing exercise. This can have adverse effect on mental health. **Aim:** To assess the impact on mental health on the public and to identify the influencing indicators of negative mental health. **Method:** This cross sectional study conducted in the first week of August 2020 as the web based questionnaire and telephonic interview among the randomly selected adults of age of 18 and more years in randomly selected parts of Chennai. **Results:** The indicators identified were stress from work, home and financial, horrified feel, apprehended and helpless feel due to COVID-19. 43 participants were able to complete the questionnaire amongwhich28%werefemaleand72%weremale.Themeanageoftheparticipantswas 25.5 ± 10.2 years. 90% were having education higher than the school. More than 61% felt helpless and more than 67% expressed they met with horrified feeling due to pandemic situation. 44% people obtained help from their friends and family members and shared their feelings. **Conclusion:** The strong existence of negative impact indicators clearly showed the participants of our study were mild to moderately stressful. But the higher score on family and social support suggested the better side of negating the negative effect of pandemic fear. Clinical pharmacists can perform online seminars to negate the negativeemotions.

Key words: COVID-19, pandemic, coronavirus, mental health, indicators, impact of event

NACP 56

AN EXPERIMENTAL INVESTIGATION FOR THE POSSIBILITY OF AN ANTI-DEPRESSANT ACTIVITY OF ETHANOLIC EXTRACT OF*TYLOPHORA INDICA* LEAVES IN SWISS ALBINO MICE MODEL FOR THE TREATMENT OF DEPRESSION

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Abstract

Aim: In this regard, the present study aimed to investigate the antidepressant activity of ethanolic extracts of *Tylophora indica* plant leaves in swiss albino mice model. **Methods:** The coarsely powdered leaves were extracted by the soxhlation process using ethanol as a menstruum. The antidepressant activity of ethanolic extract of *Tylophoraindica* leaves was carried out by Forced Swimming Test (FST) and Tail Suspension Test (TST) methods using adult male swiss albino mice. **Results:** The preliminary phytochemical studies depicted the presence of alkaloids, flavonoids, tannins, carbohydrates, glycosides, proteins, steroids etc. It was observed that the 300 mg/kg dose of leave extract has significant antidepressant activity compared with 100 mg/kg, 200 mg/kg and standard fluoxetine. Furthermore, the ethanolic extract of *Tylophoraindica* did not produce any lethal effect even up to 2000 mg/kg during acute oral toxicity study. **Conclusion:** From the present study, it may be concluded that the ethanolic extract of *Tylophora indica* has an antidepressant activity in animal models. This effect may beproduced either by the enhancement of central 5-HT or catecholamine neurotransmission. However, more extensive studies are required to clarify the active components responsible for antidepressant activity.

Key words: *Tylophora indica,* Antidepressant, Forced Swimming Test, Tail Suspension Test.

NACP 57

SHORT-TERM OUTCOMES OF PULMONARY DISEASES ASSOCIATED WITH E-CIGARETTES/VAPING

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Abstract

Background: E-cigarettes are battery-operated devices, that are engineered to heat a liquid solution that emulate smoking with a smoke-free technique. Over the last decade there has been a significant boost towards the use of electronic cigarettes **Aim**: An on-going outbreak of lung injury associated with e-cigarettes or vaping has been reported in the USA.**Methods and Materials:** The authors performed a review of the PubMed and Embase databases to find articles providing information on electronic cigarettes and its impact on health Initially, 200 studies were assessed for aptness 40 studies were included in the study. **Results**: This article reviews the detailed mechanisms of electronic cigarette and its adverse effects on respiratory and cardiac health. **Conclusion**: Evidence-based guidelines are also needed from government and medical societies to assist the clinicians in the event of a patient presenting with potential vaping-associated pulmonary disease. The establishment of a database that records the true extent of the diversity of vaping products would also facilitate an epidemiological assessment of the magnitude of the problem.

Key-words: electronic cigarettes, vaping products, pulmonary disease, respiratory and cardiac health.

NACP 58

CORONA VIRUS-2019: KNOWLEDGE, ATTITUDE AND PRACTICES QUESTIONNAIRE IN GENERAL POPULATION

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Abstract

Background: The new Coronavirus (SARS-CoV-2) was first reported in December 2019,in Wuhan, Hubei Province, China**.** On 12th March 2020 it was declared as global pandemic. To date, there is no antiviral curative treatment or vaccine that has been recommended for COVID19, there is an serious need to understand the public's awareness of COVID-19 at this life-threatening moment.**Methods and Materials:** A cross-sectional study was carried out to explore the knowledge, attitude and practices towards COVID-19, the online survey was conducted by using a Self-administered questionnaire ,considering WHO training material for the detection, prevention, response, and control of COVID-19.the questionnaires were disseminated to Whatsapp groups using google forms, comprising of 28 questions among which 8 assessed Knowledge, 7 assessed attitude and remaining 13 assessed practice. Spss software was used for statistical analysis. **Results**: The mean knowledge score was 6.3 (SD: 1.2) eighty six percent (n = 100)of the participants were categorized under high knowledge score(6--8) The mean attitude score was 21.1(SD:2.8) the mean practice score was 44.5(SD:5.6)the p value for attitude and practice was found to $p<0.5$ there by it states a significant positive relation between attitude and practice. **Conclusion**: Our findings suggest that general Andhra Pradesh population, demonstrated good knowledge, positive attitudes, and reasonable practice regarding COVID-19 during the outbreak. Furthermore, based on the significant positive association among, attitude, and practice in our study, health education programs, particularly targeting lower knowledge individuals regarding COVID-19, are essential for encouraging positive attitude and maintain safe practices.

Key-words: Coronavirus, SARS-CoV-2, Pandemic, Questionnaires

NACP 59

EVALUATION AND COMPARISON OF THE ANTACID EFFECT OF SOME VEGETABLES, FRUITS, MILK AND MILK PRODUCTS IN AN ARTIFICIAL STOMACH MODEL

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Abstract

Introduction: The consumption of certain alkalinizing vegetables, fruits, milk and milk products has been known to alleviate hyperacidity. The drugs used as antacid are effective antacids but are associated with many adverse effects and are often expensive. It is thus pertinent to use natural products which help to restore natural gastric balance and function. The present study evaluate and compares the antacid effect of kale, broccoli, cucumber, radish, lemon juice, cold milk and curd in an artificial stomach model. **Methods:** pH of each test samples and their neutralizing effect on artificial gastric acid was determined and compared with that of water, sodium bicarbonate and ENO. Neutralization capacity of test solution against gastric juice was determined in vitro by titration method of fordtran's model. For the determination of duration of consistent neutralization a modified model of vatier's artificial stomach was used.

Results: Temperaturedidnotaffectp Hsignificantly.Exceptlemonalltestsamplesshowsbetterneutralizingeffect than water ($p<0.5$ for cucumber and $p<0.001$ for other samples). Neutralization capacity and the duration of consistent neutralization shown by all test samples was higher than water. Cold milk and broccoli exhibit highest antacid activity and is comparable with that of Sodium bicarbonate and ENO. Lemon juice and radish exhibited the poorest antacid effect. **Conclusion:** It may be concluded that all the foods exhibited significant antacid activity in an artificial stomach model .Natural and edible products such as those used in this study are not associated with rebound acidity and hence should be looked upon as safe alternatives for treatment of hyperacidity.

Keywords- Hyperacidity, Antacid effect, Vegetables and fruits, Milk and milk products, Vatier's artificial stomach,

NACP 60

ARTIFICIAL INTELLIGENCE IN PHARMACOVIGILENCE

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Abstract

Safety of a drug molecule is the prerequisite for taking it further in the product pipeline. Despite of the efforts taken in the drug and product development, worldwide drug reactions and serious adverse events are being reported. There is increase in the number of volume of individual case safety reports (ICRS) increases yearly, but it is estimated that more than 90% of adverse effects go unreported. To improve the collection of huge amount of data daily and to process these long term data with more accuracy, artificial intelligence (AI) and robotic process automation are being used extensively in the recent few years. Pharmacovigilance (PV), also known as drug safety, promotes proper detection, assessment, prevention of adverse effects of the drugs or any other drug related problems and improvises the health and well-being of the patients and health care consumers. This review discusses the role of artificial intelligence in drug safety, the process flow from data collection to its utilization, current market scenario on pharmacovigilance services/software/ programs, challenges being faced for use of AI for and the role of pharmacist in promoting drug safety through AI.

Key words: Artificial intelligence, Pharmacovigilance, individual case safety reports (ICSR), database, PV software, drug safety.

NACP 61

A STUDY ON CLINICAL EPIDEMIOLOGICAL DATA OF BREAST CANCER

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Abstract

Breast cancer is the abnormal growth of the cells and can start in any part of the breast. Breast cancer has became common in the elderly women especially in Indian population. Every 2 persons over 20 people are affected with breast cancer in India. In more developed countries, the prevalence is risng up to 7% over age 70 years. A review of population based literature and analysis of the data of Eindhoven cancer registry and European data regarding the diagnosis, treatment and prognosis has shown the proportion with unstaged and advanced stage III &IV is high among elderly patients compared to younger ones and the treatment is less aggressive generally. Although the proportion of receiving chemotherapy is increasing since early 1990's. Elder breast cancer patients survival is generally low and prevalence of comorbidity is higher greater than 50% in patients over 70 years of age.

Key words: Breast cancer, chemotherapy, population study

NACP 62

INTERACTION STUDY OF HESPERDININ COMBINATION WITH METFORMIN IN STREPTAZOTOCIN INDUCED DIABETES

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Abstract

Complementary and alternative therapies are quickly gaining importance because they are perceived to be free of side effects due to their natural origin. Diabetes patients are often treated with multiple medications due to different comorbidities, and such patients use antidiabetic medications for their entire lives; thus, it is important to make the public aware of herb interactions with antidiabetic drugs Citrus bioflavonoids may offer some protection against the early stage of diabetes mellitus and the development of complications. In this research work the effect of hesperdin on the pharmacokinetics and pharmacodynamics of metformin in normal as well as in streptozotocin (STZ) induced diabetic rats were studied. The data were statistically evaluated using one-way analysis of variance (ANOVA). In diabetic rats, the combination of metformin with hesperdin significantly increased all the pharmacokinetic parameters, such as Cmax, AUC0-n, AUCtotal, $t_{1/2}$ and mean residence time and decreased the clearance, Vd, markedly as compared with the control group whereas, PD activity was also altered.

Key words: Hesperdin, Anti-diabetic.

NACP 63

DISEASE MODIFYING THERAPY AT MOLECULAR LEVEL BYKNOWING GAP JUNCTIONS

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Abstract

Gap junctions are intercellular channels, serve to exchange members of the metabolomebetween adjacent cells, participating in both autocrine and paracrine signaling.. Gap junctions are the dynamic emerging therapeutictargets in acquired and inherited diseases. They regulate immune responses, cell proliferation,migration, apoptosis and carcinogenesis. Present technology and therapies reveal that due tofocus on only relief of symptoms is damaging these connexins further worsens the disease. Bythe application of molecular therapeutic principles, gap junction's modification is showing betterfruitful results in treating wounds, cardiac diseases, glaucoma, major depressive disorders and various cancers. Thus targeting gap junctions act as a disease modifying therapy but not symptomatic treatment. The only challenge is delivery of agents to gap junctions at target damaged tissue or tumor.**Mode of action:** Targeting gap junctions involve

- closing channels
- change preferred single channel conductance
- open channels
- regulate the expression, synthesis, assembly and degradation of the channels thereby controlling the number of channels.

Novel strategies for themodification of these connexins involve synthetic mimetic peptides and siRNA technologies.Attempts are continued to examine the consequences of influencing gap junctions by antisensetechnology is helping in development of novel therapeutic agents for future clinical applications

Key words: Gap junctions, connexins, antisense technology, synthetic mimetic peptides and siRNA technologies.

NACP 64

COST EFFECTIVEANALYSIS OF COMBINED INHALEDBRONCHODILATORSAND CORTICOSTEROIDS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS

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Abstract

Background: According to GOLD guidelines COPD is definedas, a disease state characterized by airflow limitation that is usually progressive and associated with abnormal inflammatory response of the lungs to inhaled noxious particles. Cost-effectiveness analysis (CEA) is a form of economic analysis that compares the relative costs and outcomes (effects) of two or more drug regimens. **Aim:** This study was designed to evaluate the clinical and economic consequences of Salmeterol/Fluticasone(SF), Formoterol/Budesonide(FB) and Formoterol/Fluticasone(FF) in severe and very severe COPD patients. **Method:** A Prospective Observational Comparative study was done for a period of 6 months in Owaisi Hospital and Research Centre(DCMS, Hyderabad). 90 COPD patients suffering from stage 3 and stage 4were taken for the study.We used three parameters such as spirometry test, number of symptom free days and total cost to assess the cost-effectiveness of prescribed regimens. **Results:** The average FEV1 for group I, group II and group III subjects at initial visit was 33% and was increased to 41% (SF), 37% (FB) and 35% (FF). Group I patients had 36 SFD, group II patients had 33 SFD and group III patients had 28 SFD. Overall mean total cost for group I, group II and group III subjects was found to be Rs.29725, Rs.32600 and Rs.37155.**Conclusion:** This study highlighted the favorable therapeutic performance of combined inhaled bronchodilators & corticosteroids. Results from our study showed that SF was the most effective strategy in patients suffering from severe and very severe COPD.

Keywords: GOLD guidelines, COPD, inhaled corticosteroids, bronchodilators, CEA analysis.

NACP 65

IN SILICO ANALYSIS OF SOME NOVEL FLAVONOIDS AGAINST ALANINE AMINOTRANSFERASE AS POTENTIAL HEPATOPROTECTIVE AGENT

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Prof. S K ABDUL RAHAMAN professor and principal of Nirmala college of pharmacy.

