

***National Conference
on
“Innovation through Integration: The Crucial Role of Industrial
and Clinical Orientation in Pharma Education”***

21st and 22nd March 2024

***Organized by:
BCDA College of Pharmacy & Technology, Hridaypur***



Conference Proceedings

***BCDA College of Pharmacy & Technology, Hridaypur
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National Conference
on
"Innovation through Integration: The Crucial Role of Industrial
and Clinical Orientation in Pharma Education"
Organized By:
BCDA College of Pharmacy & Technology, Hridaypur

Venue for 21st March 2024
BCDA College of Pharmacy & Technology, Campus-II,
Madhyamgram

Venue for 22nd March 2024
BCDA College of Pharmacy & Technology, Hridaypur; 78,
Jessore Road (South); Barasat; Kolkata – 700 127.

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| BCDA College of Pharmacy & Technology Hridaypur Kolkata-700127 | | |
|---|--|-----------------------------|
| National Conference on | | |
| " Innovation Through Integration: The Crucial Role of Industrial and Clinical Orientation in Pharma Education" | | |
| 21st & 22nd March,2024 | | |
| <u>Program Schedule</u> | | |
| 1st day: 21st March 2024 | | |
| | Program | Time |
| | Registration of the Delegates | 09.00 am onwards |
| | Inaugural Session | |
| | Inaugural Dance | 10.00 am to 10.10 am |
| | Felicitatation of the Dignitaries on Dais | 10.11 am to 10.15 am |
| | Lighting of Lamp | 10.16 am to 10.25 am |
| | Brief Introduction about the Conference by Prof. (Dr.) Nityananda Mondal, Convenor | 10.26 am to 10.30 am |
| | Welcome Address by Prof.(Dr.) Nripendra Nath Bala, Principal & Organizing Chairman | 10.31 am to 10.35 am |
| | Keynote Address by Prof. (Dr.) Rama Prasad Banerjee, Chairman, GB. BCDACPT | 10.36 am to 10.40 am |
| | Address by Mr. Sajal Gangopadhyay, Chairman, BCDA Members' Benevolent Trust & Hon'ble State Secretary, BCDA | 10.41 am to 10.45am |
| | Address by Managing Trustee, BCDA Members' Benevolent Trust & Hon'ble State President, BCDA | 10.46 am to 10.50 am |
| | Address by the other Trustee members | 10.51 am to 11.00am |
| | Address by Speakers & Hon'ble Guests | 11.01 am to 11.10 am |
| | Address by Chief Guest Mr. Rathin Ghosh, MIC, Food & Food Supply, Govt. of West Bengal | 11.11 am to 11.25 am |
| | Release of Scientific Abstract Book | 11.25 am to 11.30 am |
| Tea Session | | |
| | Scientific Session - I & Poster Presentation(1-60) | |

| | Speaker | Time |
|--|--|-----------------------------|
| | Prof.(Dr.) Venkatesan Jayapraksh BIT, Mesra, Ranchi, JH Topic: "Exploring Academic Research in Pharmacy: Bridging the Gap between Pharma/ Healthcare Industry" | 11.31 am to 12.00 pm |
| | Interaction with the speaker | 12.01 pm to 12.15 pm |
| | Panel discussion & Poster Presentation | |
| | Panel Discussion by the Experts Topic:" Bridging Academia & Industry" | 12.16pm to 01.30 pm |
| | Lunch Break | 01.31 pm to 02.30 pm |
| | Scientific Session II & Poster Presentation(61-117) | |
| | Dr. C.M. Hossain Professor, Dept. Of Pharm.Tech. MAKAUT, WB Topic: "Bench to Bed: Bridging the Gap in Pharma Education" | 02.31 pm to 03.00 pm |
| | Interaction with the speaker | 03.01pm to 03.15 pm |
| | SWOT Analysis of the Pharmacy graduates by different Industry personnels | 03.16 pm to 03.30 pm |
| | Scientific Session III & Poster Presentation (Rest) | |
| | Dr. Sushant Senapaty Senior Manager, WIPRO Ltd. Kolkata Topic: Fostering Education in Drug Development: Role of Industry Academia Collaboration | 03.31 pm to 04.00 pm |
| | Interaction with the Speaker | 04.01 pm to 04.15 pm |
| | Tea Session | 4.16pm-5.00 pm |
| | | |
| | 2nd day: 22nd March,2024 | |
| | Oral Presentation | 10.00 am to 01.30 pm |
| | Innovative Model Presentation | 10.30 am to 01.30 pm |
| | Scientific Session IV at Seminar Hall | |
| | Dr. Dhananjoy Saha Deputy Director of Technical Education, Govt. of West Bengal Topic: Application IPR in Pharmaceutical & Biotechnology Research | 11.00 am to 12.00 pm |
| | Interaction with the Speaker | 12.01 pm to 12.30 pm |
| | | |
| | Lunch Break | 01.31 pm to 02.30 pm |
| | | |
| | Prize Distribution & Valedictory Session | 02.31 pm to 03.30 pm |

LOCAL ORGANIZING COMMITTEE MEMBERS

1. **Chief Advisor:**

Prof. (Dr.) Rama Prasad Banerjee, Chairman, Governing Body, BCDA College of Pharmacy & Technology.

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Ms. Saswati T. Sasmal, Assistant Professor, BCDACPT, Hridaypur
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14. **Reception committee:**

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Mrs. Swati Singh, Assistant Professor, BCDACPT, Hridaypur
Ms. Sneha Shaw, Assistant Professor, BCDACPT, Hridaypur
Mrs. Oishee Roy, Lab Technician, BCDACPT Campus-2, Madhyamgram
Mr. Mahanambрата Paul Assistant Professor, BCDACPT Campus-2, Madhyamgram

15. **Other Members of the Committee:**

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Mrs. Ranjana Mondal, Lab Technician, BCDACPT, Hridaypur
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Mr. Puspanjan Saha, Purchase Manager, BCDACPT, Hridaypur

Mr. Basudeb Mondal, Library Assistant, BCDACPT, Hridaypur

Mr. Kalyan Das, Office Assistant, BCDACPT, Hridaypur

From the Desk of Chairman's Governing Body.....



Message

It's a matter of pleasure to know that one of BCDA campuses of Pharmacy is heading towards having a national conference on issues relevant to the study in Pharmacy. I wish all success for the program.

Pharmaceuticals have occupied a great role now in the world of academics and research. The world needs new vision and new areas of exploratory and penetrative research into different areas now.

During the last few decades, areas of research have gone beyond the traditional boundaries of pharmacy. Certain areas have gone deeper into the search of predictive Pharmaceuticals, whereas areas of remedial support have diversified with the active involvement of technology. The role of Neural Networks, Broader areas of artificial intelligence, Nuclear Robotics, Cellular Fusions, and many other areas have come before the world of Pharmaceuticals to go along with it and get deeply involved With.

It is in this context, research, or at least academic sensitization on the need for research becomes pivotal.

It's good that BCDA has taken up the relevant issues for the conference.

Once again, I convey my BEST WISHES FOR ITS SUCCESS.

Thanks,

Rama Prosad Banerjee

(Prof. (Dr.) Rama Prosad Banerjee)

Chairman, BOG

From the BCDA Members Benevolent Trust Chairman's Desk



Message

I am elated to know that our college, BCDA College of Pharmacy & Technology, Hridaypur, is going to organize a national conference on "Innovation Through Integration: The Crucial Role of Industrial and Clinical Orientation in Pharma Education". We always encourage this kind of conference from our side and believe that this conference will certainly play a special role in improving the quality of pharmacists in the coming days.

Thanks to the organizing committee and all the participants. Wishing every success of this seminar.

Sajal Gangopadhyay

(Mr. Sajal Gangopadhyay)

Chairman

BCDA Members Benevolent Trust

From the Managing Trustee's Desk.....



Message

It is quite gratifying to note that our BCDA College of Pharmacy & Technology, Hridaypur, is hosting its National Conference on "Innovation Through Integration: The Crucial Role of Industrial and Clinical Orientation in Pharma Education" on 21st and 22nd March, 2024.

Organizing such an event at this amount of time reinforces our objective of developing Pharmacists soon. I am sure that this occasion will provide an affable environment for researchers and academicians to freely exchange the news and ideas with others.

I convey my warm greetings and felicitations to the organizing committee and the participants and extend my best wishes for the success of the conference.

(Mr. Sankha Roy Chowdhury)
Managing Trustee
BCDA Members Benevolent Trust

From the Principal's Desk.....



Message

It is a matter of pleasing and joy that we once again are tiresome to explore the nurturing and sharing of knowledge among the pharmacy alliance for the shining of the pharmacy profession in corroboration of our co professionals.

BCDA College of Pharmacy & Technology, Hridaypur, Barasat, Kolkata- 700127, West Bengal, is established in the year 2006, under the philanthropic consideration of BCDA Members Benevolent Trust, and which within this span of times has gained reputation, as one of the best colleges in India. Bengal Chemists & Druggists Association (B.C.D.A.) was established in century back in 1921 and is the oldest organization in the trade of medicine in India. It has approximately 45,000 odd members all over West Bengal and the motto of the organization is the "Service to Humanity".

The institution believes in quality in education and always striving hard to cater outcome based education system and has three streams in M.Pharm programs, in addition to B.Pharm program, approved by PCI and affiliated to MAKAUT. The institution already spreads its fragrance globally producing little genius. The institution has its sister concern named "BCDA College of Pharmacy & Technology, Campus-2, Madhyamgram, Kolkata-700129, conducting Diploma and Degree in Pharmacy.

Scientific publications, seminar, symposium, workshops are in separable part of good quality education, and teaching learning process for any institutes, any we are not any exception, thus we always motivate ourselves including the students ,for the same.

The College is governed by a galaxy of luminaries of the academics, industries and other health professionals.

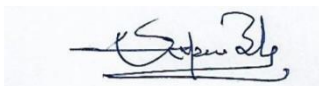
It is located within the metropolitan city of Kolkata, at 78 Jessore Road (S), Hridaypur, Barasat, Kolkata-700127; and connected with the Tilottama Kolkata in one way, the neighboring country Bangladesh and our Northern India in the other way.

Pharmacy education in the recent decades in India has metamorphosis in character, mass and dimensions, and it is the need of the hour to make it more industry & research friendly alongside health professionals. Keeping in view of the same, we are going to organize a National Conference on 21st & 22nd March' 24, of which theme are "National Conference On: Innovation Through Integration: The Crucial Role Of Industrial And Clinical Orientation In Pharma Education". A group of achiever of the professional fields of the national – international level is to share their observation in the last decades, and expansion of future scope of the budding pharmacists.