ABSTRACT:

In this study we confirmed the hepatoprotective properties of the phyto constituents present in Gentianaceae family using molecular docking. Molecular docking study used to check the interaction of phytoconstituents with hepatoprotective targets such as Alanine aminotransferase. Flavonoids belongs to a group of natural substances with variable phenolic structures and are found in fruits, vegetables, grains, barks, roots, stems, flowers, tea and wine. They have miscellaneous favourable biochemical and antioxidant effects associated with various diseases such as cancer, Alzheimer's disease, atherosclerosis, etc. ALT is found in plasma and in various body tissues but is most common in the liver. Flavonoids and alanine aminotransferase (ALT) potential and binding energy is good. Therefore, crystal structure Alanine aminotrasferase (PDB code: P24298) were taken as target in the present study. ALT often suggest the existence of other medical problems such as viral hepatitis, diabetes, congestive heart failure, liver damage, bile duct problems, infectious mononucleosis, or myopathy, so ALT is commonly used as a way of screening for liver problems. This is interacted with the amino acids residues such as GLY532, VAL530, CYS817, PRO535, ALA763, ILE762, GLN814, MET534, LEU811, and TYR517 and produces interaction energy of -8.38 Kcal/mol. Thus, the present study provided the scientific validation for hepatoprotective activity of flavonoids present in gentianaceae family.

KEYWORDS: Flavonoid derivatives, Alanine aminotransferase, Molecular Docking.

NACP 66

MOLECULAR DOCKING TOWARDS BOVINE CORONAVIRUS 3CL4 RECEPTOR: AN IN-SILICO STUDY

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ABSTRACT

Background: Bovine coronavirus infects upper and lower intestine and respiratory tracts in cattle inducing diarrhea and respiratory infections. **Aim:** To identify the binding affinities of endophytic fungi derivatives with hemagglutinin esterase 3Cl4 receptor for Bovine Corona Virus. **Method:** The Crystal structure of the bovine corona virus protein i.e. hemagglutinin esterase 3Cl4 receptor was taken from the Protein Data Bank. All heteroatoms were removed, and the file is converted from PDB file to PDBQT file using Autodock. Binding pockets are identified and then it was further used for docking. The structures of endophytic fungi derivatives (ligands) were obtained from the Pubchem compound Data base. These ligands are in SDF format. They are converted to PDBQT format and are docked by binding it to the 3Cl4 receptor using the software PYMOL and docking scores were noted and are compared to the standard control Darunavir. **Results:** Of 100 Endophytic fungi derivatives docked, 10 showed greater affinity than Durunavir. Strongest binding occurred with Cytoglobosins D (8.3 kcal/mol) and C(8.2 kcal/mol) and least with butyrolactone (3.8 kcal/mol).**Conclusion:** We found 10/100 derivatives of seaweed had some binding affinity with bovine coronavirus hemagglutinin-esterase (3Cl4).Strongest binding was exhibited by Cytoglobosins C(8.2Kcal/mol) and D (8.3Kcal/mol) and least with butyrolactone (3.8 Kcal/mol).The highest affinity was shown by CID: 46209919. We conclude that further in vitro and in vivo studies should be performed to assess the therapeutic potential of these endophytic marine fungi derivatives.

Key-words: In silico, Protein Binding, Bovine Coronavirus, Cytoglobosins, Darunavir.

NACP 67

REPURPOSING OF POLYPHENOLIC PHYTOCHEMICALS AGAINST COVID-19 BY CADD APPROACH

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Abstract:

The current pandemic outbreak of COVID-19 caused by SARS-CoV-2 is a serious public health crisis across the globe. Till date, there is no FDA approved drugs or vaccines available for the treatment and prevention of COVID-19. It has, therefore, become a challenging task to control and prevent the spread of this life-threatening disease. In view of this, the development of new drug candidates is an urgent requirement to combat COVID-19. Drug repurposing is an emerging strategy of drug discovery which remains to be an effective approach in search for new therapeutic indications of existing drugs. The objective of our investigation was to identify bioactive molecules having potential against SARS-CoV-2 by repurposing of plant-derived polyphenolic phytochemicals. The *in silico* screening of virtual library of polyphenolic phytochemicals was performed against SARS-CoV-2 using various protein molecules by molecular docking method. Results reveal that some polyphenolic phytochemicals possess antiviral potential against SARS-CoV-2. However, finally it is inferred that polyphenolic phytochemicals can be further developed as novel antiviral agents to combat the deadly COVID-19 disease.

Keywords: SARS-CoV-2, polyphenolic phytochemicals.

NACP 68

IN SILICO VACCINE DESIGN AGAINST SFTSV: AN IMMUNOINFORMATIC APPROACH

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Abstract:

Background: Severe fever with thrombocytopenia syndrome virus (SFTSV) is responsible for the occurrence of a fatal disease in humans named severe fever with thrombocytopenia syndrome (SFTS) with a mortality rate ranging from 10 to 30%. SFTS is an emerging infectious disease with no vaccine or specific drugs for treatment. Hence, there is a need to develop a new vaccine against SFTSV. The current study was planned to design a multi-epitope based vaccine using immune informatic approaches. **Methodology:** Membrane glycoprotein polyprotein of SFTSV was used as a target protein to predict B and T-cell epitopes. Predicted B and T-cell epitopes were later analysed for immunogenicity, allergenicity, toxicity and conservancy. Screened epitopes were docked with HLA alleles to ensure their interaction to generate an immune response. **Results:** The vaccine was designed from the finest epitopes chosen. The constructed vaccine showed its immunogenicity, safety and stability after studying its physicochemical properties and various characteristics. Subsequently, the vaccine was docked with Toll-like receptor-8 (TLR-8) and molecular dynamic simulations were studied. Further codon adaptation of vaccine sequence was conducted for *in silico* cloning studies in pIB2 vector to ensure its expression efficiency in plasmid vector for production of the vaccine. **Conclusion:** The constructed vaccine in this present study is anticipated to show its effect in controlling and prevention of SFTSV. Further *in vitro* and *in vivo* studies should be conducted to ensure its efficacy and safety.

Key-Words: SFTSV; Multi-epitope vaccine; membrane glycoprotein polyprotein; Immuno-informatics; Vaccine design.

NACP 69

BIOISOSTERES OF BRASSININ: SYNTHESIS, MOLECULAR DOCKING AND CHEMOTHERAPEUTIC ACTIVITY

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Abstract

Background: Brassinin a phytoalexin first isolated from cabbage had cancer preventive activity, structural modification of this compound led to the synthesis of isobrassinin and Spiro-brassinin19 and a series of dithiocarbamates, some of which were found to possess significant in vitro and in vivo antitumor activity. In view of the above and as there is no literature report on dithiocarbamate substituted benzimidazoles, we planned to synthesize such molecules, which possibly combine favorable structural properties of both dithiocarbamate and benzimidazole moieties. **Aim:** To develop andevaluatebrassinin derivatives as chemo preventive agents. **Method:** The compounds 5(a-l) were prepared by stirring DMF (10 mL) with anhydrous potassium carbonate (0.01 moL), at room temperature for 5 minutes, and then corresponding amine derivatives (0.01 moL) were added, followed by addition of carbon disulphide (0.03 moL). The mixture was stirred for 30 minutes, after which the compound (4) was added and the completion of reaction was monitored by TLC. Once reaction completed the residue was extracted with ethylacetate, washed with water, dried over sodium sulphate, concentrated and subjected to purification by passing through silica gel, using a mixture of ethyl acetate and petroleum ether as eluents. **Results:** The synthesized compounds 5(a-l) were screened were characterized by IR, ^{1}HNMR and Mass spectroscopy. All the synthesized compounds were screened for invitro antimicrobial activity and antioxidant activity by using ampicillin, griseofulvin and ascorbic acid as standard drugs respectively.From the screening studies it was evident that the synthesized compounds 5f, 5g, 5k and 5l exhibited no activity against *E. Coli* at 4 μg/ml, when compared to standard drug.

However most of the compounds exhibited moderate antibacterial activity against the tested gram negative bacteria and no activity was found against gram positive bacteria. From screening results of synthesized compounds for antifungal activity against *PencilliumChrysogenum*, using griseofulvin as standard drug revealed that the compounds such as 5a, 5b, 5c, 5d, 5j, 5k and 5l exhibited no antifungal activity and rest of the compounds exhibited poor antifungal activity against tested organism. Antioxidant activity of the synthesized compounds was evaluated using DPPH method. Each experiment was performed, in triplicate. Methanol was used as blank solution and ascorbic acid as standard. All compounds, exhibited moderate antioxidant activity, when compared to standard ascorbic acid. Based on the deprived results of the synthesized molecules as antibacterial and antifungal agent, docking studies were performed as to find the possible chemotherapeutic target of these molecules; a similarity search was performed based on substructure in PubChem structures. Molecular docking of molecules into MEK-1 protein also showed promising results as these molecules showed superior docking compared to the co-crystallized ligand. The dock pose of molecule 5l into active site of MEK-1 protein, showed two hydrogen bond interactions with Leu74 and Asp152. **Conclusion**: We have synthesized a new series of benzimidazole dithiocarbamate derivatives, and screened for their antimicrobial and antioxidant activities, from the results it was observed that the synthesized derivatives exhibited poor antimicrobial and antioxidant activities. Docking studies indicating the molecules are more selective for anticancer targets, which is further evaluated.

Keywords: Benzimidazole, Dithiocarbamate, Antimicrobial, Antioxidant activity and Docking.

NACP 70

TELAPREVIR A PROTEASE INHIBITOR INHIBITS NOVEL CORONA VIRUS PROTEIN NCOV19: AN IN-SILICO APPROACH

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Abstract

Emerging viruses are across the globe are increasingly becoming a major threat to world health. Coronaviruses and in particular COVID19 are a notable example. Predominantly virulent forms have originated from their natural animal hosts and are currently posing as a threat to human communities worldwide. Coronaviruses consists of a genome that possesses a long RNA strand which is one of the largest amongst all RNA viruses known till date. The viral genome acts as a messenger RNA which when infects a cell, directs the synthesis of two long polyproteins that includes a replication/transcription complex which produces more RNA, structural proteins for the virus that helps in the development of new virions, and proteases. The two proteases play detrimental roles in dissecting the polyproteins into its functional forms. Among the two proteases, spike protease is essential for the replication of the virus.

In the present in-silico docking study using Auto Dock 4.2, we have evaluated the existing protease inhibitors for the inhibition of 2019-nCOV protease present in the novel coronavirus sourced from Wuhan, China. The 3D structure (6lu7) was obtained from the protein data bank and the 3D structures of the protease inhibitors were obtained from Pubchem.

Our results show that Telaprevir is highly effective in inhibiting 2019-nCOV spike protease compared to other protease inhibitors. The results obtained from the insilico studies can guide preformulation studies for developing a formulation of Telaprevirfor 2019-nCOV.

Keywords : Coronavirus, Autodock, Telaprevir, RNA virus, in-silico.

NACP 71

SYNTHESIS MOLECULAR MODELING AND ANTI-INFLAMMATORY ACTIVITY OF CHIFF BASES OF OXDIAZOLE DERIVATIVES

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Abstract

A series of five-member heterocyclic rings were synthesized by the reaction between benzoyl chloride and various chlolro-nitro-benzoyl chlorides and semi carbazide to form (C1- C7) compounds and was tested for their anti-inflammatory activity determined by rat-paw-oedema method. All the synthesis compounds have been characterized by 1HNMR, IR and Mass spectral data. The compounds were purified by column chromatography. All synthesized derivatives were determined by the carrageenan-induced rat-paw-oedema model for anti-inflammatory activity. The entire compound gives good response for the anti-inflammatory activity: [3-Chloro-N-[5-(3-Chloro-phenyl)-[1,3,4] oxadiazole-2yl] benzamide (C4), and [4-Nitro-N-[5-(4-Nitro-phenyl)-[1,3,4] oxadiazole-2yl] benzamide (C7). For this activity, Indomethacin was used as a standard drug and compared to new synthesized drugs. Some new synthesized drugs have shown better activities for the anti-inflammation.

Key Words: Oxadiazoles, Anti-inflammatory, Synthesis, Heterocyclic

NACP 72

ADVANCES IN CHALCONES WITH ANTICANCER ACTIVITIES

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Abstract

Chalcones are naturally occurring compounds exhibiting broad spectrum biological activities including anticancer activity through multiple mechanisms. Literature on anticancer chalcones highlights the employment of three prongestrate- gives, namely; structural manipulation of both aryl rings, replacement of aryl rings with heteroaryl scaffolds, molecular hybridization through conjugation with other pharmacologically interesting scaffolds for enhancement of anticancer properties. Methoxy substitution on both early rings (A and B) of the chalcones, depending upon their position in the aryl rings appears to influence anticancer and other activities. Similarly hetero cyclic rings either as ring A or B in chalcones, also influence the anticancer activity shown by this class of compounds. Hybrid chalcones formulated by chemically linking chalcones to other prominent anticancer scaffolds such as pyrrol [2,1-c] [1,4] benzodiazepines, benzothiazoles, imidazolones have demonstrated synergistic or additive pharmacological activities. The successful application of these three prolonged strategies for discovering novel anticancer agents based on chalcone scaffold has resulted in many novel and chemically diverse chalcones with potential therapeutic application for many types of cancer. This review summarizes the concerted efforts expanded on the design and development of anticancer chalcones recorded in recent literature.

Keywords: Anticancer, anticancer chalcones, antioxidants, antiproliferative activity, chalcones.