I believe this platform will give ample scope the researchers in swapping up their views and enhancing knowledge base through their participation to the program in particular and others in general.

In this opportunity, I warmly invite you all, to ascertain the opening, taking part in mass, for glittering in the said National

Conference~24, and motivate all of us in dissemination of knowledge to all the aspirants including ourselves.



(Prof. (Dr.) Nripendra Nath Bala)

Professor & Principal,

**BCDA College of Pharmacy & Technology, Hridaypur, Barasat
& Organizing Chairman, National Conference - 2022**

From the Convenor's Desk.....



Message

Dear All,

A very warm welcome to the Delegates of National Conference 2024 organized by BCDA College of Pharmacy & Technology, Hridaypur, Kolkata 700127, in our 2 days Programme both at Campus-2 Auditorium, Madhyamgram & Hridaypur, Barasat campus.

As Convenor, I am extremely delighted to inform you that, these 2 days National Conference on "Innovation through Integration: The Crucial Role of Industrial and Clinical Orientation in Pharma Education" on 21st & 22nd March 2024 are highly encouraging program for all to lead us on the path of professional excellence in very near future.

I am thankful to BCDACPT Management & Administration in this regard for taking this initiative and giving their full support.

I appreciate the objective of the Conference to bring together Academicians, Scientists, Industrialists and Experts from different parts of the Country to exchange knowledge & ideas and to provide in-depth analysis of the present gap between our profession & society's need and bridging Academia & Industry to provide a sound & vibrant better health care system in India.

I hope that these 2 days Conference will serve as a pivotal platform for the Researchers, Academicians, Students and Industrialists towards reaping core values, innovative skills, their findings and research in various fields of Pharmaceutical Sciences through oral, poster, innovative model presentation and scientific deliberations.

With immense gratitude, I thank all the Hon'ble Speakers, Panelists, Evaluators, Dignitaries from Pharmaceutical Industry, Educational Institutes and other Professionals from

various fields for their support through their gracious presence & valued opinions to make this Conference a grand success.

My special thanks to our Chief Advisor, Patrons, all Trustee members of BCDA Members Benevolent Trust, Organizing Chairman & Co- Chairman, Joint Convenors, Co-Ordinator's, Joint Co-Ordinator, Treasurers, Technical & Venue committee , Scientific, Hospitality & Transport , Registration, Reception Committee, all other LOC members & Volunteers for their wholehearted support to organize this Conference.

I convey my warm Greetings to everyone.

Nityananda Mondal

***(Prof(Dr. Nityananda Mondal)
Convenor, National Conference – 2022
& President, APTI West Bengal branch.***

*Abstracts
for
Poster Presentation*

BCDACPT/P-01/2024

A Review on The Medicinal Properties of Phytochemical Constituents and The Marketed Formulations of *Catharanthus Roseus*" and "*Nigella Sativa*"

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Abstract: People have used medicinal plants for centuries to treat and recover from a variety of illnesses. Nowadays, people rely on plants in many ways for medical purposes and use them as a source of medicine. Since technology has advanced to such an extent that we don't use plants directly, we instead extract their chemical components to create formulations that we use for human consumption. Two important medicinal plants, "*Catharanthus roseus*" and "*Nigella sativa*" were discussed in relation to this topic because of its ability to fight cancer, *Catharanthus roseus*, member of apocynaceae family commonly known as Vinca rosea, is referred to as a warrior plant. Vinca contains four primary alkaloids that are used in large quantities as they are Vinblastine, Vinorelbine, Vincristine, and Vindesine. Vinca has many therapeutic uses, including as an anti-cancer, antidiabetic, antibacterial, and anti-dysenteric medication. It belongs to the class of cytotoxic drugs and has the capacity to suppress cancer cells. *Nigella sativa*, commonly known as Black seed is a member of the ranunculaceae family and has a variety of therapeutic benefits. It goes under the name Kalonji in India. Bioactive compounds such thimoquinone, nigillicine, nigllidine, nigllimine, and others are found in *Nigella sativa*. *Nigella sativa* seed extracts have demonstrated anti-inflammatory, antioxidant, anticancer, antihypertensive, hepatoprotective, antimicrobial, antiparasitic, antiosteoporotic, antihypercholesterolemic, and antidiabetic properties. In this review Therefore, we have discussed some of the ingredients in *Catharanthus roseus* and *Nigella sativa* as well as some of their most current commercial formulations.

Keywords: *Catharanthus roseus*, *Nigella sativa*, Anticancer, Antidiabetic, Thimoquinone, Therapeutic uses

BCDACPT/P-02/2024

More Spinach Please: Food To Fight and To Keep Bowel Cancer at Bay

Pritha Sarkar, Ivy Ghosh

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Abstract: The dynamic interactions that occur between gut bacteria, the host, and extrinsic causes of illness outcome are governed by complex interrelationships. In the polyposis in rat colon (Pirc) model, a multi-omics approach to spinach (SPI)-induced cancer prevention was initially investigated. In the Apc-mutant genetic background, β -catenin remained substantially overexpressed in adenomatous polyps, and SPI given for 26 weeks (10% w/w, freeze-dried in the diet) showed strong anticancer effectiveness. However, after consuming SPI, the taxonomic makeup of the gut microbiota reversed in both wild-type and Apc-mutant rats, indicating enhanced gut microbial diversity. Supported by transcriptome and metabolomic data, metagenomic prediction linked pathways, the tricarboxylic acid cycle, and the metabolism of linoleate and butanoate to cancer. Modifications to host RNA-miRNA networks and gut microbiota reconfiguration were linked to tumor suppression by SPI. Metabolomics showed anticancer results associated with N-aceto-2-hydroxybutanoate and SPI-derived linoleate bioactives, known for proapoptotic and anti-inflammatory properties. These findings suggest altered butanoate metabolism due to increased gut microbiome diversity. L- glutamate and N-acetylneuraminic acid levels were likewise decreased in colon tumors from SPI-fed rats, indicating changes in mitochondrial energetics and cell surface glycans related to oncogenic signaling networks and immune evasion. Finally, mechanistic support for linoleate and butanoate metabolism, together

with tumor-associated modifications in L-glutamate and N- acetylneuraminic acid, was given by SPI's multi-omics approach to cancer prevention. Further research is necessary on other parameters, such as the fiber content, in order to postpone colectomy and medication intervention in people who are at risk.

Keywords: Microbiome, polyposis, multi-omics, transcriptome, metagenomic, metabolomic, spinach,

BCDACPT/P-03/2024

Microspheres As a Novel Drug Delivery System-A Review

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Abstract: Microspheres considered as a promising frontier in drug delivery systems due to their unique properties and versatile applications. These spherical debris, normally ranging from 1 to 1000 µm in diameter, offer advantages including controlled release kinetics, improved drug stability, and targeted delivery, making them an attractive option for diverse therapeutic interventions. One of the key benefits of microspheres is their capacity to provide sustained or managed release of encapsulated drugs. By varying the composition and structure of microspheres, drug release kinetics can be tailored to suit precise therapeutic necessities, minimizing the need for common dosing, and improving affected person compliance. This controlled release functionality is specifically useful for drugs with narrow therapeutic windows or those requiring prolonged systemic exposure. Moreover, microspheres can guard encapsulated capsules from degradation, enzymatic metabolism, and different physiological boundaries, hence improving drug stability and bioavailability. This protecting impact is specifically superb for pills at risk of degradation inside the gastrointestinal tract or people with poor solubility. Moreover, microspheres may be engineered to target precise tissues or cells, further improving their therapeutic efficacy while minimizing systemic side effects. Surface modifications, such as ligand conjugation or coating with targeting moieties, enable precise localization of drugs to diseased sites, reducing off-target effects and enhancing therapeutic outcomes. Furthermore, the versatility of microsphere fabrication techniques allows for the incorporation of various drugs, including small molecules, proteins, peptides, and nucleic acids, offering a wide range of therapeutic possibilities across diverse medical fields.

Keywords: Microspheres, drug delivery, controlled release, targeted delivery, stability, encapsulation, therapeutic interventions.

BCDACPT/P-04/2024

Peripheral Nerve Stimulation for Tremor Amelioration in Movement Disorder Patients: A Narrative Review

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Abstract: Electrical stimulation can be used to deliver short electric impulses to individual or groups of muscles to cause action potentials under the stimulating electrodes, consequently producing muscle twitches and limb movements. Clinical applications of electrical stimulation first appeared in the 20th century. Parkinson's disease is a progressive neurological disorder marked by the degeneration of dopamine-producing neurons in the brain. This review examines the potential of peripheral nerve stimulation (PNS) as a promising treatment for tremors in movement disorders like Parkinson's disease and essential tremor. While traditional treatments like medication and deep brain stimulation have limitations, including side effects and invasive procedures, PNS offers a minimally invasive alternative with potentially fewer adverse effects. The review covers the mechanisms of PNS, its effects on tremor circuits, and stimulation targets such as the median and radial nerves. Overall, the

review highlights PNS's potential as a valuable therapeutic approach for tremor control, providing insights into its mechanisms and guiding its clinical use. Identify the databases most pertinent to our topic. Commonly utilized databases for literature searches encompass PubMed/MEDLINE, Web of Science, Scopus, PsycINFO, and Google Scholar. Parkinson disease patients. PNS represents a promising therapeutic option for tremor control in patients with movement disorders, offering a minimally invasive alternative to pharmacological interventions and deep brain stimulation. Through its modulation of neural circuits and physiological effects on tremor networks, PNS holds the potential to significantly improve patient outcomes and quality of life.

Keywords: *Peripheral nerve stimulation, Tremor, Movement Disorder, Parkinson's disease.*

BCDACPT/P-05/2024

PREPARATION AND CHARACTERIZATION OF NANOPARTICLES

Ritika Das, Dipanjana Ash

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Abstract: In 21st century, nanotechnology has gained popularity as a drug delivery system for reducing particle size (1-1000nm) with modified surface characteristics and achieving target specific pharmacological responses of drugs at controlled or sustained manner. Nanoparticles may be subdivided as one (nano-structured thin film), two (carbon nanotubes), and three dimensional (dendrimers, quantum dots, fullerenes) nanoparticles. Bottom-up and Top-down approaches are widely used for the preparation of nanoparticles. Moreover, solvent evaporation method, solvent diffusion technique, monomer polymerization, and ionic gelation technique are also adapted for nanoparticle synthesis. Nanoparticles are characterised on the basis of morphological properties, surface hydrophobicity, drug loading, and release capacity. Several microscopic techniques (Scanning electron microscopy, Transmission electron microscopy and atomic force microscopy), Dynamic light scattering technique, X-Ray photon correlation spectroscopy are employed for determining aforementioned properties of nanoparticles. Nanoparticles become suitable drug delivery candidate for several domestic and commercial applications such as agricultural, environmental, and pharmaceutical industry attributing to their distinctive physicochemical properties, high stability, improved entrapment efficiency, and broad-spectrum drug loading capacity. However, numerous researches on nanoparticles are only limited to preclinical stages as several physiological variables reduce the effective of nanoparticles.

Keywords: *Dynamic light scattering technique, Nanoparticles, Solvent evaporation method, Surface hydrophobicity, Transmission electron microscopy*

BCDACPT/P-06/2024

Peptic Ulcer: A common disease now a days

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Abstract: Peptic ulcers are open sores that develop on the inside lining of stomach or the upper portion of small intestine. Peptic ulcer includes Gastric ulcers (occurs on the inside of the stomach) and Duodenal ulcers (occurs on the inside of the upper portion of small intestine). When acid in the digestive tract destroy the inner surface of the stomach or small intestine then Peptic ulcers are form. It is mainly stomach infection which is caused by Helicobacter pylori bacteria and long-term use of non-steroidal anti-inflammatory drugs such as ibuprofen, aspirin. Spicy foods may aggravate ulcer symptoms in some people, but they don't cause ulcers. Some peptic ulcers do not cause symptoms,

these are called "Silent ulcers". The main symptoms of peptic ulcers are stomach pain and indigestion. Ulcer pain feels like burning in stomach, which is between breastbone and belly button. It may improve temporarily when an antacid or medication to reduce stomach acid is taken. Treatment for peptic ulcers depends on the cause. Usually treatment will involve killing the *H.pylori* bacterium if present, eliminating or reducing use of non steroidal anti inflammatory drugs if possible, and helping ulcer to heal with anti-ulcer medication. This presentation mainly aims to include about the disease and its prevention strategies.

Keywords: Non steroidal anti inflammatory agents, Silent ulcers, *H.pylori* bacterium, Stomach pain, Indigestion, Spicy food

BCDACPT/P-07/2024

A Review on Phytochemistry, Pharmacological Activities and Therapeutic Activities of *Syzygium malaccense* (L.)

Ayon Haldar, Arna Pal, Sudipta Chakraborty

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Abstract: *Syzygium malaccense* (L.) (Pomerac) belonging to the *Myrtaceae* family is widely grown in many countries. This plant species is frequently utilised in traditional medicine. The *Myrtaceae* family plant *Syzygium malaccense* (L.), also known as the "Malay apple," is grown extensively around the world. This review's objectives are to outline the scientific literature and offer structured data on the traditional applications, nutritional worth, bioactive ingredients, phytochemical components, and pharmacological properties of *Syzygium malaccense* (L.) species along with its other parts such as bark, leaves, roots, etc. that are currently available. Analysed data about malay apples was compiled from publications and links to PubMed, Google Scholar, Science Direct, Web of Science, Wiley Online Library, Research Gate, and Wiley Online Library. The bulk of research supported and provided evidence for the hypothesis that *Syzygium malaccense* (L.) and its active ingredients play a critical role in preventing degenerative and chronic illnesses associated with oxidative stress. Our findings demonstrate that more research is needed to create a possible strategy that could counteract the pharmacological and harmful effects of pomerac and is necessary for quality control on a global scale.

BCDACPT/P-08/2024

Atopic Dermatitis: A Review

Rima Bhattacharyya, Kamalika Mazumder

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Abstract: "Atopic" means "sensitivity to allergen". Atopic dermatitis is a chronic or long-lasting disease. atopic dermatitis is a strong genetic predisposition to an immune response against different antigens and allergens leading to cd4+th2 differentiation and overproduction of immunoglobulin E(IgE). It is non-curable diseases and it has no particular medicines. females are slightly more affected than males. Atopic disease is a genetic tendency to develop an allergic reaction when exposed to environmental substances, like direct sunlight, dewdrops in grass, dusty area, any types of hard fragrances used in skin care products, perfumes, scented soaps and any types of flowers anther etc. the symptoms of atopic eczema often have certain triggers, such as soaps, detergents, stress and the weather. It mainly starts in childhood, with changing severity over the year. those who live in cities and dry climates are more commonly affected. it is type of eczema. it causes dry, itchy and inflammation on skin. Skin moistening creams are used to make the skin less dry and prevent atopic disease and anti-inflammatory corticosteroid creams are used to treat atopic dermatitis. Treatment during exacerbation some steroids are used orally or topically. Anti-histaminic, Immuno suppressants, Calcineurin Inhibitors, phototherapy can be used for its treatment. It is affecting up to 20% of children

and 10% of adults in high income countries. This review concentrated on the clinical features, and treatment of atopic dermatitis.

Key words: Atopic dermatitis, Eczema, Steroid, Inflammation, Immuno suppressant.

BCDACPT/P-09/2024

Dostarlimab Used in The Treatment of Colorectal Cancer

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Abstract: The 19 million cancer cases reported worldwide in 2021. In colorectal cancer there are 10% cases of recuperation & 9.4% instances of dying suggested. Dostarlimab is a anti-PD-1 monoclonal antibody, made from “*Identical immune cells*” that are all clones of a specific parent cell. It is previously used to treat endometrial cancers & has a mechanism of action that is inhibit the PD-1/PD-L1. Recent a small clinical trial discovered that every single rectal cancer patient who got an experimental treatment saw their disease vanished, in what looks to be a miracle & a “*First Time in History*”. According to the *New York Times*, 18 patients took a medicine named Dostarlimab was administered every 3 weeks for 6 months in a limited clinical trial, done by “*Memorial Sloan Kettering Cancer Centre*”, and all of them saw mismatched repair-deficient stage- II or III rectal adenocarcinoma. All 18 patients had finished the treatment & have been accompanied up for 6 to 25 months. Wonderful end result shown that there are not any cases of progression or recurrences of the carcinoma have been said at some point of follow-up time. Patients had a clinical complete response after completion dostarlimab therapy might proceed without chemo radiotherapy & surgery. All 18 patients had completed the treatment & were followed up for 6 to 25 months. Positive result shown that there are no cases of progression or recurrence of the carcinoma had been reported during follow-up time.

Keywords: Dostarlimab, Monoclonal Antibody, Endometrial, Adenocarcinoma

BCDACPT/P-10/2024

A Systemic Review on Phytopharmaceutical Aspects of “*Andrographis paniculata*” and “*Syzygium aromaticum*” With Their Distributed Formulations

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Abstract: Extremely intimate relationship between medicine and civilization, while plants and plant parts have been used medicinally in the past, but not directly used at nowadays. Essential chemical components are extracted and isolated to create different formulations due to the human benefits. Medicinal plants, “*Andrographis paniculata*” and “*Syzygium aromaticum*” show important role to fight various disorders *Andrographispaniculata*, also known as “Green chiretta” (Kalmegh), is referred to as “King of Bitter”. Andrographolide, Neoandrographolide, Andrograpanin, 14-deoxyandrographolide, Andrographoside are some of the several major chemical components are present in Kalmegh which show diverse pharmacological activity like digestion, liver protection and act as anti-inflammatory, antioxidant, anti-diabetic, anti-bacterial, anti-virus and used in treatment of cardiovascular-cerebrovascular diseases, ulcers as well as cancer. Kalmegh's laxative qualities aid in the elimination process by affecting the GI system. *Syzygium aromaticum*, also known as Clove (Laung), small reddish brown aromatic flower buds used as a spice and possess great potential for pharmaceutical, cosmetic, food and agricultural applications. This plant richest source of volatile compounds such as eugenol, eugenol acetate, β -caryophyllene and gallic acid, phenolic acids, and other bioactive compounds. is the main bioactive compound of clove essential oil which show antioxidant, anti-inflammatory, anti-microbial, anti-nociceptive, anti-viral activities and cytotoxicity

properties. In addition to many other ailments, it may treat diseases of the stomach and respiratory system. In this review, therefore we have discussed some of the ingredients of *Andrographis paniculata* and *Syzygium aromaticum* as well as some of their most current commercial formulations.

Keywords: *Syzygium aromaticum*, Kalmegh, Eugenol, Anti-oxidant, Anti-inflammatory, β -caryophyllene and Gallic acid

BCDACPT/P-11/2024

Personalized medicine & it's approach

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Abstract: Personalized medicine, also known as precision medicine or individualized medicine, a broad and rapidly advancing field of healthcare that is informed by each person's unique clinical, genetic, genomic, and environmental information. These characteristics can include genetic makeup, environmental factors, lifestyle, and personal health history etc.

Personalized medicine has mostly focused on the systematic application of genetic or other patient-specific data to optimize or choose the patient's course of preventive and therapeutic treatment. The focus of healthcare is now shifted from reactive to preventative, with physicians able to develop optimum care regimens at every stage of a disease by analysing human genome properties. Genomics, Proteomics, and other areas of biomedical research have revolutionized personalized medicine by unlocking the genetic and molecular underpinnings of diseases. By examining a patient's genetic makeup and biomarkers, as well as other pertinent information, healthcare providers can more accurately predict which treatments will work best for a specific patient and identify potential risk factors for adverse reactions. From oncology to cardiology to neurology to psychiatry, personalized medicine can be used to improve treatment outcomes, reduce side effects, and optimize resource allocation across the entire healthcare continuum.

Personalized medicine has the potential to revolutionize healthcare by offering more accurate and effective therapies suited to each patient's unique traits, resulting in better health outcomes and quality of life. However, despite these obstacles, personalized medicine has great potential to revolutionize the way we diagnose, treat, and prevent diseases on a personalized level.

Keywords: *Precision medicine, Pharmacogenomics, Individualized therapy, Genomic medicine, Personalized treatment.*

BCDACPT/P-13/2024

Apheresis: An Innovative Medical Technology

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Abstract: Apheresis or therapeutic apheresis, a novel therapeutic modality in modern medical technology, involves extracorporeal removal or separation of specific blood components (plasma, red blood cells, white blood cells, platelets, or specific plasma proteins) for diagnosis and treatment of several medical conditions such as leukemia, lymphoma etc. The two techniques of apheresis (centrifugal technique following membrane filtration process) are also employed in current purification procedures (leukocytapheresis, erythrocytapheresis, thrombocytapheresis, and plasmapheresis) to separate blood components. Despite being well-established and expanded, there are still issues with the selectivity and long-term impacts of procedure on blood cells and their components as generated shear stress may often damage cell via initiating complement cascade causing for either activating platelet or triggering inflammatory factors.