NACP 73

SYNTHESIS AND BIOLOGICAL EVALUATION OF NITROGEN CONTAINING HETERO-CYCLIC COMPOUNDS

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Abstract

Back ground: Thiadiazoles are an important class of heterocyclic system that exhibit variety of biological activities depending on their molecular structures. **Aim:** To synthesize thiadiazole derivatives using different types of aromatic / heterocyclic aldehydes, to characterize all new compounds by modern analytical methods such as IR.H1NMR and Mass Spectra, molecular properties and evaluated the compounds as biological agents. **Method:** The nitro benzoicacid in ethanol was mixed with solution of thiosemicarbazide followed by addition of few drops of sulphuric acid to get 5-(4-nitrophenyl)-1, 3,4-thiadiazole -2-amine(step-I).To this compound, different aromatic / hetero cyclic aldehydes were added and stirred for few minutes followed by addition of few drops of acid. The reaction was monitored by TLC and purified using column chromatography (step-II), i.e... 1-(1H-indol-3-yl)-N-(5-(4-nitro phenyl)-1,3, 4-thiadiazol-2-yl) methanimine. **Results:** All the synthesized compound derivatives evaluated for anti-bacterial activity by Agar cup plate method, Indole -3-carboxaldehyde and Thiophene-2-carboxaldehyde derivatives showed good activity against gram+ bacteria and gram- bacteria. Other compounds showed moderate activity. They were also evaluated for anti-fungal activity, 2,4-dichloro carboxaldehyde showed equipotent activity compared to standard drug fluconazole. Molecular properties were predicted by using various softwares. All compounds were found to be in conformity with Lipinski rule. They showed good pharmacokinetic and pharmacodynamics properties. **Conclusion:** All the synthesized compounds were characterized by using IR, H1NMR and Mass spectral analysis. Hetero cyclic derivatives showed potent antibacterial and antifungal activity. They exhibited good solubility and oral bioavailability criteria. The drug likeness score showed good bioavailability and permeability.

Key words: Thiadiazole, drug likeness, Lipinski rule, analytical methods and permeability.

NACP 74

BAKING SODA AS AN ANTICANCER DRUG

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Abstract

BACKGROUND: Sodium bicarbonate, commonly known as baking soda, is widely used in the clinic as an antacid for treating gastric hyperacidity, among other conditions. Chao et al have reported a clinical trial about targeting intra tumor lactic acidosis–transarterial chemoembolization. Based on conventional transarterial chemoembolization, the authors added a 5% sodium bicarbonate solution to cytotoxic drugs, resulting in a high local control rate. The explanation for the antitumor effects of sodium bicarbonate is related to acidosis in the tumor microenvironment. In this review, we summarize the findings from studies administering sodium bicarbonate alone or in combination with other anticancer therapies as cancer treatments, and discuss methods for safe and effective use of sodium bicarbonate in the clinic. **AIM** - To investigate the various effects of baking soda.**METHOD**: Treating the cell (acidosis) with the baking soda. **RESULTS:** Baking soda decrease the acidity of the tumour cells. **CONCLUSIONS:** The distinctive metabolic mode of solid tumors leads to acidity in the tumor microenvironment, which results in the activation of multiple factors contributing to tumor development. The most direct method to conquer the acidity is neutralization. Several in vivo experiments have revealed potential anticancer effects of sodium bicarbonate alone or in combination with other therapies. The use of TILA-TACE has confirmed that local application potentially represents an ideal administration method, and the combination of sodium bicarbonate with other anticancer therapies might be more effective. However, a large-scale clinical trial is necessary to test and verify this hypothesis and we hope it will be confirmed.

KEYWORDS- Baking soda (NaHCO3), Tumour cells, Neutralisation, acidisis, , chemoembolization, chemotheraphy etc.

NACP 75

IN-SILICO CHARACTERISATION, MOLECULAR DOCKING & ADME PREDICTION STUDIES ON TRIAZOLE DERIVATIVES AS POTENTIAL ANTI-CANCER AGENTS

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Abstract:

Background: Cancer is defined as the uncontrolled growth and spread of abnormal cells. In structure based discovery, if the identified compound shows any significant pharmacological activity, then it is subjected to further development process and studies. Triazoles are heterocyclic five membered ring structures with 3 nitrogens and 2 carbon atoms. Having wide spectrum of therapeutic activities.**Aim:** To perform in silico molecular docking and in-vitro anticancer studies of proposed 1,2,4-triazole derivatives for the determination of their anti cancer activity. **Method:** A series of ten triazole compounds with different substituents were drawn in ACD Lab Chem. Sketch software. The compounds that obeyed Lipinski rule of five are subjected for pharmacokinetic parameters prediction and docking analysis. Swiss dock ADME software is used for the prediction of Absorption, Distribution, Metabolism, and Elimination. Then the compounds were docked with target enzymes in Chimera software1.14 version. The molecular docking studies revealed favorable molecular interactions and binding energies. The compounds that showed good docking results were synthesized through wet lab synthesis and further preceded for *in vitro* anti-cancer studies. **Results:** Three compounds were proceeded for wet lab synthesis due to their good docking results and performed different In-vitro anticancer studies which were found to be having potential anti-cancer activity. **Conclusion:** The pharmacokinetic and docking studies conclude that the triazole compounds have potential as anti-cancer agents. The In-vitro anti cancer studies revealed that the triazole derivatives are having high potency of anticancer activity against pancreatic cell lines.

Key Words: Molinspiration, Swiss dock, Chimera, Neutral red reuptake assay, etc.

NACP 76

DOCKING STUDIES ON VARIOUS FLAVANOIDS USING HMG-CoA REDUCTASE AS ENZYME FOR THE ANTI-ATHEROSCLEROTIC ACTIVITY

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Abstract

Background: Molecular docking is a kind of bioinformatics modelling which involves in the interaction of two or more molecules to give the stable adduct. Depending upon the binding properties of ligand and target, it predicts the three dimensional structure of any complex of potential efficacy and more specificity. Atherosclerosis with heart attack or stroke is rapidly increasing throughout the world. It is generally recognized that natural products like flavonoids along with statins and HMG CoA reductase can supress the LDL oxidation and inflammatory progress in the artery wall i.e., atherosclerosis. **Aim:** To investigate the information obtained from the docking technique can be used to suggest the binding energy, free energy and stability of complexes. **Method:** Computational work was carried out on Ubtun Linux 12.0 and windows XP operating system. Molecular docking was performed by Autodoc 2.0 method implemented in Discovery Studio 2. Compounds used for study are acerosin, artocarpetin, cerrosillin, elliptone, eupalitin, hypolaetin, nepetin, nirurin, pedalitin, tephrosin etc.. All the docked molecules are analysed on the bases of binding energy and hydrogen bond interactions with active site binding residues. **Results:** Among all the flavonoids, Nirurin with binding energy- (-8.44 kcal/mol) & KI value – (653.47 nM), Tephrosin with binding energy – (-8.30kcal/mol) & KI value- (818.67 nM) are much suitable to reduce the LDL concentration in the body which helps to treat the atherosclerosis along with statins. **Conclusion:** Flavonoids on binding with HMG CoA Reductase along with statins will reduce the LDL concentration in the body and helps to prevent the atherosclerosis.

Keywords: Atherosclerosis, docking, LDL concentration, KI value, binding.

NACP 77

PYRITHIONE ATTENUATES ZINC-DEPENDENT β-CELL DEATH AND THE HYPERGLYCEMIA ASSOCIATED WITH EXPERIMENTAL TYPE I DIABETES IN MICE

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Abstract

Background: Zinc in the pancreas is co-released with insulin from β-cells reaching concentrations similar to those found in the vicinity of glutamatergic synapses. In the brain, the role of zinc in excitotoxic brain damage is well established. In contrast, its role in islet destruction during diabetes is poorly understood. **Aim:** To study the efficacy of zinc homeostatic proteins and an intracellular zinc chelator, pyrithione, in conferring resistance against zinc toxicity in pancreatic islets. We further assessed the ability of pyrithione to protect the islets in an experimental model of type I diabetes. **Methods:** Experimental study was carried out using in vivo chelation, immunohistochemistry, glucose tolerance test. **Results:** Chelation of zinc ions by pyrithione in vivo prevented onset of multiple low dose streptozotocin-induced diabetes, and hyperglycemia associated with this model. Furthermore, the glucose tolerance test score of multiple low dose streptozotocin mice pre-treated with pyrithione can be, statistically indistinguishable from that of untreated, control mice. **Conclusion:** Our results point to the potential utility of in vivo zinc chelation as a therapeutic strategy for treatment of idiopathic type I diabetes.

Keywords: Pyrithione, Zinc chelation, Diabetes

NACP 78

THE POTENT ANTIOXIDANT ACTIVITY OF *TRIBULUSTERRESTRIS*: A REVIEW

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Abstract

Background: Mitochondria generally know as energy house of cell. It combined with oxygen and glucose to produce ATP, carbon dioxide and water. It also produces reactive oxygen species (ROS) as a by-product of the metabolic process, which is highly reactive molecules contain uneven electron pair such assuperoxide (O_2^-), hydroxyl (OH^-) anions, and hydrogen peroxide (H_2O_2). ROS can participate in normal as well as pathological biochemical reactions and damage the cell membranes, proteins, and macromolecules. These lead to various diseases like cardiovascular disease, cancer, etc. In normal condition, body mechanisms produce natural antioxidant like superoxide dismutase, glutathione peroxidase to maintain the excess ROS. If the ROS and antioxidant balance does not maintain properly then intake of antioxidant is a single path to reduce the ROS. Many types of medicinal plant contain some phytochemicals which has significant antioxidant property. *Tribulusterrestris* is an important medicinal herb, belongs to the family Zygophyllaceae. It is mainly found in India and Srilanka. **Aim:** This articles aim to showcase various phytochemical constituents responsible for antioxidant activity of *tribulusterrestris* based on an extensive literature survey. **Method:** Articles and research papers were searched in Pubmed, Google Scholar and Research Gate. At first 120 papers were selected to read. Then 55 articles were selected for the study. **Result:** Various solvent extract of plant shows significant antioxidant activity. **Conclusion:** *Tribulusterrestris* is a reach source of active phytochemical constituents like saponins glycoside, flavonoids, polyphenols, etc. Polyphenol and flavonoids is main responsible for antioxidant activity.

Key word: *Tribulusterrestris*, ROS, Antioxidant Activity.

NACP 79

A COMPREHENSIVE REVIEW ON CHAMOMILE (MATRICARIA CHAMOMILLA L.)

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Abstract

Background: Chamomile (*Matricariachamomilla L.*) is consider as the most popular medicinal plant species from the Asteraceae family often referred to as the "star among medicinal species." Nowadays it is a highly favored and much used medicinal plant in folk and traditional medicine. Itsmultitherapeutic, cosmetic, and nutritional values have been established through years of traditional and scientific use and research. **Aim**: The main objective of this article is to briefly discuss the medicinal uses along with it's botany and cultivation techniques of Chamomile (*Matricariachamomilla L.*)**Methods**: Based on the recent publishes made within various sites of Google, Pubmed, Science direct dayabase, several informations were collected in order to frame a new review. Research with the database evaluations has successfully helped to sort out few of the unknown facts about Chamomile (*Matricariachamomilla L.*) and further works are about to get implemented. **Result:** Chamomile is a rich source of natural products, details on chemical constituents of essential oil and plant parts as well as their pharmacological properties are included. **Conclusion:** Furthermore, particular emphasis is given to the biochemistry, biotechnology, market demand, and trade of the plant. This is an attempt to compile and document information on different aspects of chamomile and highlight the need for research and development.

Keywords: Multi-therapeutic, traditional medicine, cultivation, medicinal plant, tissue culture.

NACP 80

ROLE OF CAPSID PROTEIN IN THE TREATMENT OF HIV: A REVIEW

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Abstract

Highly active anti-retroviral therapy (HAART) is the reliable anti-HIV-1 therapy as it prolongs survival and switches HIV-1 infection from a fatal disease to a chronic yet manageable one. Due to drug toxicity and the emergence of drug-resistant mutant strains in patients undergoing long-term therapy have meant that there is still a continual need for novel drugs that target alternative molecules in the HIV-1 life cycle. The HIV-1 Gag precursor protein is a multi-domain polyprotein that is proteolytically cleaved into the main, mature capsid protein; CA. CA has multifaceted roles during HIV-1 morphogenesis and is thus regarded as a promising target for future antiviral intervention. In this review, we describe the advances made in our understanding of the HIV-1 capsid structure and the key interactions involved during core assembly, and discuss how this and future knowledge will provide important structural insight for antiviral design

KEY WORDS: Capsid Protien, HIV, P24 Antigen, Inhibitors, Small molecules and peptides

NACP 81

FARNESOL AS A POTENTIAL INHIBITOR IN NEUROPATHOLOGY OF ALZHEIMER'S DISEASE: AN IN-SILICO STUDY

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Abstract

Objective: To estimate in-silico studies on farnesol as a potential inhibitor of Acetyl cholinesterase (AchE), Butyrylcholinesterase (BchE), and Angiotensin converting enzyme (ACE) in the treatment of Alzheimer's disease. **Method:** In the present in-silico study, bioactive terpene farnesol were analysed for their inhibitory role on Acetyl cholinesterase, Butyrylcholinesterase, and Angiotensin converting enzyme activity by molecular docking studies. The in-silico docking studies were carried out by using Accelrys Discovery Studio 4.1 client.**Results:** The CDOCKER energy of farnesol with Acetyl cholinesterase showed binding energy -32.06 kcal/mol whereas Galantamine(S) showed binding energy 0.364 kcal/mol. Farnesol with Butyrylcholinesterase showed binding energy -34.21kcal/mol whereas Tacrine(S) showed binding energy 12.60 kcal/mol. Farnesol with Angiotensin converting enzyme showed binding energy -33.12 kcal/mol whereas Lisinopril(S) showed binding energy 38.65 kcal/mol. **Conclusion:** The present study reported that the bioactive terpene farnesol have good binding interactions with Acetyl cholinesterase, Butyrylcholinesterase, Angiotensin converting enzyme when compared to the standard drugs Galantamine, Tacrine and Lisinopril respectively.

Keywords: Alzheimer's disease, in-silico study, Acetylcholinesterse, Butyrylcholinesterase, Angiotensin converting enzyme, Accelrys discovery studio 4.1 client.

NACP 84

A REVIEW ON PHYTOCHEMICAL & PHARMACOLOGICAL ACTIVITY OF REMARKABLE MEDICINAL PLANT SENNA OCCIDENTALIS (FABACEAE)

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Abstract

Background: Medicinal plants have been traditionally used to treat humans in various health problems since the ancient period. Herbal drugs are very popular due to their easy availability and they show fewer side effects than synthetic drugs. *Senna occidentalis* is one of the important medicinal plants which are being used from ancient time to till date for treating different health disorder. It is commonly known as Coffee Senna, which belongs to the family Fabaceae. It is mainly found in the tropical and sub-tropical regions of the world.

Aim: This article aims to review the pharmacological activity of *Senna occidentalis* based on an extensive literature survey. **Method**: An up to date (till June 2020) search was done in Google Scholar, Scopus, Web of Science, Springer Link, Research Gate Publication, Pubmed, Science Direct database with several keywords to select all the possible and informative evidence to be reviewed in this paper. The search yields 120 articles. After exclusion, a total of 57 articles were finally selected to perform the study. **Result**: *Senna occidentalis* is an important source of many active phytochemicals and nutrients i.e. alkaloids, phenols, flavonoids, glycosidic, tannins, terpenes, lignans, etc. Its shows major pharmacological activities such as anti-inflammatory, antioxidant, analgesic, antipyretic, antibacterial, antitumor, anti-arthritic, antidiabetic, anti-amnesic, anxiolytic, nephroprotective activity, anti-HIV, anti-eosinophilic. **Conclusion**: So, we could speculate that *Senna occidentalis* may be a good natural source of pharmacologically active constituents. It may be considered for the development of new herbal formulations against various diseases.

Key Words: *Sennaoccidentalis* , Antibacterial, Antitumor, Antidiabetic.

NACP 83

A COMPREHENSIVE REVIEW ON *COMMELINA BENGHALENSIS* (COMMELINACEAE): THE WONDER PLANT

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Abstract

Background: Life is impossible without widespread use of plants and plant products. In the present situation, as the whole world is suffering from the COVID-19 pandemic, it is important to boost up our immunity power to survive. Many herbal plants which play an important role to improve our immunity power are readily available and have fewer side effects. *Commelinabenghalensis* commonly known as Benghal dayflower belongs to the family Commelinaceae and it is mainly found in tropical Asia and Africa. **Aim:** The main objective of this article is to showcase various phytochemical & pharmacologicalactivities of *Commelinabenghalensis* based on different literature survey. **Methods**: An up to date (till July 2020) search was done in Google Scholar, Pubmed, and Science Direct database with several keywords to select all the possible and informative evidence to be reviewed in this paper. The search yields 127 articles. After exclusion, a total of 43 articles were finally selected to perform the study. **Result:** The presence of various active phytochemical constituents such as polyphenols, flavonoids, tannins, carbohydrates, saponins, alkaloids etc. it shows different pharmacological activities like anti-inflammatory, anti-microbial, anti-cancer, sedative, analgesic, immunomodulatory, hepatoprotective, anti-depressant, anti-viral, antioxidant, antidiarrheal, etc. **Conclusions:** So, we could conclude that *Commelina benghalensis* may be a good natural source of pharmacologically active constituents. Further research and clinical trials have to be carried out to commercialize the potential pharmaceutical uses of the plant**.**

Key words: *Commelina benghalensis*, Anti-cancer, Anti-viral, Anti-microbial, Anti-depressant

NACP 84

DEVELOPMENT ON THE SYNTHESIS TECHNIQUES AND PROPERTIES OF GRAPHENE DERIVATIVES

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Abstract

Graphene, an atomically thin two-dimensional carbonaceous nanomaterial, has attracted tremendous research interest in both scientific studies and technological development thanks to its exceptional electric, mechanical, and chemical properties. Since the invention of graphene, many efforts are done to switch the graphene structure for integrating this promising material to vast applications. Specific attention is dedicated to the recent progresses on the event of grapheme derivatives like graphene oxide, porous graphene/graphene oxide, reduced graphene oxide, and graphene quantum dots. During this chapter, the definition, intrinsic properties, and various approaches for the synthesis of graphene derivatives supported top-down and bottom-up approaches are discussed. Furthermore, the related works on the preparation of graphene derivatives via chemical oxidation method are included. Additionally, the pitted and peeled out mechanism of the formation of graphene derivatives was also highlighted, and this can cause a much better understanding of the physicochemical properties of graphene derivatives.

Keywords: Graphene oxide, Nanographene oxide, Graphene oxide quantum. dot Chemical oxidation. Graphite nanofibers

NACP 85

A STUDY ON CHEM INFORMATICSAND IT'S APPLICATIONS ON MODERN DRUG DISCOVERY

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Abstract

The discovery of new chemical entities exhibits a paradigm shift by application of novel techniques like combinatorial chemistry and high-throughput screening generating huge amount of data. This data and information can only be managed and made accessible by storing them in databases. Such problems in chemistry require use of chem informatics methods. Chemo informatics is the application of informatics methods to solve chemical problems. It covers the application of computer assisted methods to chemical problems like information storage and retrieval, the prediction of physical, chemical or biological properties of compounds, spectra simulation, structure elucidation, reaction modeling, synthesis planning and drug design. Chemo informatics methods have successfully been applied in all fields of chemistry. The future will bring a rapid expansion of the use of Chemo informatics to our further understanding of chemistry and to process the flood of chemical information.

Keywords: Chemo informatics, Graph theory, SMILES, Similarity, Bioinformatics

NACP 86

REPURPOSING APPROACH FOR DRUG DISCOVERY AGAINST COVID-19

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Abstract

WHO declared the current outbreak of COVID-19 pandemic as a serious public health emergency. Till date, there are no such approved drugs available for the complete treatment of COVID-19. The World Health Organization (WHO), European Medicines Agency (EMA),US Food and Drug Administration (FDA),and the Chinese government and drug manufacturers were coordinating with academic and industry researchers to speed development of vaccines, antiviral drugs, and post-infection therapies. It has, therefore, become a challenging task to control and prevent spread of this deadly disease. In view of this, the development of new therapeutics is an urgent requirement to combat this devastating infectious disease. Drug repurposing is an emerging strategy of drug discovery which remains to be an effective and practical approach in search for novel therapeutics to face the global challenge and/ or to fight against the deadly disease. The objective of our investigation was to identify bioactive molecules having potential as anti-COVID-19 agents by drug repurposing of plant-derived phytochemicals. The in-silico screening of virtual library of phytochemical was performed against SARS-CoV-2 using various protein molecules by multi target-based molecular docking method. Results reveal that some polyphenolic phytochemicals possess antiviral potential against SARS-CoV-2. However, finally it is inferred that polyphenolic phytochemicals can be further developed as novel anti-COVID-19 agents for combating the deadly COVID-19 disease.

Key words: COVID-19, Drug repurposing, Phytochemicals, Drug Discovery

NACP 87

A PHYTOCHEMICAL AND PHARMACOLOGICAL REVIEW ON *CATHARANTHUS ROSEUS* (APOCYNACEAE): THE MIRACLE PLANT.

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Abstract

Background: In the very beginning of life, humans used to acquire all the necessary resources likeshelter, food, fuelling materials etc. from the trees. Afterwards, plants also began to use as medicine sources for its wide compatibility with most humans. And thus, the 'Ayurveda'came in the picture. Itis the Indian traditional system of medicine formation from the plants. In this Ayurveda, *Catharanthusroseus*is a well-known herbal plant of family Apocynaceae. It is a warmer region plant with varyingpink to purple flowers and oppositely arranged pairs of leaves.**Aim:** The ultimate goal of this article is to exhibit the phytochemical& pharmacological activities of*Catharanthusroseus*according to several literature surveys. **Methods:** Till date (July 2020), several keywords are used to obtain most possible information fromPubMed, Wikipedia, Science Direct Database, and Google Scholar; which are utilised in this paper. After exclusion from a total of 90 articles, 32 were nominated to carry out the study. **Result:** Till now, from this plant, nearly 130 alkaloids are obtained; mainly Ajmalcine, Vinceine,Resperine, Vincristine, Vinblastine and Raubasin which are used for treatment of various type of cancer such as Hodgkin's disease, breast cancer, skin cancer and lymphoblastic leukemia etc. Apart from all these it has anti-diabetic, anti-oxidant, anti-bacterial, anti-ulcer and anti-diarrheal properties. **Conclusion:** As an inference we can say that,*Catharanthusroseus*is a good natural source of severalefficient alkaloids with immense pharmacological uses. It has much more medicinal value which needs to be explored extensively.

KEY WORDS: *Catharanthusroseus*, Vincristine, Vinblastine, Anti-cancer, Anti-diabetic.

NACP 88

ANTIBACTERIAL AND ANTIOXIDANT ACTIVITIES OF LEAVES CALLI OF AN ETHNOMEDICINAL HERB *ACHRANTHES ASPERA* L.

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Abstract

Background: Free radicals formation during the metabolism can be cause of severe diseases like cancer, cardiovascular disease etc. Natural antioxidants and secondary metabolites from plants play important role in prevention and treatment of diseases. **Aim:** In this study, we investigated the antibacterial and antioxidant activities of leaves calli from *Achranthesaspera* L. **Method:** Profuse callus was obtained on MS medium supplemented with MS + 2,4-D (1.6mg/L) + NAA (0.3 mg/L) under *in vitro* conditions from leaves explants. Four pathogenic bacterial strains (*Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa*) were used for determining the antibacterial activity of callus extracts. The antioxidant activity was determined by DPPH liberated radical rummaging activity, Ferric diminishing control determination and Hydrogen peroxide rummaging activity. **Result:** The ethanol callus extract of *A. aspera*L. was found to be more effective in inhibiting all the pathogenic strains. maximumradical scavenging activity (84.39 %) with IC50 value (0.872 mg/ml), ferric reducing activity(22.52 µg/g) and hydrogen peroxide rummaging activity (75.06%) with IC50(76.53 µg/ml) were observed in methanol extract of leaves callus supplemented with MS + 2, 4-D (1.6mg/L) + NAA (0.30 mg/L).The protocol for callus production is described. **Conclusion:** It was concluded that Antibacterial and antioxidant activities of leaves Calli were found more than extract of intact plant.

Keywords: antioxidant activity, callus, leaves explants, antibacterial activity, secondary metabolites.

NACP 89

PHYTOCHEMICAL CONSTITUENTS AND DIVERS PHARMACOLOGICAL IMPORTANCE OF *TINOSPORA CORDIFOLIA* : A PHYTOPHARMACOLOGICAL REVIEW

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Abstract

Background: Medicinal plants play many important roles in human life for treating different healthdisorders since the ancient period to till now. Herbal drugs are very popular due to their easy availability and they show fewer side effects than synthetic drugs. *Tinosporacordifolia* is a very useful & have versatile activities. The common name of *Tinosporacordifolia* is "Guduchi" belongs to the family Menispermaceae. It is marked as a precious plant of the Indian system of medicine. It has a huge impact on Indian Ayurveda Shastra. It is mainly found in different states of India like Assam, Bihar, Karnataka, Kerala and West Bengal.**Method:** The review article is based on various international literature surveys. **Aim:** The main objective of this review article is to emphasize different phytochemicals andpharmacological activities of *Tinosporacordifolia*. **Result:** Phytochemical studies showed that "Guduchi" is a rich source of different active chemicalconstituents like alkaloids, lignans, diterpenoid lactones, glycoside, sesquiterpenoids, phenolics, polysaccharide, cordifoliosidesyringin, cordifol, heptacosanol, columbin, and ***β***-sitosterol, etc. Major pharmacological activities presented by this plant are antioxidant, hypolipidemic effect, hepatic disorder, anticancer, anti-HIV potential, antidiabetic, antitoxic, wound healing, immunomodulating activity, systemic infection, anti-microbial, anti-viral, anti-osteoporotic effects, etc. **Conclusion:** Therefore, it can be concluded that the*Tinosporacordifolia*is an important source ofpharmacologically active ingredients which could be used for the new herbal formulations development. Though, detailed study and experiments are essential to prove the safety profile of this important medicinal plant.

Key words: Tinosporacordifolia, Anticancer, Anti-microbial, Antioxidant, Hepatic disorder.

NACP 90

3D-QSAR

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Abstract

QSAR is used in the development of relationship between physicochemical properties of chemical substances and their biological activities for prediction of the activities of new chemical entities. 3D-QSAR exploits the 3D properties of the ligands to predict their biological activities using chemometric techniques. It serves as a valuable predictive tool in the design of pharmaceuticals and agrochemicals.3D-QSAR decreases the number of compounds to be synthesized in drug development process by facilitating the selection of the most appropriate candidates.

Keywords: QSAR, chemometric techniques, agrochemicals.