Keywords: Centrifugal technique, Membrane filtration, Plasmapheresis, Therapeutic apheresis

BCDACPT/P-14/2024

Medicinal Mushrooms: The New Era of Medicine

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Abstract: Medicinal mushrooms are those which can provide a physiological benefit to the human body upon consumption. All mushrooms are not medicinal, some are poisonous & deadly. Chaga, Lion's mane, Reishi, Turkey tail, Cordyceps & Maitake are considered as best medicinal mushrooms. Reishi & Cordyceps have been used as traditional medicine in China for thousands of years. Scientists are continuously researching on the specific compounds contained within it which have different effects on human body. The most important bioactive compounds present in it are beta-D-glucans, terpenoids along with amino acids, vitamin B & D, minerals such as zinc, potassium, magnesium & prebiotic fiber which help to improve our gut. These compounds interact with the immune system. Also acts as a natural pain & inflammation reducer. Apart from this, they've antioxidant properties. Turkey tail contains Polysaccharide-K which is an approved anticancer drug in Japan. Psilocybin containing mushrooms used for overcoming PTSD & Chaga prevent the growth of cancer in the liver cells. Besides that, Lion's mane is best known for potential benefits for brain health. Medicinal mushrooms can be taken as supplements in form of capsule, powder, tincture alongside food items and water to improve human health. So, it is important to educate the society on medicinal mushrooms science. Furthermore, regular awareness programs and campaigns should be conducted about the health benefits of medicinal mushrooms. On the other hand, priority should be given to the discovery of new species of medicinal mushrooms.

Keywords: Medicinal mushrooms, beta-D-glucans, cordyceps, PSK, Psilocybin

BCDACPT/P-15/2024

Bioplastic: Medical Applications and Biodegradation

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Abstract: Bioplastic, which is derived from renewable biomass sources like corn starch, sugarcane, microorganisms, offering an eco-friendly alternative to traditional petroleum derived plastics. Distinct bioplastics including Polylactic acid (PLA), Polyhydroxyalkanoates (PHAs), Polyglycolides (PGL) etc are used widely in medicine because of their biocompatibility as well as its bio dissolvability, which means it has a significant response in human body and can dissolve with time. These characteristics make it perfect to use in skin and bone tissue engineering and in Drug Delivery System (DDS) like manufacture of capsules. It's also used in a narrow range of surgical and biodegradable materials with applications in body implants like bones, scaffolds and breast implants. In the medical sector, a potential market for bioplastics is disposable, single-use plastics like gloves, facemasks, haircaps, medical packaging. During biodegradation, microorganisms like bacteria, fungi break down the molecular structure of the biopolymer and results in the soil being enriched with organic matter, since the materials used are mostly bio-based and reduced the plastic pollution in environment. On the other hand biodegradable polymers containing drugs degrade in the stomach, undergoes chemical degradation by stomach acid, enzymatic degradation by gastric lipase and pepsin which can breakdown polymer matrix and release the drug. This process permits for controlled drug release in gastrointestinal tract (GIT). Currently bioplastics become more gracious due to their specific biological, pharmaceutical and degradation properties. The main aim of research on bioplastic is to improve properties, such as enhanced biodegradable its, durability, scalability and accelerate the adaptation of Bioplastic as sustainable alternatives in various applications.

Key words: Biodegradable polymers, renewable resource, Medical applications, drug delivery system (DDS), sustainability.

BCDACPT/P-16/2024

A Review on Natural Colorants in The Pharmaceutical Industry

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Abstract: Colorant or dye is a substance that colour any object. Natural and synthetic dyes both are available but in the pharmaceutical industry natural colorants are used as they are safe for use, non-toxic and do not cause any irritation to the body. In Pharmaceutical industry several types of natural colorants have been used for various purposes including increase the attractiveness of the product and providing means of identification of the drug. Natural colorants obtained from natural sources such as vegetable, animal or mineral matters. Colorants have been used in Pharmaceutical product like beverages, cosmetics, tablets(coating), capsules (capsule shell) etc. They also provide some health benefits such as antioxidant and anti-inflammatory properties. However, it is essential for the pharmaceutical companies to ensure the stability and quality of colorants used in their products. Some commonly used natural colorants are curcumin, betanin, tannin, anthocyanin, pumpkin, chlorophyll, start fruit leave. Curcumin: Obtained from turmeric. It is yellow in colour and antioxidant properties; Betanin: Source of betanin is beetroot which is red in colour, it helps to improve blood flow and lowering blood pressure; Anthocyanin: Obtained from various fruit and provide red, purple colour and also has antioxidant properties. Overall, natural colorants not only used for coloured any object but also have pharmaceutical properties. The use of natural dyes does not change the taste, aroma and texture of the products.

Keywords: Beverages, Natural dyes, Cosmetics, Pharmaceutical products, Curcumin, Anthocyanin

BCDACPT/P-17/2024

Deciphering The Theragnostic Implications of Gut Microbiome in Alzheimer's Disease

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Abstract: Alzheimer's disease (AD) is a neuro-degenerative disorder of the central nervous system which is caused mainly due to oxidative stress, tau protein hyperphosphorylation, and amyloid toxicity. Though there aren't many effective treatment modalities available for AD, understanding the processes that regulate the disease's start and progression may help develop novel, efficient treatment approaches. The development of clinical AD is influenced by tau aggregates, neuroinflammation, and amyloid beta oligomers and plaques, all of which are essential components of neurodegeneration. There is mounting evidence linking neuroinflammatory processes along the microbiota-gut-brain axis to dysbiosis of the human gut microbiota and neurodegenerative illnesses like AD. The alteration in the gut microbiota's architecture leads to a rise in proinflammatory mediators, alterations in the blood-brain barrier (BBB) permeability, immune system activation, and ultimately neurodegeneration. Amyloids and lipopolysaccharides are released as a result of microbiota dysbiosis brought on by increased intestinal bowel disruption and changed BBB permeability. Through the production of toxins and short-chain fatty acids, which alters gut permeability and other immunological processes, the gut microbiota influences brain health. Studies indicated the microbiome diversity is lower in AD patients, which may have an impact on the disease's pathophysiology. Finding the genetic underpinnings of microbial abundance and how it affects AD may lead to lifestyle modifications that lower a person's chance of developing the illness. Recent studies have demonstrated distinct changes in the gut microbiome makeup of Alzheimer's patients, positioning the gut microbiota as a significant susceptibility factor in Alzheimer's disease. In this poster the significance of gut microbiome and its therapeutic implications in neurodegenerative disease has been illustrated.

Keywords: Alzheimer's disease, gut microbiota, theragnostic, neurodegenerative disorder, neuroinflammation

BCDACPT/P-18/2024

The Role of Natural Products in Drug Discovery: Discovery of Antineoplastic Agents

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Abstract: Drug discovery using natural products is a challenging task for opening the new era of medical science. It shows the necessity of bioactive compounds derived from natural resources either for its phytochemical analysis or characterization or pharmacological investigation. From many years, natural products have been acting as a source of therapeutic agents and have shown beneficial use. Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells in the body. These abnormal cells can form tumours and invade nearby tissues and organs, thereby interfering with normal body functions. There are more than 100 different types of cancers, each with its own characteristics, risk factors, and treatment options. In old days cancer was treated by using radiation therapy(x-ray). In 1906 radium needle were used to treat cancer. But there were no awareness of the risk and no radiation protection. This causes the death of many radiation pioneers from disease relating to over exposure. Promising and novel cancer therapies have been explored and studied in natural compounds and their structural activities and show exceptional variation in chemicals. In addition, the distinct molecular characteristics of natural products enable them to offer greater safety and effectiveness. The role of natural products like Taxol, Vincristine, Vinblastine has been thoroughly implicated in the management of blood cancer and Hodgkin's disease. Moreover, the integration of deep learning and artificial intelligence with traditional computational drug discovery methods may be useful for enhancing the anticancer potential of natural products.

Keywords: *Natural products, Herbal, drug discovery, Phytochemicals, Bioactive*

BCDACPT/P-19/2024

Bioavailability Enhancement Strategies for Herbal Medicines

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Abstract: Recently, the use of herbal medicines has been increased all over the world due to their therapeutic effects and fewer adverse effects as compared to the modern medicines. Many herbal medications and extracts, however, exhibit little to no in vivo action despite their remarkable in vitro results. This is because they are poorly soluble in lipids or have the wrong molecular size, which causes poor absorption and, consequently, low bioavailability. Modern technological advancements have made it possible to build innovative drug delivery methods that improve the bioavailability of herbal medication delivery systems. Over the past ten years, several innovative delivery technologies, including lipid-based systems, liposomes, microspheres, nanoparticles, transferosomes, have been successfully used to modify the distribution of different herbal medications. This review's goal is to provide an overview of the several cutting-edge medication delivery methods now in use. By employing innovative formulation approaches and delivery systems, the bioavailability of herbal compounds can be enhanced, unlocking their full therapeutic potential and promoting their integration into mainstream healthcare practices. Continued research and development efforts are essential to further advance bioavailability enhancement strategies for herbal medicines and maximize their clinical benefits.

Keywords: *Herbal medicines, Bioavailability, Drug delivery methods, Innovative formulation approaches, Therapeutic potential*

BCDACPT/P-20/2024

Challenges and opportunities of orphan drug development

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Abstract: Pharmaceutical agents which treat rare medical conditions like orphan or rare diseases are called "orphan drugs". The term "orphan" itself suggests that the pharmaceutical industry is becoming less interested in creating and promoting medications meant for a limited patient base. The main obstacle to the development of orphan orphan drugs presents a unique set of challenges and opportunities within the pharmaceutical industry. Orphan drugs target rare diseases, affecting a small percentage of the population, this frequently results in restricted market potential and unpredictability for medication developers' finances. The lack of patient populations for clinical trials is one of the main obstacles to creating orphan medications, impeding conventional drug development paths and calling for creative trial designs and patient recruiting tactics. In recent years, progress has been made in the development of orphan drugs by pharma industries due to enactment of different regulations, administration authorities, tax benefits, marketing rights and public awareness by different countries. This review provides an overview of challenges and opportunities of orphan drug development and also incentives, marketing rights and administrative author.