NACP 91

DEVELOPMENT AND INVITRO EVALUATION OF SOLID NANO PARTICLES LOADED TOPICAL GEL CONTAINING COMBINATION OF DRUGS IN THE TREATMENT OF PSORIASIS

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Abstract:

Aim: The aim of present study was to formulation of Solid Nano Particles (SLNs) based topical gel in the treatment of psoriasis **Method:** Solid Nano Particles (SLNs) lipid carrier containg solid lipid and liquid lipids are preparing a new type of lipid particles by using homogenization method .in this method solvent is diffused by high pressure. This method is using to improved drug loading capacity is the main advantage and also to improve drug release properties.GMS (Glyceryl monostearate. It is lipid base Tween 80, Poloxamer 188, and Cremophor RH40 used as stabilizer. Liquid lipid is Capmul (MCMC8) and surfactant is Cetosteryl alcohol. SNLs Dispersion was characterized by Zeta potential, Analysis of particle size, differential scanning colorimetery, SEM (scanning electron microscopy and study of Invitro drug release. **Results:** Prepared (SLNs) loaded with Tacrolimus and Finasteride were shoes spherical shape with particles size 256.2nm, PDI (poly dispersity index) 0.293, Zeta potential -19.9MV, and drug entrapments efficiency is 84.16% respectively. The result of (DSC) differential scanning Calorimetry dispersed (SLNs) showed drug in a crystalline nature. Drug release of optimized formulation its shows invitro drug release studies batch F4 8.21%, 84.32% at 1hr and 8hrs respectively. Optimized formulation (F4) exhibits a spherical shape particles and surface of the particles is smooth. **Conclusion:** the result of optimized formula(F4) it indicates that successfully prepare SNLs with the Tacrolimus and Finasteride topical gel to improved drug loading capacity and drug release properties .the present result to conclusion that be a treatment of psoriasis by using nanogel for the topical therapy to treat the psoriasis disease.

Key words: Solvent diffusion method, Tacrolimus, Finasteride, Nanogel, Solid lipid nano carrier.

NACP 92

RECENT ADVANCES IN MICRO AND NANO DRUG DELIVERY SYSTEMS

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Abstract

Nano medicine and nano delivery systems are a relatively new but rapidly developing science where materials in the nanoscale range are employed to serve as means of diagnostic tools or to deliver therapeutic agents to specific targeted sites in a controlled manner. Nanotechnology offers multiple benefits in treating chronic human diseases by site- specific, and target-oriented delivery of precise medicines. Recently, there are a number of outstanding applications of the nano medicine (chemotherapeutic agents, biological agents, immunotherapeutic agents etc.) in the treatment of various diseases. The current review, presents an updated summary of recent advances in the field of nano medicines and nano based drug delivery systems through comprehensive scrutiny of the discovery and application of nano materials in improving both the efficacy of novel and old drugs (e.g., natural products) and selective diagnosis through disease marker molecules. The opportunities and challenges of nano medicines in drug delivery from synthetic/natural sources to their clinical applications are also discussed. In addition, we have included information regarding the trends and perspectives in nano medicine area.

Keywords: anti-biofilm activity; microbial biofilms; nanotechnology systems

NACP 93

FORMULATION & EVALUATION OF SULPHONYLUREA DRUG OF 'GLICLAZIDE' SR TABLETS FOR ANTIDIABETIC ACTIVITY

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Abstract:

The main objective of the study is recent advances in Sustained Release Drug Delivery System (SRDDS) aims to enhance the safety and efficacy of drug molecules by formulating a convenient dosage form for administration and to achieve better patient compliance. Several MR formulations were designed in-vitro drug release profile was assessed by a dissolution test. For pharmacokinetic analysis concentrations of Gliclazide in plasma were determined by a validated IR method. Our study proposed that results of a reduction in blood glucose. It may be assumed that reduce in glycemia in healthy subjects might not be a suitable factor for characterizing anti-diabetic drugs**. Method & Materials:** Gliclazide tablet is prepared by the wet granulation method.

Result & Discussion: From the result, it is concluded that there was no interference in the functional groups as the principal peak of the drug Gliclazide was found to be unaltered in the drug-polymer physical mixture indicating that they were compatible chemically. The granules from the different formulation are evaluated for angle of repose between 32.16±0.90 to 35.16±1.10, bulk density 0.49±0.01 to 0.57±0.02 g/cm3, tapped density between 0.066±0.01 to 0.72±0.02 g/cm3, compressibility index between 14.01±3.10 to 28.16±1.36, Hausner ratio between 1.18±0.04 to 1.39±0.02, lower Hausner's ratio (<1.25) indicate better flow properties than higher one (>1.25) Bulk density was found to Hausner's ratio was found to be between 1.18±0.04 to 1.39±0.02, lower Hausner's ratio (<1.25) indicate better flow properties than higher one (>1.25) and Compressibility index was found to be between 14.01±3.10 to 28.16±1.36. The *in vitro* result of all the formulations was obtained by dissolution testing and similarity factors value was calculated. As Gliclazide has solubility in methanol, the calibration curve was taken by the solubilizing drugs in methanol. Gliclazide API showed the main peak in methanol at 226nm. As Gliclazide is insoluble in water, methanol was used to solubilise Gliclazide and then the volume was made up with

water.Animals injected with STZ gained significantly less weight compared to age matched controls (mean weight diabetic 233.78±4.16g, n= 15 vs controls 273.16±4.16g, n= 11, $p<0.0001$). However we found to significant correlation between the body weight and maximal responses or sensitive to the vasoactive agents in either group of rats. The average blood glucose concentrations (fasting and non-fasting) were significantly elevated in STZ induced diabetic rats ($p<0.0001$; 10.4±0.4 and 16.6±1.1mM, n=15) compared to those (4.3±0.03 and 4.7±0.18mM, n=11) in age-matched controls. It shows the significant results when give the Gliclazide sustained release tablet.

Keywords: Gliclazide, SR, Tablets, pharmacokinetic study**.**

NACP 94

PRE-FORMULATION STUDIES FOR THE DEVELOPMENT OF LIPOSOME BASED SUSTAINED RELEASEDELIVERY SYSTEM FOR ANTICANCER DRUG

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Abstract

To address the disadvantages of traditional drug delivery methods, there are several approaches available for the design and production of formulations for extended- release drug delivery. Such drug delivery systems are mainly intended to enhance disease control by altering the pharmacokinetic profiles of therapeutic agents usually administered as traditional tablets or capsules. Preformulation is a study which deals with the structure for the combination of drug with pharmaceutical ingredients in dosage form manufacturing. The analysis of preformulation is to create the elegant dosage form by determining the kinetic rate profile, compatibility with the other ingredients, defining the new drug's physicochemical parameter and polymorphism. The pre-formulation also provides details on the organoleptic property, solubility, melting point and drug-related partition coefficient, drug stability, drug absorbance, and analysis of FTIR among these properties. As the 6-mercaptopurine is a very powerful medication, this medication is used by many researchers in their work. This research paper helps those people who want to use 6-mercaptopurin for development of new formulation related to this drug.

Keywords: Preformulation, kinetic rate profile, FTIR.

NACP 95

NANO DRUG DELIVERY SYSTEM IN CANCER THERAPY

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Abstract

Nanoparticles, with their size range (1- 100 nm) that corresponds to basic biological material such as DNA, vastly increased surface area (100 m^2/g) and unique mechanical, electronic, photonic and magnetic properties are projected to have a wide range of applications from drug and gene delivery to biomedical imaging and more recently to personalized medicine. The major advantages of using nano materials as a carrier for anticancer agents are the possibility of targeted delivery to the tumour, tumour imaging, their ability to hold thousands of molecules of drugs and also their ability to overcome solubility, stability and resistance issues. Currently, there are several nanotechnology- enabled diagnostic and therapeutic agents undergoing clinical trials and few are already approved by the FDA. Targeted delivery of anti cancer agents is achieved by exploiting a unique characteristic of the tumour cells called " the Enhanced Permeation and Retention Effect (EPR effect). In addition to this passive targeting based mainly on size, the nanoparticle surface may be modified with a variety of ligands that would interact with specific receptors over- expressed on the surface of the tumour cells, thus imparting specificity for active targeting. Although the nanomedicines have numerous advantages compared to conventional chemotherapy, there are concerns about their potential for toxicity to patients and to environment in addition to the high cost of production and premature drug release. On the other hand, nanotechnology offers the opportunity to reformulate the discontinued drugs because of poor bioavailability, lack of selectivity to desired target or extreme toxicity.

Keywords: targeted delivery, nano particles, anti cancer drugs.

NACP 96

HUMAN ON A CHIP: A NEW ERA OF DEVELOPMENT

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Abstract

As technology has progressed, so do ailments have enormously augmented which alarms the mandate for newer medicines. The traditional methods of Petri dishes and animal testing are outdated due to their lack of precision and reproducibility. Microfluidic cell culture supports us to recreate the smallest functional unit of cells which withstands in the dynamic environment and interacts with other cell types. This technique is similar to computer chip manufacturing where the organ structures are created at a scale appropriate to both the cells and their environment. Several studies have so far done with Human microchip. The fluidic channels which consist of the porous flexible membrane where the human cells are kept, beneath that layer are the capillary cells and mechanical force is provided to create the tension similar to the human body. This microchip assists to study types of diseases, the immune response of our body along with potential innovative treatments. The fluidity links the cells together which begins to interconnect multiple different chips together to form a virtual 'human on a chip'. The kinetic and dynamic studies of drugs can thus be assessed. This could help with clinical trials, to study radiation exposure, bioterrorism, chemical testing, and cosmetics and which makes it a revolutionary transformation. This method is valuable for molecular studies, its mechanisms of action, toxicity testing and biomarker identification. The individual variances towards drugs have always created a muddle, personalized chip for each person with their stem cells helps to individualize drug therapy that would improve the therapeutic outcome and reduces mortality rate.

Keywords: Human cells, microfluidic cell culture, microchip, personalized chip

NACP 97

FORMULATION DEVELOPMENT, *EX VIVO* EVALUATION, SKIN IRRITATION AND PERMEATION KINETIC STUDIES OF NANOPRONIOSOMAL GEL OF LOSARTAN POTASSIUM FOR THE TREATMENT OF HYPERTENSION

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Abstract

Background: Hypertension is a chronic medical condition in which elevated blood pressure leads to shortened life expectancy unless appropriately treated. It can be treated by Losartan potassium nanoproniosomal gel formulation through transdermal delivery. **Aim:** The transdermal nanoproniosomal gel of Losartan potassium was prepared for the treatment of hypertension that is capable of efficiently delivering the entrapped drug over extended periods of time and to provide better bioavailability. **Methods:** The nanoproniosomal gel of losartan potassium was formulated by Lecithin, Cholesterol, Non-ionic surfactants using Coacervation-phase separation method. The physical mixture of drug, lecithin and cholesterol were subjected to compatibility study using FTIR spectroscopy. The prepared gels were evaluated for determination of pH, viscosity, vesicle size, rate of spontaneity, encapsulation efficiency, zeta potential, *ex vitro* skin permeation studies, skin irritation test and stability studies. **Results:** The physical characterization of nanoproniosomal gels was found to be within the acceptable limits. The *ex vivo* skin permeation studies showed the cumulative permeation of 47.25 % to 82.49 % through the albino rat skin in 24 hrs for all the formulations which indicate the zero-order drug permeation with diffusion, non-fickian release as the possible mechanisms of drug release. Among all formulations, NLPG2 was selected as best formulation because it showed better characteristics than other formulations in several aspects. The formulation NLPG2 showed the highest transdermal flux (28.67 $\mu g/cm^2/h$), with an enhancement ratio of 2.87 when compared to other formulations. **Conclusion:** The formulation NLPG2 is an efficient transdermal therapeutic system for the delivery of a drug and it is suitable for once a day controlled release formulation.

KEY WORDS: Cholesterol, Lecithin, Losartan Potassium, Permeation studies, Proniosomal gel, Nonionic surfactants, Transdermal delivery.

NACP 99

SOLUBILITY ENCHANCEMENT OF POORLY WATER SOLUBLE ANTIHYPERTENSIVE DRUGS BY USING DIFFERENT POLYMERS

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Abstract

Background: Drugs with poor water solubility cause slow dissolution rates generally show erratic and in complete absorption leading to low Bioavailability. It is recognized that solubility enhancing methods used to solve bioavailability problems **Aim:** The aim of this study is to increase the solubility of poorly water soluble antihypertensive drug by using different methods by various polymers. **Method:** Lercanidipine Hydrochloride. It is a BCS class II antihypertensive drug by using different methods like solid dispersion method, Melting fusion technique and physical method by various polymers like poloxamer,HPMCK4M,PVPK30 in different drug-polymer ratios(1:1,1:3,1:5,1:7) were formulated and analyzed. **Results**: The prepared formulations were evaluated for interaction study by FTIR, IR, DSC.The results showed no interation between the drug and polymer. **Conclusion:** It is confined from the obtained results that solid dispersions prepared by poloxamer in 1:5 ratio shows increase solubility, dissolution rate 96.4% thus significantly increases.

Key words: Bioavailability, Antihypertensive drug, solid dispersion method, Polymers.

NACP 99

ROLE OF NANOTECHNOLOGY: STRATEGIES IN VACCINE DEVELOPMENT OF 2019-nCoV

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ABSTRACT

Background: The current global health threat by the novel coronavirus disease 2019 (COVID-19) requires an urgent deployment of advanced therapeutic options available. The role of nanotechnology is highly relevant to counter this "virus" nano enemy. **Aim**: To develop the advanced nanotechnology for COVID-19 therapeutics and vaccine research **Methods:** Nano intervention is discussed in terms of designing effective nanocarriers to counter the conventional limitations of antiviral and biological therapeutics. This strategy directs the safe and effective delivery of available therapeutic options using engineered nano carriers, blocking the initial interactions of viral spike glycoprotein with host cell surface receptors, and disruption of virion construction. Controlling and eliminating the spread and reoccurrence of this pandemic demands a safe and effective vaccine strategy.Nanocarriers have potential to design risk-free and effective immunization strategies for severe acute respiratory syndrome coronavirus 2 vaccine candidates such as protein constructs and nucleic acids. We discuss recent as well as ongoing nanotechnology-based therapeutic and prophylactic strategies to fight against this pandemic, outlining the key areas for nanoscientists to step in. **Result:** The journey of COVID-19 vaccine development is very impressive and involves high-tech platforms such as viral vectors, antigen carriers, and delivery technology. A mRNA-based vaccine employing nanoparticle(LNPs) delivery is already in clinical trials, whereas another vaccine candidate in the clinical phase is using electroporation technology for the intradermal administration of DNA plasmid. **Conclusion**: Rational designing of nanocarrier-based vaccine is equally important for its clinical success.these technologies and play a frontline role in tackling thisoutbreak.

Keywords: Life cycle, patho, structure of SARS Cov 2, nanomedicine strategies , therapeutics development, vaccine development.

NACP 100

NANOSTIMULATORS IN STEMCELL BASED THERAPY FOR TISSUE REPAIR IN PERIPHERAL ARTERY DISEASE

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Abstract

Tissue necrosis occurs in peripheral artery disease as the oxygen supply to the tissue is depleted. Researchers at University of Illinosis at Urbana Champaign have developed new procedure, which calm the inflammation and help self regeneration of necrotised tissue with the help of stem cells derived from the adipose tissue. These steam cells improves blood supply.

Keywords: self regeneration, stem cells, blood supply.

NACP 101

GENETICALLY MODIFIED ORGANISMS

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Abstract

Genetically modified organisms are organisms that are altered in a way that does not occur naturally by mating and natural recombination. A wide variety of organisms have been genetically modified from animals to plants and microorganisms. Creating a genetically modified organism is a multi-step process. Herbert Boyer and Stanley Cohen made modified organism in 1973. Genetically modified foods are developed and marketed because there is some perceived advantage either to the producer or consumer of these foods. This is meant to translate into a product with a lower price, greater benefit in terms of durability or nutritional value or both. Genetically modified foods can potentially solve many hunger and malnutrition problems in the world, as well as help to protectand preserve the environment by increasing yields and reducing reliance upon chemical pesticides and herbicides. Genetically modified animals have opened a new way in the study of physiology, disease process, increased precision of pathogenesis and treatment studies. Transgenic animals offer improved therapy to patients with conditions that currently have poor or ineffective treatments.

Key Words: Recombinant, Genetically modified, Malnutrition, Transgenic.

NACP 104

NANO COCOONS – BIO INSPIRED NOVEL DRUG DELIVERY SYSTEM

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Abstract

Cancer is one of the major causes of deaths. Since every conventional treatment of cancer have some limitations, the focus propelled onto Nano particle-based therapy. Nanotechnology is rapidly growing field which has a remarkable progress. This system is used for the diagnosis and treatment of various human diseases. Bio-inspired nanoparticles mimic the natural components of body and are more biocompatible and less toxic. In these days DNA-based nanotechnology has proved that it gives efficient ways to treat cancer. DNA-based Nano cocoons are self-assembled and self degradable, made of only single strand of DNA by rolling amplification technique which gives promising results in treating cancer cells. It targets and tricks the cancer cell and enters the cell through Folic acid receptors. The cocoon enters the endosomes of Cancer cells where pH triggered degradation occurs. This releases the drug load, which accumulates in the nucleus of Cancer cells. Anti-cancer drugs like doxorubicin, camptothecin and other protein and nucleic acid materials can be loaded. This Nano cocoons have small size, enhanced permeability, retention and drug load, stability, ease of manufacturing and functioning, on addition of particular agents it is also helpful in bio-sensing, bio-imaging and diagnosis.

Keywords: Nanotechnology, Nano cocoons, DNA, anticancer, doxorubicin

NACP 103

BIOFILM FORMATION AS A MECHANISM OF RESISTANCE AND THE VIRULENCE FACTORS OF UROPATHOGENIC E.coli - A REVIEW

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Abstract

One of the most common infections among humans are UTIs. It is estimated that about 40% of women and 12% of men experience a minimum one symptomatic UTI episode during their lifetimes. UTIs comprise of about 40% of all HAI and 50% of bacterial infections. UTIs are clinically divided into complicated or uncomplicated. Among the bacterial species involved in UTIs, uropathogenic Escherichia coli strains (UPEC) are the most common. UPEC account for about 80% of uncomplicated UTIs, 95% of community-acquired infections, and 50% of HAI.

UPEC is a heterogeneous group of extraintestinal pathogenic E. coli (ExPEC) that seem to originate from the gut. Within the intestine, UPEC rarely cause any complications and exist in a beneficial symbiotic relationship with intestinal microflora. Formation of biofilm further complicates the infection and increases the dwelling of significant number of cells within a biofilm which are more tolerant to antibiotics than those cells that grow planktonically. Biofilm formation has been associated with medical devices including catheters, ventilators, contact lenses and their treatment is difficult. Escherichia coli biofilm formation involves few steps such as initial adhesion, early development, maturation and dispersion. Thirty articles were selected from the last five years 2015-2020 using the PUBMED search engine using the keywords - E.coli ,resistance ,biofilm , virulence factors. The mechanism of biofilm formation by E.coli was reviewed and the virulence factors which lead to such mechanism was understood clearly.

Keyboard: Escherichia coli strains, UTI.

NACP 104

STUDY OF NATURAL POLYMERS TO DEVELOP A MODIFIED RELEASE DOSAGE FORM

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Abstract

Background : Abacavir sulphate is a potent nucleoside reverse transcriptase inhibitor used in the treatment of AIDS. It is a hydrophilic molecule having a very short half-life of 1-2 hours which makes the repetative administration of the drug. Hence, there is a need to modified its release by preparing a formulation which extends its release for a longer period of time. Thus, reduce its dosing frequency.

Aim: The objective of this study was to see the effect and the release profile of a modified releasedosageformbyusingdifferenthydrophilicnaturalpolymersindifferentratioswiththe drug (drug : polymer = 1:1, 1:2) using matrix diffusiontechnology.

Method: A sustained release tablet was prepared by direct compression method taking abacavirsulphate as a drug model to overcome its short half-life using a 12mm tablet punch size. Drug release modifying natural polymers used were Trigonellafoenum-graecum mucilage, and guar gum further whose release was compared.

In vitro dissolution studies were performed using USP type II Paddle apparatus taking 900 ml of simulated gastricfluid (SGF–pH1.2)at37°C±0.5°C. Aliquotswerewithdrawnatperiodic time intervals, and were assessed for drugrelease.

Results and Discussion: Itwasfoundthattheratioof1:1and1:2ofdrug:Trigonellafoenum-graecum mucilage respectively shows 90% - 95% of its drug release within an 1 hour time period while using the same ratio of drug with guar gum, and combination of guar gum and Trigonella foenum-graecum (1:1 respectively) shows a similar and desired drug release overa 24 hour period. Further higher proportion of the polymer guar gum retarded the drug release and did not provide the desired drug release after 24hours.

Conclusion: It could be concluded from the study that the mucilage obtained from natural

source (Trigonella foenum-graecum) was not found to be a better release retardant but can act as a better disintegrant and other natural gum (guar gum) was found to be a better release retardant.

Keywords: Trigonellafoenum-graecum, matrix diffusion, drug release, guar gum, abacavirsulphate.

NACP 105

NANO MAGNETIC MEDICAL SENSORS ANDTREATMENT METHODOLOGIES

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Abstract

Background: The sensing, detecting, imaging and measurements of magnetic nanoparticles in the human body is a vibrant area of advancing technology.

Aim: potential applications cover a variety of therapies and diagnoses, including in vitro magnetic separation assays, targeted delivery of the therapeutic drugs ,genes and radionuclides, radio frequency methods for the catabolism of tumours via hyperthermia andcontrast enhancement agents for magnetic resonance imaging.

Conclusion: To reduce the amount of systemic distribution of the cytotoxic drug, thus reducing the associated side -effects.

Key words: Nano magnetic medical sensors ,enhancement agents .

NACP 106

RHEUMATOID ARTHRITIS – CURRENT INSIGHTS

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Abstract

Rheumatoid arthritis (RA) is a chronic inflammatory condition that affects the joints. It is characterized by pain, inflammation, swelling and joint damage in laterstages. Butearlydetection and diagnosis makes the treatment effective. The treatment includes medications, physiotherapy, herbal medicines, dietary supplements and surgery for those who do not respond to medications. The conventional medication includes DMARDs, NSAIDs, Biologics and Steroids. Since there is no permanent cure, the medication needs to be continued for a long time. The long term use of these medications is associated with side-effects like gastro-intestinal bleeding, high blood pressure, liver damage and so on. Even surgery is involved with risk factors. To avoid these and makeaneffectivetreatment,scientistsareworkinguponresearchideasonnanotechnology(nano-medicines), biotechnology (gene therapy and stem therapy), pharmaceutical technology (making targeted moiety), in-silico drug development (drug moiety action against particular enzymes or development of new drug moiety), formulation technology (nano-formulations, herbal formulations), artificial neural networking (diagnosis and checking drug action), organ on chip (tissue engineering on-chip) and so forth. These technologies will serve as the best option for reducing the challenges faced by RA patients. This review presentation discusses the current strategies and advancements in the management ofRA.

Key words: Rheumatoid Arthritis; Nanotechnology; Biotechnology; Artificial intelligence; Proteomics; Telepharmacy.

NACP 107

CURRENT INSIGHTS ON THYROID DISEASES

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Abstract

Thyroid disease is a medical condition that affects the functioning of thyroid gland. Dysfunctionofthyroidglandaffectsthepatientbodycategorizingashyperthyroidism,Graves' disease, goitre, hypothyroidism, thyroiditis, thyroid cancer, and thyroid eye disease. Diagnosing thyroid dysfunctions in early stages is not differentiable as it exhibit no specific changesunlikethechronicorseverecondition sshowingphysicalchanges.Treatmentsinclude anti-thyroiddrugs,radioactiveiodinetherapy,andsurgeryinchronicconditions.Conventional medications listing Methimazole (MTZ) and Propylthiouracil(PTZ) for hyperthyroidism while Levothyroxine for hypothyroidism. As there is always a room for developing technical feasibility, patient compatibility, safety, and cost effective treatment. The researchers and the scientists have been working to expand the circumstances in trouble-free diagnosing (proteomics & Osteopontin), effective treatments (seleniumtherapy, thyrocytes&regenerative therapy) and development in surgical possibilities (endoscopic thyroidectomy, extra-cervical surgery). This review is to toss up the collective information regarding the current perception in thyroid disease prevalence, treatment andsafety.

Key words: Thyroid Diseases; Thyroidectomy; Regenerative Therapy; Proteomics; Osteopontin; Thyrocytes.

NACP 108

DEVELOPMENT OF FAST DISSOLVING SUBLINGUAL FILMS OF AGOMELATINE: IN VITRO AND EX VIVO EVALUATION

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Abstract

Background: Agomelatine a potent agonist at melatonin receptors (MT1 and MT2) and antagonist at serotonin (5-HT2C) receptors. These combined actions can improve the disturbed circadian rhythm and abnormal sleep pattern thus produce the antidepressant effect. These unique effects suggest that it might be effective for the treatment of seasonal affective disorder like anxiety and bipolar depression. Oral administration of Agomelatine has 5% of bioavailability due to first pass metabolism, hence ineffective. **Aim:** To investigate the development of fast dissolving sublingual films of Agomelatine allowing fast, reproducible drug dissolution in the oral cavity, thus bypassing first pass metabolism to provide rapid onset of action of the drug. **Material and Methods:** The fast dissolving films were prepared by solvent casting method. The HPMC E3 & E5 were used as film forming polymers, Ethanol and dichloro methane (DCM) were used as solvents, Tween 80 used as solubilizing agent & plasticizer and aspartame used as sweetening agent. All the films were evaluated for their thickness, weight variation, tensile strength, percentage elongation, folding endurance, in vitro disintegration time, drug content, and in vitro drug release and ex vivo permeation studies. **Results:** The optimized film formulation (F10) found to be tensile strength of 1.19±0.051 kg/cm^2, percentage elongation of 5.97±0.32, folding endurance of 120.1±0.814, drug content of 95.74±1.73%, *in vitro* drug release of 94.64% in 20min, disintegration time of 43.5±1.27 sec. and ex vivo permeation of 75.36% in 1hr. **Conclusion:** The results indicated that the F10 sublingual film of Agomelatine found to be stable and satisfactory physico-mechanical parameters which may be a promising alternative to conventional tablets.

Key words: Agomelatine, First pass metabolism, Sublingual films, Solvent casting method

NACP 109

FORMULATION AND EVALUATION OF CONTROLLED RELEASE CARBOXY METHYLATED OKRA GUM-ALGINATE MICROSPHERES CONTAINING METOPROLOL TARTRATE

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Abstract

Background: Antihypertensive drugs were currently available in the market largely in the form of conventional dosage forms.

Aim: There was a need to develop controlled release drug delivery systems for these categories, so as to optimize the therapy and accrue the benefits enumerated in the controlled release drug delivery systems. One such approach is using polymeric microspheres as drug carriers. Metaprolol tartrate is a selective β-adrenergic receptor blocking agent and commonly used for the treatment of mild to moderate hypertension and stable angina.

Method: OG was extracted by modifying the method described by using an ultrasonic device using fresh Ladies finger. Carboxymethylation of OG was carried out employing monochloroacetic acid as reported earlier for increasing their characteristics.

Results: The prepared microspheres were evaluated for entrapment efficiency, swelling behavior, *ex vivo*Mucoadhesion strength and Characterization techniques which show clear, smooth, uniform and better Mucoadhesion properties. The formulation F4 has shown optimum release in concentration independent manner. Higuchi's plot for the formulation revealed that the predominant mechanism of drug release is diffusion.

Conclusion: Hence, Microspheres containing Metoprolol tartrate could be promising drug delivery as they overcome the side effects by using natural gum, simplify treatment regimen and improve patient compliance.