Keywords: orphan drugs, rare diseases, pharmaceutical industry, challenges, opportunities, regulations, clinical trials, patient recruitment, incentives, marketing rights, administrative authorities

BCDACPT/P-21/2024

Implementation of Raman Spectroscopy in the field of molecular fingerprint analysis

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Abstract: Raman spectroscopy is a non-destructive technique used to determine the molecular composition of samples in a variety of states. This study discusses the concept of Raman spectroscopy and highlight its application in various scientific fields, particularly in the molecular fingerprint analysis. Raman spectroscopy is vibrational technique involve high energy photons based on the inelastic scattering of radiation in the visible or near-infrared region of the sample. Most of the scattered light (Rayleigh scatter) has the same wavelength as laser source light. There are two types of light scattering the elastic and inelastic scattering. The elastic scattering is when the photon frequency doesn't shift or changes its wavelength. The opposite is the inelastic scattering, which is involved in Raman spectroscopy. The shift of the frequency can be used to get an information about the molecular chemistry. The versatility of Raman spectroscopy extends across various scientific disciplines, with applications ranging from pharmaceuticals and materials science to biology and environmental monitoring. Raman spectroscopy facilitates advanced materials characterization, including polymorph analysis in pharmaceuticals, identification of biomolecules in biological samples. In conclusion, Raman spectroscopy serves as a versatile tool for characterizing substance, identifying unknown compounds, and studying molecular dynamics. Its non-destructive nature, high sensitivity, and ability to provide a unique "fingerprint" make it an indispensable tool for scientific exploration and discovery.

Keywords: Raman spectroscopy, Rayleigh scatter, Inelastic scattering, Non-destructive

BCDACPT/P-22/2024

Emergence of Nano liquid chromatography in analytical chemistry

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Abstract: Chromatographic technique was invented in 1903 by Russian botanist Mikhail Semenovich Tswett when he was studying plant pigments. The nano-LC technique was first introduced by Karlsson and Novotny in 1988. It is a kind of 'microfluidic system' used to resolve different pharmaceutical, clinical, biomedical, metabolic, protein, and enantiomeric compound. This study discusses the concept of nano-LC, discuss its key features, and highlight its applications in various scientific fields, particularly in the pharmaceutical analysis of drug samples. NanoLC involves the miniaturization of liquid chromatography systems, employing columns with internal diameters in the nanometer range (10-100µm). This system is based on the same principles applied to conventional chromatography. This miniaturization leads to reduced solvent consumption, faster analysis times, and improved peak resolution for the separation of complex mixtures. This enhanced sensitivity and efficiency make nano-LC a valuable tool in various fields from proteomics and metabolomics to pharmaceutical analyses, nanoparticle characterization and environmental monitoring. It aids in understanding glycan structures and their roles in health and disease. Its ability to handle minute sample volumes makes it particularly suited for the analysis of limited biological samples. This study concludes by emphasizing the transformative impact of nanoLC on pharmaceutical analysis. NanoLC has excellent scopes in drugs development, design and analysis of drugs. The process become more effective and sensitive when hyphenated with mass spectrometric technique.

Keywords: miniaturization, chromatography, proteomics, effective, metabolomics

BCDACPT/P-23/2024

Synthesis, Characterization, and In-Vitro Evaluation of Quercetin-Copper Complex

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Abstract: Quercetin(3,3',4',5,7-pentahydroxyflavone), a dietary flavonoid abundant in medicinal plants, vegetables, and fruits, possesses a diverse array of pharmacological effects owing to its active phenolic hydroxyl groups and double bonds. However, its therapeutic potential is hindered by challenges such as low solubility, stability, and bioavailability. Complexation with metal ions, notably copper, serves to ameliorate these limitations, enhancing both stability and biological activities. Given copper's pivotal roles in angiogenesis, bone development, wound healing, enzyme activity, and antimicrobial effects, it emerges as a prime candidate for quercetin complexation, offering promising prospects for enhanced pharmaceutical efficacy.

Characterization of the product involved a comprehensive suite of analytical techniques, including UV-visible spectroscopy, FTIR spectroscopy, FESEM, and XRD analysis. Furthermore, the electrochemical behavior of the quercetin-copper complex was meticulously examined. Prior to potential biomedical applications, diverse biophysical studies were undertaken to evaluate the complex's DNA binding capacity. Quercetin's efficacy in inhibiting drug-resistant microorganisms underscores its potential as a potent antimicrobial agent against resilient strains. Moreover, structural modifications of quercetin have demonstrated the ability to amplify its antimicrobial activity relative to the parent molecule.

This study endeavors to delve deeper into the mechanistic underpinnings of quercetin complex action, thereby elucidating its implications for clinical antimicrobial therapy.

Keywords: *Quercetin, Quercetin-copper complex, antimicrobial activity, DNA binding.*

BCDACPT/P-24/2024

Analgesic and anti-inflammatory activity of purified roots of *Plumbago Zeylanica*

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Abstract: The purified roots of *Plumbago Zeylanica* are used widely in Ayurveda for the treatment of various painful inflammatory condition & rheumatic diseases. In our preliminary *in vitro* studies, the methanolic extract of the purified root was found to have the highest anti-inflammatory and antioxidant activities. Hence, the present study proposes to investigate the *in-vivo* analgesic and anti-inflammatory activities of the methanolic extract of purified root and the possible mechanism through *in silico* studies. Analgesic activity and anti-inflammatory activities were assessed in rats through formalin-induced pain model and carrageenan-induced paw edema models, respectively. Prediction of bioactive compounds was conducted through molecular docking and dynamics of different phytoconstituents of *P. zeylanica* with the cyclooxygenase-II enzyme. Results of *in vivo* studies revealed that the methanolic extract was having significant analgesic and anti-inflammatory properties. The results of molecular docking indicated that there is a good interaction between phytoconstituents of the methanolic extract and COX-2 enzyme, with the Chitranone being the most inhibiting compound having stable ligand anchoring. The study concludes that the methanolic extract of purified roots of *P. zeylanica* possesses notable anti-inflammatory and analgesic activities, potentially attributed to the presence of its COX-2 inhibitor compounds.

Keywords: *Analgesic activity, anti-inflammatory activity, phytoconstituents, cyclooxygenase*

BCDACPT/P-25/2024

Unleashing the molecular mechanism and ameliorative potential of Amygdalin in cancer therapeutics

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Abstract: Malignant tumours are the major disease that cause serious damage to human health and have been listed as the premier diseases which seriously threaten human health by the World Health Organization (WHO). In recent years the development of antitumor drugs has been gradually transformed from cytotoxic drugs to improving the selectivity of drugs, overcoming multidrug resistance, development of new targeted drugs and low toxicity with high specificity drugs. Amygdalin is a promising naturally occurring molecule against cancer disease development and progression. Amygdalin is a natural cyanogenic glycoside, found in the seeds of the fruits of *Prunus rosaceae* family including apricot, bitter almond, cherry, and peach. It has been shown that amygdalin causes cancer cells to undergo apoptosis, which prevents cancer cells from proliferating and slows the growth of tumour metastases. Amygdalin exhibits its anti-tumour activity through influencing or modifying the proteins involved in the cell cycle. Recent research has spotlighted the therapeutic potential of Amygdalin via cyclin, exonuclease, topoisomerase modulation. Several studies have been reported in the analysis and detection methods of amygdalin which indicates that amygdalin plays a key role in the cancer therapeutics, diabetes, atherosclerosis, immune suppression, leprosy and other diseases. This poster illustrates the recent progression of amygdalin in cancer research.

Keywords: *Amygdalin, anticancer, apoptosis, glycoside, cell cycle inhibitor.*

BCDACPT/P-26/2024

Chemotherapy Induced Nausea and Vomiting

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Abstract: Chemotherapy-induced Nausea and Vomiting is one of the most common and distressing acute side effects of cancer treatment. It occurs in up to 80% of patients and can have a significant impact on a patient's quality of life. The significant physical and emotional effects of chemotherapy-induced nausea and vomiting (CINV) are experienced by cancer patients. Severe symptoms decrease the patient's quality of life and potentially deters further treatment. The five main forms of CINV (i.e., acute, delayed, anticipatory, breakthrough, and refractory) require different treatment regimens, which often include 5-HT₃ receptor antagonists, NK1 receptor antagonists, and corticosteroids. Despite a significant amount of research and development of antiemetic agents, management of CINV remains a great challenge with many needs waiting to be adequately addressed, such as controlling non-acute CINV, developing appropriate CINV treatment protocols for multiple-day chemotherapy patients, and providing options for those prone to CINV despite treatment. Further research is required to optimize CINV management for these patients. We focused on this topic the pathophysiology factor which chemotherapy induced Nausea and Vomiting.

Keywords: Drug therapy, Nausea, Vomiting, Antiemetics.

BCDACPT/P-27/2024

Amelioration of Robotic Pills in The Delivery of Insulin Through Git And Its Fete In The Treatment of Other Medical Conditions In Therapeutic World

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Abstract: Oral drug delivery of proteins is limited by degradative environment of the gastrointestinal tract and poor absorption, requiring parenteral administration of these drugs. Luminal mucus represents the initial steric and dynamic barrier to absorption. To overcome this barrier, the RoboCap has been developed, an orally ingestible, robotic drug delivery capsule that locally clears the mucus layer, enhances luminal mixing and topically deposits the drug payload in the small intestine to enhance drug absorption. RoboCap's mucus clearing and churning movements are facilitated by internal motor and by surface features that interact with small intestinal plicae circulares, villi and mucus vancomycin and insulin delivery mediated by RoboCap resulted in enhanced bioavailability 20 to 40 folds greater in ex vivo and in vivo swine model when compared with standard oral delivery. Further, insulin delivery via the RoboCap resulted in therapeutic hypoglycemia, supporting its potential to facilitate oral delivery of drugs that are normally precluded by absorption limitation. Gaily researchers have come across a conscientious strategy to make the pill biocompatible to prevent activation of immune response against the capsule so it is administered through coating it with a polymer like polyethylene glycol (PEG). This entire concept was first performed in pigs, finding that it was effective at getting the pigs bodies to absorb medications, including insulin and an IV antibiotics. Though the research is preliminary, it could one day make treatment of many medical conditions easier and more.