KEYWORDS: Metoprolol, Microspheres, Okra Gum, Modification.

NACP 110

AMPHIPHILIC DRUG DELIVERY SYSTEMS-PHYTOSOMES

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Abstract

The term "Phyto" means plant while "some" means cell-like. Phytosome is a novel drug delivery technique which contains phyto constituents of herbal extracts. Preparation of phytosomes involve in the complexation between phyto constituents and phospholipids especially with phosphor tidylcholine which produces lipid stable molecular complexes. Phytosomes have water soluble inner layer and lipophilic outer layer. Phytosomes have high pharmacokinetic and pharmacodynamic properties. They have improved bioavailability when compared to other conventional herbal extracts. They have valuable role in pharmaceutical industustries. Phytosomes can be supplied as natural digestive aids as they acts as antioxidants, hepatoprotective agents, anticancer agents and used as carriers for water soluble and lipid soluble nutrients.

Keywords - Drug delivery, Phytosome, Phosphotidylcholine (PC), Phospholipids complex, Bioavailability, Flavonoids, Liposomes.

NACP 111

PREPERATION, EVALUATION AND OPTIMIZATION OF LERCANIDIPINE HYDROCHLORIDE FILMS

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Abstract

Background: Lercanidipine hydrochloride (LER) is a BCS class II antihypertensive drug which results in limited oral bioavailability of 10%. **Aim:** The purpose of this study is to improve the dissolution and thus the bioavailability of LER by preparing films of LER. **Method:** The films were prepared by the box-behnken method by using solvent casting method. Films obtained showed improved release compared to pure LER and physical mixture. **Results:** It can be confirmed from the obtained results that films can be a method of choice for increasing the solubility, dissolution and in turn the bioavailability of Lercanidipine hydrochloride. **Conclusion:** Optimized films have showed increased dissolution of lercanidipine Hcl up to 99% w/w after 10 min and its solubility had increased upto 180 times. The obtained results had shown that there was increased dissolution and bioavailability of LER films and could give quick onset of action upon administration of lercanidipine hydrochloride oral fast dissolving films.

Keywords: Lercanidipine, box-behnkenmethod,Solvent casting method, Films, HPMC, bioavailability.

NACP 112

CLOZAPINE INSITU GELS FOR NOSE TO BRAIN DELIVERY: PHARMACODYNAMIC AND PHARMACOKINETIC EVALUATION

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Abstract

Background: Schizophrenia is a chronic, severe disabling brain disorder affecting thoughts and mood of a patient throughout the life with high risk of suicidal behaviour. The psychiatric disorders pose the largest health, economic and social capital burden worldwide. **Objective:** The present study was aimed to develop and evaluate Clozapine (CZP) thermosensitive *in situ* gels (CZP-GEL) for nose to brain delivery for the treatment of schizophrenia. **Methods:** The CZP-GEL was prepared by cold method using Pluronic F127 & 68 as gelling agents and characterized for physicochemical parameters. The Antipsychotic effect of *in situ* gel was evaluated by assessing locomotor activity.The PD and PK activity of oral solution and nasal solution were comparatively evaluated.The locomotor activity was evaluated in (+) MK-801 induced male wistar rats weighing between 230-250g using digital photoactometer. Pharmacokinetic parameters were determined in plasma and brain of rat using Kinetica 2000 software.**Results:** The optimized CZP-GEL (Fa15) was composed of 5% Clozapine, 20% PF127& 2% PF68, 25% Labrasol: Transcutol P (1:1) and 0.5% chitosan, found stable with required gelling properties and showed high permeation (2.28 folds) to drug solution. The PD results indicated that the intranasal delivery of gel was rapid and reduced the activity of (+) MK-801 within 15 min. The % reduction of locomotor activity of *in situ* gel was found to be 86.05% within 90min and it was significantly high ($p<0.01$) compared to oral drug solution (44.92%). It also showed brain Cmax, brain of *in situ* gel was 21465.87±1110.66 ng/mL significantly high (3.15 times) and AUCbrain was 5.26 times compared to oral solution. Optimized *in situ* nasal gel showed significantly high DTE of 2.35 and DTP of 66.05% compared to drug solution (DTE-0.80) and significantly low Tmax (30 min) compared to oral solution (1hr).**Conclusion:** The results demonstrated the brain targeting efficiency of intranasal CZP-GEL, which will also reduce the side effects of clozapine in the treatment of schizophrenia.

Keywords: Schizophrenia, Clozapine, *in situ* gel, intranasal delivery, Brain targeting

NACP 113

FORMULATION AND DEVELOPMENT OF FAST DISSOLVING TABLETS OF SELECTIVE ANTI HYPERTENSIVE DRUG

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Abstract

The demand for fast disintegrating tablets has been growing, during the last decade especially for geriatric and paediatric patients because of swallowing difficulties. Urapidil is used to treat hypertension. Hence in present work an attempt has been made to formulate Fast dissolving tablet of Urapidil by spray drying technique using various concentration of Superdisintegrants like Crosscarmellose sodium (CCS), Cross povidone (CP) and Sodium starch glycolate (SSG). The formulated tablets were evaluated for Crushing strength, Friability, Thickness, Diameter, Weight variation, Drug content, Wetting time, Water absorption ratio, Disintegration time and Percentage of drug release. All formulations showed satisfactory

result. Among them formulation F3 containing 2.5 % of CP exhibited complete release within 10 minute and disintegration time within 12 second. Accelerated stability study indicated no significant difference in assay and crushing strength. There was no chemical interaction between the drug and excipients during FT-IR study and DSC Study; considered in the present investigation.

KEYWORDS: Fast disintegrating Tablet, Urapidil, Spray drying technique, Interaction..

NACP 114

STABILTY INDICATING RP-HPLC METHOD SIMULTANEOUS DETERMINATION OF RACECADOTRIL AND OFLOXACIN IN TABLET DOSAGE FORM AND ORAL SUSPENSION

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Abstract

Background: Racecadotril and Ofloxacin (Flodot –Oral Suspension & RACIGYL- O:Tablet dosage form) drug combination are used for the treatment of diarrhea. The drugs have been estimated individually in formulations but no method has been developed for simultaneous estimation of these two drugs as combination. **Aim & Objective:** To develop and validate a high performance liquid chromatography method for the simultaneous estimation of Racecadotril and Ofloxacin in tablet dosage form and Oral Suspension. **Method:** The present RP-HPLC Method was carried out on a Kromasil C_{18} (4.6 x 250mm, 5µm) column using a mixture of Acetonitrile ; TEA buffer (pH 3.2), Methanol in proportion 40:30:30v/v as the mobile phase at a flow rate of 1.0 ml/min and the detection was carried out at 223nm. **Results:** The retention time of RAC and OFL were found to be 4.666 and 2.551 minutes respectively. The developed method was validated as per ICH guidelines with respect to specificity, linearity, accuracy, precision, robustness, Limit of Detection (LOD) and Limit of Quantification (LOQ). **Conclusion:** The method precision for the determination of assay was below 2.0% RSD. The optimized method was validated and proved to be suitable for the quality control of the mentioned drugs in their different pharmaceutical dosage forms, according to ICH guidelines. The developed method was found to be fairly precise, rapid and economical for simultaneous estimation of Racecadotril and Ofloxacin when compared with the reported method.

Keywords: Racecadotril and Ofloxacin, RP-HPLC; PDA Detection; ICH validation.

NACP 117

A BRIEF OVERVIEW ON DIFFERENT TYPES OF COVID-19 TESTING PROCEDURES

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Abstract

The Covid-19 pandemic caused by infection with the SARS-CoV2. Mainly four types of testing procedures are approved by WHO. These are RT-PCR tests, Rapid antibody test, Rapid antigen tests, TruNat tests. The majority of the tests being conducted are RT-PCR, which requires nasal and throat swabs and are used to directly detect the presence of the virus rather than antibodies. The test detects the virus's RNA. These test converts the RNA to DNA through a process called 'reverse transcription', before detecting the virus. A sample swab collected from nose and throat, then treated with chemical solutions that remove proteins and fats, leaving only the RNA present in the sample. The sample is then analysed in RT-PCR machine to detect the virus. Rapid antibody tests are fast, inexpensive. Unlike RT-PCR, antibody tests require a blood sample to determine whether the human body has antibodies for coronavirus. The blood is examined for two types of antibodies — IgM antibodies, which appear early in an infection, and IgG antibodies, which are more likely to show up later. Like RT-PCR, the Rapid antigen detection test too, seeks to detect the virus rather than the antibodies produced by the body. It has been approved by ICMR. Nasal samples are collected and tested for antigens, which are found in the SARS-CoV-2 virus. TruNat tests have same working principle as RT-PCR.True Nat machines detect the RdRp enzyme found in the virus RNA.

KEYWORDS: SARS-CoV2, reverse transcription, antibody.

NACP 116

REVERSE PHASE HIGH PERFORMANCE LIQUID CHROMATOGRAPHY METHOD FOR THE QUANTITATIVE DETERMINATION OF ANTI-HYPERTENSIVE AGENTS LIKE BENDROFLUMETHIAZIDE AND NADOLOL IN BULK AND PHARMACEUTICAL FORMULATIONS

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Abstract

A new, simple, Accurate, precise, robust and rugged reverse phase-HPLC method was developed for the simultaneous estimation of the Bendroflumethiazide and Nadolol in pure and pharmaceutical dosage forms. Chromatogram was run through Hypersil C18 (250 mm×4.6 mm, 5µm) particle size. Mobile phase containing Potassium dihydrogen phosphate (0.03M) (pH-2.8): Methanol (75:25%) was pumped through column at a flow rate of 1.0ml/min. Temperature was maintained at Ambient. Optimized wavelength selected was 226 nm. Retention time of Bendroflumethiazide and Nadolol were found to be 1.693min and 3.235min ± 0.02 respectively. The precision %RSD of the Bendroflumethiazide and Nadolol were and found to be 0.435 and 0.039 respectively. %Recovery was obtained as 100.06% and 100.083% for Bendroflumethiazide and Nadolol respectively. Regression equation of Bendroflumethiazide is y = 48138x + 5396.0., and y = 71.91x + 42.07 of Nadolol. The LOD and LOQ values were found to be for the Bendroflumethiazide and Nadolol are 1.27µg/ml, 1.16 µg/ml 3.81µg/ml, 3.48µg/ml and the proposed method was found to be simple, precise, accurate, rapid, economic and reproducible for the estimation of Bendroflumethiazide and Nadolol in pure form and pharmaceutical marketed formulation.

Keywords: Bendroflumethiazide and Nadolol, HPLC, Method Development, Validation.

NACP 117

"METHOD DEVELOPMENT AND VALIDATION OF SELECTIVE ANTIHYPERTENSIVE DRUGS IN THEIR COMBAINED TABLET DOSAGE FORM BY USING REVERSE PHASE HIGH PERFORMANCE LIQUID CHROMATOGRAPHY"

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Abstract

The present work describes a validated reverse phase high performance liquid chromatographic method for simultaneous estimation of Irbesartan, Chlorthalidone and Cilnidipine in tablet dosage form. The quantification was carried out using C18 column (250 x 4.6 mm, 5µm) and mobile phase comprised of Buffer, Acetonitrile and TEA in a proportion of 80:20:0.1 %v/v/v. The flow rate was 1.0 ml/min and the eluent was monitored at 222 nm. The selected chromatographic conditions were found to effectively separate Irbesartan, Chlorthalidone and Cilnidipine were 3.807 min, 4.667 min, and 6.887 min respectively. Linearity was found to be in the range of 30-90 µg/ml, 1.25-3.75 µg/ml and 1-3 µg/ml for Irbesartan, Chlorthalidone and Cilnidipine respectively. The percentage recoveries of all the drugs were found to be 99.27-99.81%, 99.57-99.99% and 99.22-99.44% for Irbesartan, Chlorthalidone and Cilnidipine. The proposed method was found to be fast, accurate, precise, and reproducible and can be used for simultaneous estimation of these drugs in a tablet.

KEYWORDS: Irbesartan, Chlorthalidone and Cilnidipine, Reversed-phase HPLC.

NACP 118

METHOD DEVELOPMENT AND VALIDATION BY SIMULTANEOUS ESTIMATION OF ANTI-VIRAL DRUGS (LAMIVUDINE AND ZIDOVUDINE) BY UV SPECTROPHOTOMETRY IN DOSAGE FORMS

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Abstract

Background: The UV-Spectrophotometric method is rapid, simple and cost effective.If a sample contains two drugs each of which absorbs at the λ_{max} of the other, it may be possible to determine both drugs by the technique of simultaneous equations. **Aim:** Development of simple, precise, accurate and sensitive method by Simultaneous equations method and Validation of development as per ICH guidelines for antiviral drugs (Lamivudine and Zidovudine) **Method:** With marketed drug prepared the solution to give concentration of 25µg/ml and 30µg/ml of lamvudine and zidovudine respectively. Absorbances of these solutions were measured at 255 and 270nm respectively.

Results: The calibration plot for Lamivudine was observed as linear in the range of 25-125µg/ml and the correlation coefficient was found 0.999 and for Zidovudine in the range of 50-250µg/ml with correlation coefficient 0.999. The precision was found to be within the limits. The limits were not more than RSD <2%. Recovery values of pure drug from the solution were between 98.01%-101.4% indicates that the method is accurate. **Conclusion:** The proposed UV-Spectrophotometric method is suitable technique for simultaneous determination of Lamivudine and Zidovudine in fixed dose combinations without any interference from each other. All the parameters for both the drugs met the criteria of ICH guidelines for method validation.

Keywords: Lamivudine, Zidovudine, Simultaneous equations method

NACP 119

PRODUCTION OF PROBIOTIC BEVERAGE OFCARICA PAPAYA, APTERYX AND DETERMINATION OFMINERAL CONTENT BY ANALYTICAL TECHNIQUES

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Abstract

Aim: The aim of this research was to provide a non-dairy probiotic drink to attend people that cannot eat dairy products due, dietary preferences such as vegetarians, or other health issues. Factors of consumption of reduction sugars, and bacterial growth had been examined after fermentation and during the storage in 28 days and at 4˚C. **Method:** To produce probiotic fermented mixture of papaya, kiwi juices and microbial Lactobacillus planetarium suspension with initial concentration of about $1.37*10^8$cfu/ml was prepared and added to the mixture of juices to the amount of 20, 30 and 40%, and The fermentation process was done during 48 hours and 37˚C. **Results:** The results revealed that the sample of using preservative with concentration of 20% and $1.37*10^8$ c fu/ml of Lactobacillus plantarium was considered as the best treatment which had the maximum rate of cell viability during 4 weeks of storage at 4˚C**. Conclusion:** Probiotics are live non pathogenic microorganisms administrated to improve microbial balance, particularly in the gastrointestinal tract .They consist of lactic acid bacteria such as **LACTOBACILLUS SPECIES** are regulated as dietary supplements and foods.

Keywords: Probiotics, Papaya, kiwi. lactobacillus.

NACP 120

CORONAVIRUS

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Abstract

Coronaviruses have a quality morphology, the nominate rude positive outlandish the outer fringe, or "corona" of embedded envelope protein. Skill of the grounding Corona viridae surrogatea adequate sweep of mammal and human diseases. Remarkably, fulfil of the RNA genome take look over the period of a nested wonted of viral mRNA molecules. Impending 2003, coronaviruses attracted short enumeration beyond causing mild upper respiratory tract infections. This additional dramatically in 2003 close by the zoonotic SARS-CoV and the in erstwhile creation of MERS-CoV has hardened the coronaviruses as grown-up causes of dangerous respiratory grief

Keywords: Viral replication, Middle East respiratory virus, pathogenesis, immunity .

NACP 121

L-ASPARAGINASE PRODUCTION IN SOLID STATE FERMENTATION BY *ASPERGILLUS NIGAR*

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Abstract

Background: L-asparaginase having chemotherapeutic activity and plays an important role in treatment of lymphosarcoma, lymphoproliferative disorders and acute lymphoblastic leukemia**.** They are present in many animal tissues, bacteria and plants, but not in mankind. **Aim:** The main aim of the present research work is to produce and optimize the process parameters for L- asparaginase enzyme from cheaply and abundantly available raw material by using *Aspergillus niger* in solid state fermentation. **Method:** Solid-state fermentation is a process that occurs on a non-soluble material that acts both as support and a source of nutrients, with a reduced among of water, under the action of fermenting agent. L-asparaginase enzyme production parameters like incubation time, temperature, pH, inoculum level and moisture content were optimized. **Results**: The fermentation time of 72hrs and the temperature of 26^0C, pH 6, inoculum level of 60%v/w and moisture content of 60%v/w were observed optimum for the production of L-asparaginase. Different carbon sources were screened for their influence on enzyme yield; they are glucose, sucrose, fructose and lactose used as supplements. Among these supplements glucose gave better yield. 0.3% w/w of L-asparagine as nitrogen source was observed optimum for the production of L-asparaginase. **Conclusion:** A remarkable enzyme production was enhanced and recorded when the basal medium was supplemented with carbon and nitrogen sources.

Key words: *Artocarpusheterophyllus*, *Aspergillus nigar*, Solid-state fermentation

NACP 122

ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF ATOMOXETINE HYDROCHLORIE BY USING RP-HPLC TECHNIQUE

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Abstract

Background: Atomoxetine is a selective norepinephrine (NE) reuptake inhibitor used for the treatment of attention deficit hyperactivity disorder (ADHD). Atomoxetine has been shown to specifically increase nor epinephrine and dopamine within with the prefrontal cortex, which results in improved ADHD symptoms. **Aim:** A simple, novel, sensitive, and rapid high-performance liquid chromatographic (RP-HPLC) method has been developed and validated for quantitative determination of Atomoxetine HCl in bulk and formulations. **Methods:** The chromatographic development was carried out on RP-HPLC. The column used as Xterra RP 18 (250x 4.6 mm, 5µ particle size), with mobile phase consisting of methanol: water 80:20 V/V. The flow rate 1.0 ml/min and the effluents were monitored at 270 nm. **Results:** The retention time was found to be 5.350 minutes. The method was validated as per International Conference on Harmonization (ICH) Guideline with respect to linearity, accuracy, precision, and robustness. The calibration curve was found to be linear over a range of 2-10 µg/ml with a regression coefficient of 0.9999. The method has proved high sensitivity and specificity. **Conclusion:** The results of the study showed that the proposed RP-HPLC method was simple, rapid, precise and accurate which is useful for the routine determination of Atomoxetine HCl in bulk drug and in its pharmaceutical dosage form.

Keywords: Atomoxetine HCl, Capsules, RP-HPLC, Validation.

NACP 123

DETERMINATION OF SACCHARIN IN NON-ALCOHOLIC BEVERAGES

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Abstract:

The beverages have shown rapid increase in the consumption in the recent years, irrespective of their age, sex, race and region. To improve the taste, odour, quality and the life time of these beverages the role of food additives is major. In the present study a method was for developed for the determination of saccharin present in soft drinks and non alcoholic beverages by using spectrophotometric method. The saccharin concentration was estimated at 425nm in UV- Visible spectrophotomer and a calibration curve was plotted between the concentration and absorbance. The plot obtained has shown the correlation coefficient of 0.999.

Key words: saccharin, beverages, UV-Visible Spectrophotometer.

NACP 124

ENTRUSTMENT OF QUALITY ASSURANCE IN PHARMACEUTICAL INDUSTRIES: A REVIEW

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Abstract

Background: As per different regulatory bodies guidelines Quality is the essential responsibilities of all pharmaceutical professionals, pharmaceutical industries are health industries directly associated with health of human beings, being pharmaceutical professional it is our prime duty not only to do manufacturing of different medications but also to maintain its quality, efficacy, safety and potency, Regulatory bodies like USFDA, MHRA,TGA, CDSCO , WHO emphasis on role and importance of Quality Assurance in Pharmaceutical Industries. **Aim**: To conclude different review papers in field of regulatory requirement of pharmaceutical industries and to apprised different role and importance of Quality assurance department in pharmaceutical industries, now in these days due to lack of understanding scenario of Regulatory bodies, Indian Pharmaceutical industries are facing problems like , data integrity, data manipulation, 483 and other warning letters , the aim of this review paper is to make aware everyone about regulatory bodies requirement and importance of Quality assurance, to overcome problems of Pharmaceutical Industries. **Method**: Conclusive studies done by considering

different review articles and regulatory guidelines in field of regulatory requirement of Pharmaceutical industries, in this review paper tried to conclude some practical experiences of different pharmaceuticals and compliance requirement as per regulatory bodies. **Results**: the studies emphasized role of Quality assurance as per regulatory requirements as well as introduced some quality documents and methods required for maintaining Quality of different pharmaceutical preparation, while gone through different literature it has been concluded that enough literature is available for guiding in the field of regulatory requirement and Quality Assurance, however recommended and requested some more case studies should be done in this field. **Conclusion**: the Review paper included all possible methodology as guided through different regulatory bodies in their respective guidelines for maintaining Quality of pharmaceuticals, and concluded empirical knowledge in field of Quality assurance and regulatory requirements in pharmaceutical industries.

Keywords: FDA, 483, Six Sigma, CCP, Deviation, Risk analysis, Fish- bone.

NACP 125

DIAGNOSIS OF COVID-19: CONSIDERATIONS, CONTROVERSIES AND CHALLENGES

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Abstract

Coronavirus disease 2019 (COVID-19) due to severe acute respiratory syndrome coronavirus is a global pandemic that has resulted in over 18.3 million confirmed cases and close to 7,00,000 deaths. In the majority of symptomatic cases COVID-19 results in a mild disease predominantly characterised by upper respiratory tract symptoms. Reverse transcription polymerase chain reaction (RT-PCR), using a nasopharyngeal sample, is the mainstay of diagnosis, but there is an ~30% false negative rate early in the disease and in patients with mild disease. RT-PCR positivity can persist for several days after a resolution of symptoms. IgM and IgG antibody responses become positive several days after the onset of symptoms, and robust antibody responses are detectable in the second week of illness. Antibody-based immunoassays have a limited role in the diagnosis of early symptomatic disease. However, their incremental benefit over RT-PCR in the first 2 weeks of illness is currently being clarified in ongoing studies. Such assays may be useful for surveillance purposes. However, their role in potentially selecting individuals that may benefit from vaccination, or as a biomarker identifying persons that could be redeployed into essential employment roles are being investigated. Rapid antibody-based immunoassays that detect viral antigen in nasopharyngeal samples are being developed and evaluated.

Keywords: COVID-19, pneumonia, RT-PCR, immunoassays, diagnosis

NACP 126

STABILITY INDICATING ASSAY METHOD DEVELOPMENT AND VALIDATION OF FIDAXOMICIN BY USING HPLC

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Abstract

Aim of the study: To develop and validate a simple, precise stability indicating method for the Fidaxomicin by using HPLC. **Materials and methods:** The analyte was separated from its degradation products on C18 column. The mobile phase used in this method was containing the mixture of 0.1% OPA water: ACN: methanol (20:36:5:43.5) at flow rate was 1 ml/min whereas the variable wavelength detection wavelength was at 260 nm. **Results:** Validation of method was done as per ICH Q2 guidelines. The linear regression coefficient 0.999 at a concentration range from 5-30 mcg/ml. the %RSD for intra and inter day precision were 1.5% and 1.6%. The LOD and LOQ were found to be 0.4µg/ml and 1.3µg/ml respectively. Under the stress conditions such as acid hydrolysis, base hydrolysis, oxidation and thermolytic degradation the drug was degraded and TWO degradants were formed under the basic condition. The specificity if the method is suitable for stability indicating assay. **Conclusion:** The developed and validated stability indicating method is found to be specific, linear, precise, accurate and robust.

Key Words: Stability Indicating Assay, Fidoxomicin, Regression Coefficient.

NACP 127

DEVELOPMENT AND VALIDATION OF NEW ANALYTICAL METHOD FOR THE SIMULTANEOUS ESTIMATION OF SIMVASTATIN AND EZETIMIBE IN BULK AND PHARMACEUTICAL DOSAGE FORMS

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Abstract

Background: Simvastatin and Ezetimibe are the class of drugs under HMG-CoA reductase inhibitors and Cholestrol absorption inhibitors respectively. Apart from other methods, our method is more sensitive, efficient and economical. **Aim:** To develop a new, simple, rapid, accurate, sensitive, efficient, reproducible and rugged analytical method for assay of Simvastatin, Ezetimibe in tablet dosage form by RP-HPLC and to validate the same as per ICH guidelines. **Method:** RP-HPLC method for the analysis of Simvastatin, Ezetimibe in bulk and its pharmaceutical dosage form by using solvent system of ACN : OPA with gradient program and Inertsil ODS-3V, (150 x 4.6 mm), 5µ stationary phase. The chromatographic condition is optimized at flow rate of 2 ml/min with UV detection at 238 nm. Injection volume is 20µL, Column temperature of 40ºC and Run time is 30 minutes. Validation studies are carried out by using freshly prepared solution as per ICH requirements. **Results:** As per our experimental study, the retention time of Simvastatin was found to be 10.69 min and that of Ezetimibe was 5.0 min. **Conclusion:** In the present investigation a new analytical method was developed for Simvastatin and Ezetimibe. Since there is no gradient evaluation method available to estimate the Simvastatin and Ezetimibe using RP-HPLC. Hence, this method will provide a wide choice of routine determination of Simvastastin and Ezetimibe in bulk and Pharmaceutical dosage forms.

Key words: Simvastatin, Ezetimibe, HPLC, UV detector.

NACP 128

A NOVEL VALIDATED RP-HPLC METHOD FOR THE ESTIMATION OF TICAGRELOR IN BULK AND PHARMACEUTICAL DOSAGE FORMS

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Abstract

Aim: A simple, accurate and precise RP-HPLC method was developed and validated for the estimation of Ticagrelor in pharmaceutical dosage forms. **Method:** Mobile phase: Methanol: Water (90:10 % V/V). Preparation of standard solution of TICA: Transfer 10 mg of TICA (1000 µg/mL) into a 10 mL of volumetric flask and add diluent. From this solution pipette out 1 mL of solution (100 µg/mL) into another 10 ml volumetric flask and fill with diluent. Again, from this solution take 5ml (50 µg/mL) into 10 ml volumetric flask and make up the volume with mobile phase and filter the solution through 0.45 µ membrane filters. The resulted solution (20 µL) was injected into the HPLC system by employing standard chromatographic conditions. **Results:** The separation was achieved by cap cell pack C18 column (250×4.5mm, 5µ) column using methanol: water (90:10%V/V) as eluent at a flow rate of 1 mL/min, detection was carried out at 254 nm. The retention time for Ticagrelor was found to be 4.0 mins, respectively. Linearity was observed over the range of 10-100 µg/mL and it was found to be linear with y=38445x+30072 (r2=0.999). The precision of the method was demonstrated with %RSD values of <2% while the %recovery was found in between 101.3-101.5%. There is no interference of any compounds present in pharmaceutical dosage forms was observed. **Conclusion:** The proposed method was simple, specific, requires short time to analyze samples and it is easy to perform. Hence it was concluded that the present RP-HPLC method developed was well suitable for routine analysis of TICAGRELOR in their pharmaceutical dosage formulations.

Keywords: Ticagrelor, Shimadzu- RP-HPLC, Method development and validation.