Keywords: RoboCap, Vancomycin, insulin, hypoglycemia, polyethylene glycol, IV antibiotics

BCDACPT/P-28/2024

A Review on Marigold and Its Medicinal Uses

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Abstract: *Tagetes erecta* Linn. (Marigold), a member of the Asteraceae family, is most common in the plant kingdom, are used in a number of applications which include cosmetic, medicinal and ornamental preparations. It comes in a different variant of colours and fragrances which can be used to characterize it. The most common colour of marigold flower is bright yellow or orange. It is native to Mediterranean regions but is now cultivated worldwide for its ornamental and medicinal purposes. In India, these were introduced by the Portuguese in the early 16th century. The plant *T. erecta* contain quercetagenin, a glucoside of quercetagenin, phenolics, syringic acid, quercetin, thienyl, lutein and ethyl gallate. Lutein is one of the major constituents and the main pigment of *Tagetes erecta*. Traditionally, It is used as a health remedy for many health issues, the leaves are effective against wounds, ulcers, kidney problems, back pain and piles. The flowers contain flavonoids, triterpenes, polysaccharides and are rich in bioactive compounds which is used in Ayurveda medicine for centuries to treat fevers, epileptic fits, stomachic ailments, scabies, liver complaints, astringent, carminative and eye diseases. Marigold displays a variety of pharmacological activity like antibacterial, anti-depressant, anti-fungal, antiepileptic, anti-microbial, hepatoprotective, antioxidant, insecticidal, mosquitocidal, wound healing, larvicidal, anti-inflammatory, anti-cancer, anti-diabetic etc. Marigold's diverse pharmacological profile calls for more investigation and study, maybe opening new directions for its application in healthcare and medicine preparation.

Keywords: *Marigold, Tagetes erecta* Linn., characteristics, Chemical compositions, Traditional Uses, Medicinal Uses, Pharmacological activities.

BCDACPT/P-29/2024

Recent advancements in the nanotherapeutic strategies of Idiopathic Parkinsonian Disorder

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Abstract: Idiopathic Parkinsonian Disorder (IPD) is one of the most common life-altering, debilitating neurodegenerative disorders which exhibits a severe physical, psychological, and financial burden on patients, affecting more than 10 million people worldwide. Since 1997 approximately 1,064,750 deaths are reported from IPD in the entire world. Parkinson's Disease mainly occurs when nerve cells in the basal ganglia, an area of the brain that controls movement, become impaired or lose their potency. This leads to the degeneration of substantia nigra pars compacta (part of basal ganglia) & the nigrostriatal (dopaminergic) tract resulting in the deficiency of dopamine which controls the body movements. Hence, the symptoms that can occur in the body of the persons affected with IPD are tremors, rigidity, cramps, and bradykinesia. The blood-brain barrier's (BBB) protective nature and capacity to restrict entry to foreign molecules, including medications, provide a significant treatment challenge for Parkinson's disease (PD). The drugs used now are generic and given at levels that have a variety of negative side effects. Nanoparticulate drug delivery systems have been a promising method for treating various illnesses. Carbon-based polymeric nanoparticles (CPNs) among other nanocarriers provide a number of benefits, including higher bioavailability due to greater permeability to the brain, a benign nature, and the capacity to be conjugated to pharmaceuticals. CPNs have demonstrated therapeutic potential as nanocarriers for IPD. Even though IPD-related research is few, their promise as treatments is clear from their inventive drug delivery system compositions. This poster is aimed at manifesting the roles and

properties of CPNs that make them efficient therapeutic nano-delivery vehicles for the treatment of IPD, including therapeutic advances to date.

Keywords: Parkinson's Disease, neurodegeneration, novel drug delivery, nanoparticles, drug targeting.

BCDACPT/P-30/2024

Nanogels For Brain Tumour Therapy: Biocompatible Vehicles For Targeted Drug Delivery

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Abstract: Chemotherapy and Radiation remain as mainstays in the treatment of variety of cancers globally, yet some therapies exhibit limited improvement and result in harsh side-effect of patients due to restrictions from the blood-brain-barrier(BBB) .A Nanogel is a three dimensional hydrogel that is formed by connection of nanoscopic micelles dispersed in an aqueous medium having an inherent capability to incorporate hydrophobic molecules in the core of the micelles while maintaining a hydrophilic exterior . Hydrogels carrying "Epirubicin" and BSA/PTX NPs showed remarkable tumour growth inhibition with the medium survival of 69 days whereas the average survival spans for animals in control group receiving no treatment after surgical tumour removal was 27 days. Nanogels are used as biocompatible vehicles in TDDS. Small size allows penetration into the skin and they can be designed to respond to specific internal stimuli for controlled release of loaded drug, preventing drug accumulation in non-target tissues and minimizes the side-effects of drug. However clinical studies revealed that the repeated administration in humans induced antigen specific cellular and humoral immunity. Thus,Nanogels provide local or systemic treatment options that respect the BBB and the physiological feature of the cranial cavity while limiting adverse effects with its applications in artificial muscles, biomimetics, Photonics drug delivery.

Keywords: BBB, Photonics drug delivery, Artificial muscles, TDDS, Micelles, Hydrogel.

BCDACPT/P-31/2024

3D Printing: A new era in pharmaceutical world

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Abstract: Using a computer-driven process based on a digital model, materials are deposited layer by layer to create three-dimensional (3D) things through the process of 3D printing. In the pharmaceutical sectors, 3D printing has emerged as one of the most advanced and potent tools for creating, producing, and evaluating innovative dosage forms since the 1990s. With the help of 3D printing, which combines robotics technology and computer-aided design (CAD), different dosage forms and medical devices can be created with greater accuracy, less work, and greater efficacy. Fused Diffusion Modelling (FDM), Powder Based (PB), Laminated Object Manufacturing (LOM), Continuous Liquid Interface Production (CLIP), Selected Laser Sintering (SLS), and Stereo Lithography Apparatus (SLA) are some of the applications of 3D printing. Many inventions, such as functional kidney, ear, lower jaw, skull, eye lens, etc., or medications like levetiracetam, 5-FU, combined pills (polypills) for the treatment of diabetes mellitus type 2, cancer chemotherapy, hypertension, and many other conditions, have been very successful in the history of drug discovery. These days, the most popular medications for treating certain diseases or problems in individuals are multilayered tablets made by 3D printing, which provide extremely high activity with very little side

effects. I went into great detail on the history, purpose, methods, uses, and benefits of 3D printing in this article.

Keywords: CAD, FDM, LOM, SLS, Stereolithography.

BCDACPT/P-32/2024

Innovations in Ocular Drug Delivery: Addressing Challenges and Improving Efficacy

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Abstract: Ocular Drug Delivery is one of the most interesting and challenging drug delivery in terms of safety, efficacy and bioavailability. With limitations like blood ocular barrier, cornea, conjunctiva, nasolacrimal drainage etc. proper formulation of drug delivery systems are necessary. With improving technology, novel approaches to ophthalmic drug delivery systems have been made to address these challenges and improve efficacy. Novel approaches like prodrugs, use of penetrative enhancers like polymeric gels, bio adhesive hydrocele, liposomes, noisome, m8scroemulsions, Nano emulsionsetc. are being used for ophthalmic drug delivery as a way to address the various ocular barriers at the same time improve efficacy and bioavailability.

Keywords: ocular barriers, drug delivery, novel approaches, efficacy, bioavailability.

BCDACPT/P-33/2024

Nuts in the treatment and prevention of type 2 diabetes

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Abstract: Nuts' high nutritional profile and possible health advantages make them essential for both the prevention and treatment of type 2 diabetes. The evidence for include nuts in dietary treatments for people with type 2 diabetes is examined. Nuts are a great source of fiber, protein, unsaturated fats, vitamins, and minerals. These nutrients work together to enhance lipid profiles, insulin sensitivity, and glycemic management. There is a persistent negative correlation between nut consumption and the incidence of type 2 diabetes, according to epidemiological research. Furthermore, research studies show that include nuts in the diet can lower fasting blood glucose, insulin resistance, and hemoglobin A1c levels. Furthermore, while controlling weight is a critical component of preventing and treating diabetes, the satiating qualities of nuts may help. Their capacity to reduce postprandial glycemic reactions and low glycemic index provide additional credence to their usefulness in controlling blood sugar levels. To prevent possible weight gain, it is important to take into account portion size and overall calorie consumption. Nut integration into diets appears to be a straightforward, but effective, approach to controlling and preventing type 2 diabetes. To clarify ideal consumption habits and long-term impacts on diabetes outcomes, more investigation is necessary.

Keywords: Epidemiological research, dietary treatment, insulin resistance, postprandial glycemic reaction,

BCDACPT/P-34/2024

Jaundice & Its Herbal Treatment

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Abstract: Jaundice is the commonest ailments affecting the citizens of both developed and poor Asians countries including Iran. An ethnobotanical survey of plants used by the traditional healers for

the treatment of jaundice was conducted in the Mashhad city, Northeastern Iran. A total of 37 plants belonging to 32 genera and 26 families have been documented for their therapeutic use against jaundice. The plant families which contained the most commonly used species for their effects are: Fabaceae (5 species), Polygonaceae (4 sp.), Asteraceae (3 sp.), Plantaginaceae (2 sp.) and Salicaceae (2 sp.). The use of decoction is the most preferred method of herbal preparation. In all cases, the treatment involved oral administration of the extracts 2 to 3 times daily from a week to month till the problem disappears. *Cichorium intybus*, *Salix alba*, *Cotoneaster nummularius*, *Descurainiasophia*, *Malva sylvestris*, *Berberis integririma*, *Rumex acetosella*, *Phyllanthus emblica* and *Alhagi maurorum* were repeatedly mentioned by the traditional healers as the most widely used for the treatment of jaundice in the study area. The study indicates that the local inhabitants rely on medicinal plants for treatment. This paper suggested that further clinical experimentation is needed to scientifically evaluate these widely used herbal remedies for possible bioactive effects.

Keywords: Ethnomedicinal, Jaundice, Traditional healers, Mashhad, Iran

BCDACPT/P-35/2024

Phytosomes: An Advanced Approach in Cancer Therapy

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Abstract: Phytosomes, a lipid-based vesicular delivery system is used for development of formulation for improved bioavailability of medicaments of phytoconstituents present in herbal extract or herbal preparation. Phytosomes, also known as herbosomes, are cell-like phospholipids complex structures resembling a small cell. Phytosomes are used as a vesicular drug delivery system for cancer. Vesicular drug delivery systems in common are passive targeting drug carriers by evading the immune system. However, in the case of tumour therapy, phytosomes with a molecular weight greater than 40 kDa and a nano-metric size range of 100–1200 nm actively targets tumour cells due to enhanced permeation and retention. Phytosomes are mainly prepared by linking standardized plant extracts or water soluble phytoconstituents with phospholipids to produce lipid compatible molecular complexes that enhance their absorption and bioavailability. Plant derived products or plant extracts frequently face problems such as stability and bioavailability and it is potentially unfit to cross the biological membrane. To overcome this problem, Phytosome technique increases the hydrophilicity of highly lipophilic drug and lipophilicity of hydrophilic phytoconstituents to cross the biological membrane. Complexation of active ingredients with phospholipids of different phytoconstituents such as flavonoids, terpenes & saponins form reversible complexes with phospholipids that showed their anti-inflammatory and long lasting than those in free form. It enhances the bioavailability of polyphenolic compound through the incorporation of them into phospholipid. Nowadays, there are a number of marketed products of phytosomal drugs such as *Ginkgo biloba*, *Silybum marianum*, Grape seed, Hawthorn, and *Camellia sinensis* are available in the market.

Keywords: *Phytosomes, Novel drug delivery system, Phospholipids, Phytoconstituents.*

BCDACPT/P-36/2024

A Review on Medicinal Properties of Black Turmeric

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Abstract: Often referred to as "Black Turmeric," this perennial herb belongs to the Zingiberaceae family and has bluish-black rhizome. Because of this species' unparalleled therapeutic qualities, interest in it has been growing over time. Traditional healers employ the genus *Curcuma* in

ethnomedical techniques to cure a wide range of illnesses, however *Curcuma caesia* Roxb. is a relatively unknown and almost unexplored herb. *Curcuma caesia*, black turmeric is a perennial herb with bluish-black rhizome. The rhizomes of *Curcuma caesia* have a high economical importance owing to its reputed medicinal properties. Rhizome of this plant is claimed to be useful in treating several disease-like piles, leprosy, bronchitis, asthma, cancer, epilepsy, fever, wounds, impotency, fertility, tooth ache and vomiting etc. Antifungal, smooth muscle relaxant, anti-asthmatic, antioxidant, analgesic, locomotor depressant, anticonvulsant, and muscle relaxant effects, anxiolytic and CNS depressant, antibacterial, anti-ulcer, and numerous other ancillary activities have all been investigated in relation to the plant's rhizomes.

Keywords: *Curcuma caesia*, black turmeric, perennial herb, traditional healers, medicinal uses.

BCDACPT/P-37/2024

Protective Effect of Probiotics Against Tramadol Induced Nephrotoxicity

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Abstract: Probiotics are live bacteria and yeasts that are good for you, especially your digestive system. We usually think of these as germs that cause diseases. But your body is full of bacteria, both good and bad. Probiotics are often called “good” or “helpful” bacteria. Tramadol is one of the most widely used drugs in the pain treatment. As kidney disease is spreading greatly in the world, However high dose of this drug may cause hepatorenal toxicity as well as nephrotoxicity. Finally This may lead to uremia and kidney failure. During metabolism and conjugation by glucuronate and sulphate tramadol produce the toxic metabolite N-acetyl-p-benzoquinone(NAPQ1). Another metabolite can be produced after deacetylation. There are severe metabolite like P- aminophenol can be produce with the help of deacetylase enzyme in the kidney. NAPQ1 is eliminate by binding with glutathione. Both the metabolite are severely toxic and helps in the process of hepatotoxicity. In this review we aim to find out effects of probiotics in reducing the progression of nephrotoxicity induced by tramadol.

Keywords: *Tramadol, Kidney, Nephrotoxicity, Probiotics.*

BCDACPT/P-38/2024

Exploring The Pharmacological Potential and Phytoconstituents of Cucurbita Maxima Seeds: A Comprehensive Review

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Abstract: *Cucurbita maxima*, a member of the Cucurbitaceae family, is gaining global recognition for its multifaceted benefits. Despite the historical disregard for pumpkin seeds, which are derived from *Cucurbita maxima*, they harbor a plethora of essential pharmaceutical constituents, including proteins, antioxidative phenolic compounds, tocopherols, triterpenes, saponins, phytosterols, lignans, carotenoids, D-chiro-inositol, trigonelline, and nicotinic acid. Moreover, pumpkin seeds are rich in fiber, polyunsaturated fatty acids, vitamins, and minerals, such as zinc, iron, magnesium, calcium, manganese, and copper, rendering them invaluable in the food industry. Traditionally underutilized, pumpkin seeds derived from *Cucurbita maxima* are now integral to traditional medicine, exhibiting therapeutic potential in the treatment of diverse ailments, including hypertension, rheumatoid arthritis, hyperglycemia, inflammation, dyslipidemia, bacterial and fungal infections, and tumors. Consequently, pumpkin seeds derived from *Cucurbita maxima* are increasingly recognized as herbal remedies or health-enhancing agents for both humans and animals, with food scientists incorporating pumpkin-infused products into the food and health sectors. This recognition has prompted food manufacturers to expand the application of *Cucurbita maxima* seeds in appetizers, baking, and snacks. This review article delves into the pharmacological activities of pumpkin seeds derived from *Cucurbita maxima*, illuminating potential mechanisms that may mitigate a wide range of health

problems. By exploring the multifaceted benefits of Cucurbita maxima seeds, this review contributes valuable insights for researchers, health professionals, and food scientists interested in harnessing the therapeutic potential of this often-overlooked natural resource.

Keywords: Pumpkin seeds, Herbal medicine, Therapeutic potential, Traditional medicine.

BCDACPT/P-39/2024

Infographics of Alzheimer's Disease

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Abstract: A degenerative illness that progressively impairs memory and other critical mental abilities. It is one of the most devastating brain diseases affecting the elderly in humans is Alzheimer's disease. It's an underdiagnosed and undertreated illness that's growing in importance as a general health issue. Over the past ten years, there has been a consistent increase in the amount of work done to identify the disease's etiology and create pharmacological treatments. Improved clinical diagnostic guidelines and better behavioural and cognitive disturbance treatments are recent breakthroughs. Randomised, double-blind, placebo-controlled, parallel-group studies assessing performance-based assessments of cognitive function, activities of daily living, and behaviour have clinically evaluated symptomatic treatment, mostly focusing on cholinergic therapy. Galantamine, donepezil, tacrine, rivastigmine, and other cholinesterase inhibitors are among the medications that are advised for treating cognitive impairment in Alzheimer's patients.

Keywords: Alzheimer's disease, Cognitive, Cholinesterase inhibitor, Degenerative, Double - blind, Placebo – controlled.

BCDACPT/P-40/2024

A Review – Preparation of Herbal Cream

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Abstract: Semi solid dosage forms that are usually applied topically on skin are called creams. The poster mainly focuses on the preparation herbal cream with using herbal extracts. The herbal extracts used for preparation of herbal cream includes Turmeric, Papaya, Aloe vera, Tulsi, Neem, Amla, Cucumber. The choice of these ingredients is based on their individual properties including anti-oxidant, anti-inflammatory, antibiotic, anti-fungal, anti-bacterial, etc. The preparation of the cream was basically done by using the cream base i.e., liquid paraffin, beeswax, borax, methyl paraben and extraction of herbs and was prepared using slab technique. These creams are basically free from all the harmful genetically modified materials, synthetic residues, or chemicals which are found to be toxic for the skin. Some synthetic ingredients may cause skin irritation or clog pores. Different parts of the plant and plant extracts are used in herbal products. They also consist of natural nutrients like Vitamins and minerals that keep skin healthy, glowing and lustrous.

BCDACPT/P-41/2024

Pharmacogenomics & Its Future

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Abstract: The study of genetic variation in how the body reacts to medication is known as pharmacogenomics. It has a rich and diverse past as scientists have learned more about human genetic diversity, how it can impact the human body, and how the body reacts to drugs and other substances. Although additional study is now needed to put this into action, it has the potential to greatly enhance the healthcare system in the future. The use of genetics and other "omic" data to tailor, guide, and

educate medication therapy is known as pharmacogenomics. Although the field of pharmacogenomics is still in its infancy, it is already making its way into clinical settings and assisting doctors and other members of the healthcare team in making more informed and customized treatment decisions. The field of pharmacogenomics, which links single-nucleotide polymorphisms or gene expression to a drug's toxicity or efficacy, studies how genetic diversity affects a patient's response to medication. It seeks to create logical ways to tailor medication regimens to each patient's genotype, to maximize benefits and minimize side effects. These methods herald the arrival of customized medicine, in which medications and treatment combinations are tailored to the specific genetic composition of each patient. The whole genome application of pharmacogenomics studies the connections between individual genes and medications. The concluding remarks is that, the modern & future approaches including the pharmacogenomics "whole genome single nucleotide polymorphism (SNP) profile", and these approaches are coming into the clinical uses for drug discovery drug design and drug development.

Keywords: Drug, Healthcare, Pharmacogenomics, Polymorphisms, Toxicity.

BCDACPT/P-42/2024

Medicinal Benefits of Carica Papaya Leaf Extract

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Abstract: Carica papaya (papaya) leaf extract has been used for a long time in a traditional medicine to treat fever in some infectious diseases such as dengue, malaria, and chikungunya. The development of science and technology has subsequently made it possible to provide evidence that this plant is not only beneficial as an informal medication, but also that it has scientifically proven pharmacological and toxicological activities, which have led to its formal usage in professional health care systems. The development of formulations for use in nutraceuticals and cosmeceuticals has caused this product to be more valuable nowadays. The use of good manufacturing practice (GMP) standards, along with the ease of registering this product facilitated by policies of the national government, will absolutely increase the value of papaya leaf extract as a vital nutraceutical and cosmeceutical products in the near future. In this article, we review the potential of papaya leaf extract to be a high-value commodity in terms of its health effects as well as its industrial benefits. Carica papaya is a tropical plant with heavenly potentials in its various parts, especially the leaves. The papaya leaves contain various phytochemicals, such as antioxidants, alkaloids, flavonoids, saponins, terpenes, etc.

BCDACPT/P-43/2024

New Approaches to Tumour-Specific Drug Delivery

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Abstract: By precisely delivering therapeutic payloads to tumour tissues while avoiding healthy cells, tumour-specific drug delivery seeks to increase the effectiveness and decrease the toxicity of anticancer drugs. There is significant hope that this focused strategy might improve cancer patients' treatment outcomes. Nanoparticles, liposomes, antibodies, peptides, and aptamers are just a few of the medication delivery methods that have been created to target tumours specifically. In order to selectively concentrate and release medications within the tumour microenvironment, these delivery systems can take use of particular properties of tumours, such as overexpressed receptors, aberrant vasculature, and changed pH levels. To further improve targeting accuracy, stimuli-responsive drug delivery devices can be engineered to release medications in reaction to particular tumour triggers.

The use of tumour-specific medication delivery might significantly enhance cancer treatment and patient outcomes by reducing off-target effects while increasing therapeutic efficacy. Nevertheless, there are still obstacles to overcome when it comes to clinical translation optimisation of these delivery systems' design, reliability, and scalability. In order to overcome these challenges and fully utilise tumour-specific medication delivery in clinical practice, ongoing research is necessary.

Keywords: Tumour, Nanoparticles, Liposomes, Antibodies, Peptides, Aptamers.

BCDACPT/P-44/2024

Antioxidants In the Human Body: A Special Emphasis on Curcumin

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Abstract: A perennial herb, curcuma longa, is known as turmeric, used as a common spice and is naturally yellow. The plant's rhizomes are used as a flavouring in a variety of dishes and as medication to treat a wide range of illnesses, such as jaundice, menstrual problems, hematuria, etc. To treat a variety of skin conditions, it can also be used as an ointment. Curcumin, a flavonoid, is one of turmeric's active ingredients. Similar to vitamin D and E in strength, turmeric's curcumin component and its water- and fat-soluble extracts have powerful antioxidant properties. The primary cause of curcumin's hepatoprotective effects is its antioxidant capacity. Curcumin is a very powerful lipid-soluble antioxidant that may function through a pro- and anti-oxidant mechanism. The three steps of carcinogenesis—tumor promotion, angiogenesis, and tumour growth—can all be inhibited by curcumin. Due to the chemical makeup of curcumin, it is a strong antioxidant that has the ability to counteract free radicals. According to research, administering curcumin to test animals considerably lessens liver damage compared to controls, and curcumin protects aflatoxin B1 hepatotoxicity via inhibiting cytochrome P450 isozymes. Additionally, curcumin can reverse biliary fatty alterations as well as hyperplasia and necrosis.

Keywords: antioxidant, curcumin, curcuma longa.

BCDACPT/P-45/2024

Biologics and Biological Response Modifiers: New Approach to Cancer Treatment

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Abstract: Cancer is the second most common cause of death in many countries. A few decades back, cancer was considered as non-curable. It is no longer more so. In the recent years a surge is seen in the use of immunotherapy for the treatment of cancer. The compounds used are called Biological Response Modifiers (BRM) or biologics or immunomodulators. Tumor cells have been shown to avoid detection and destruction by the immune system. So, patients are operated through biotherapy procedure where substances like – monoclonal antibody, DNA vaccine, cytokines, antiangiogenic agents etc. are applied that activate their immune system and help in destroying the tumors. Cancer cells express a wide profile of different proteins that act as antigens. Some of these proteins may be a result of oncogenic transformation and are relatively specific to cancer cells. These 'tumor associated antigens' are delivered to the immune system by antigen presenting cells (APCs) through major histocompatibility complex (MHC) class-1 or class-2 pathways, after which the 'processed antigens' are recognised by cytotoxic and helper T-lymphocytes respectively. The goal of immunotherapy is to manipulate host-tumor interaction in favour of the host by boosting the body's defence system. One of the major adverse effects of cancer chemotherapy is immunosuppression which leads to many opportunistic microbial infections. Biologics helps to treat carcinoma without or less exposure of chemicals and they also reduce the severe side effects of such chemotherapeutic agents.

Keywords: Biologics, Biological Modifiers, Cancer, Immunomodulators

BCDACPT/P-46/2024

A Review on Potential Role of *Carica Papaya* Against Intestinal Parasites

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Abstract: Intestinal parasites are among the global health issues with substantial economic implications. These helminthic infections, caused by intestinal hookworms, roundworms, whipworms and tapeworms, are usually observed in cases of anaemia, pneumonia, eosinophilia, and malnutrition. Common symptoms are abdominal pains, nausea, and diarrhoea. Though not lethal, but these infections are recurrent among people living in poor sanitary conditions particularly in developing world. Conventional anthelmintic drugs, such as, albendazole, mebendazole, piperazine, and niclosamide suffers with some side effects along with their price and development of resistance. In traditional medicine, *Caricapapaya* (Caricaceae) has been utilized in the management of helminthes. Different scientific studies have been conducted with several common worm models and various parts of the papaya plant such as leaves, stems, seeds and latex of unripe fruits to demonstrate their anthelmintic property. The alkaloid carpaine, found in leaves, seeds and latex, has been scientifically explained for its role in expelling worms from human alimentary canal. Different studies identified seeds to be more effective which can be explained by the presence of benzyl isothiocyanate showing parasitocidal properties.

Keywords: *anthelmintic, hookworms, roundworms, albendazole, carpaine, benzyl isothiocyanate*

BCDACPT/P-47/2024

Antifungal resistance: present scenario and challenges

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Abstract: With the widespread use of immunosuppressants and indiscriminate use of antifungal-drug for long period in patient with severe infection are causing a world wide global health hazards called antifungal drug resistance superficially and systemically both. In the past few years, certain new progress and development has been made and approved by FDA focusses on the potential antifungals, repositioned drugs and drugs that prevent resistance in bacteria and fungi both. The fungal infection caused by dermatophytes, chromoblastomycosis, sporotrichosis and specially the systemic infection causing genera candida, aspergillus, mucor all are getting resistant to almost all antifungal drugs by mutation and overexpression of the targeted proteins by following eukaryotic mechanism. However a fast increase in human invasive mycosis infection coincided with the growth in immunocompromised people and having extensive application issues in the newer antifungal drug also but running non antifungal drugs like tamoxifen including the antimicrobial peptides which can resolve this problem from the authorized drug library and this is done by mining and screening compounds by using computational modelling or docking techniques. Strategies using natural extracts from invertebrates and plants also have yielded substances that have potentials to treat *Candida albicans*. Researchers are focusing on development of new drugs with newer mechanism like luliconazole, tolvaporole showing a greater activity. Therefore this review summarizes the use of three aspects such as FDA approved drugs, newer drugs and potential drugs used in the treatment of drug-resistant-fungal infection which provides new idea concerned to develop new drugs.

Keywords: *Antifungal resistance, Fungal infection, Immunosuppressants, Candida albicans.*

BCDACPT/P-48/2024

HERBAL REMEDIES OF COVID 19

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Abstract: COVID-19, an extremely contagious infectious disease, is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and showed catastrophic impact worldwide. SARS-CoV-2, a positive-sensed single-stranded RNA virus with a crown-like appearance, adapts with genetic evolution and developing mutations having different characteristics compared to their ancestral strains and manifests as fever, cough, shortness of breath, sore throat, anosmia, dysgeusia, anorexia, nausea, malaise, myalgias, and diarrhea. There are several explanatory mechanisms of enhanced vascular permeability with excessive formation of pulmonary edema in Covid-19 patients such as endotheliitis, dysregulation of RAAS, activation of the kallikrein-bradykinin pathway and increased epithelial cell contraction etc. USFDA approved anti-viral drugs (Ritonavir-boosted nirmatrelvir, Remdesivir, Molnupiravir) to treat Covid-19. Moreover, numerous herbal products including *Eucalyptus globulus*, *Thymus maroccanus*, *Zingiber officinale*, *Allium cepa*, *Olea europaea*, *Allium sativum*, *citrus Spp.*, *Mentha piperita* etc. act by interfering with the COVID-19 pathogenesis by inhibiting the SARS-CoV-2 replication and entry to the host cells. Therefore, more researches are required to gain knowledge about the safety profile and dosage regimen of herbal products for the treatment of Covid-19.

Keywords: *Allium sativum*, Coronavirus 2, Endotheliitis, *Eucalyptus globulus*, SARS-CoV-2

BCDACPT/P-49/2024

A Review on Biomarkers for Psoriasis

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Abstract: Psoriasis, a chronic and recurrent autoimmune inflammatory skin disorder, is characterised via circumscribed and brownish-red plaques with fine silvery white scaling, becomes a global burden in 21st century. Numerous studies have been performed to identify pathophysiology and molecular signalling pathways of psoriasis. However, there are lack of defined molecular pathogenesis as well as established, non-invasive diagnostic parameters having enhanced sensitivity and specificity for the diagnosis of psoriasis. Therefore, several technologies (bioplex assays, Enzyme linked immunosorbent assay, Western blotting, immuno-histochemistry, and multiple reaction monitoring) are adapted to identify potent metabolomic (glycine, threonine, glutamate.), proteomic (squamous cell carcinoma antigen, cytokeratin14, cytokeratin17, cytokeratin15, calreticulin), epigenetic (miR-142-3p, miR-223/223, angiogenic miRNAs), transcriptomic (DNA binding 4, heparin binding protein 17, keratin 16, guanine nucleotide binding protein 15), and genomic (*PSORS1-13*, single nucleotide polymorphisms, TNFAIP3-interacting protein1) biomarkers to develop personalized therapeutics. Additionally Nuclear magnetic resonance, Nano-architecture initiator mass spectroscopy, Ultra high performance liquid and gas chromatography are also employed in recent years to detect biomarkers for promoting significant insights into human physiology and pathophysiology altogether.

Keywords: *Biomarkers*, *Epigenetic*, *Enzyme linked immunosorbent assay*, *Nano-architecture initiator mass spectroscopy*, *Proteomic*.

BCDACPT/P-50/2024

Insulin Resistance: The Prevalent Cause of Type-2 Diabetes Mellitus

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Abstract: Diabetes mellitus is the most common endocrine disorder in human currently affecting over 170 million people world-wide and, potentially, over 365 million in the year 2030. Type-2 DM is rapidly emerging as one of the greatest global health challenges of the 21st century. Beside the β cell failure, the major pathophysiological event contributing to the development of type-2 DM is the resistance of target tissues to insulin. In addition, abnormality of gluco-receptor of β cells and excess of hyperglycemic hormones are responsible for relative insulin deficiency. On a cellular level the term "insulin resistance" defines the inadequate strength of insulin signaling from the insulin receptors downstream to the final substrates of insulin action involved in multiple metabolic and mitogenic aspects of cellular function. It has been postulated that an increase in the intracellular concentration of fatty acid metabolites activate a serin kinase cascade, which lead to defects in insulin signaling downstream to the insulin receptor. Dysfunction of some proteins like the insulin receptor substrate-2, protein kinase B which are involved in intracellular processing of signal provided by insulin result in insulin resistance *in vivo*. Recently a series of studies provide evidence of a genetic mechanism linking expression of lipoprotein lipase (LPL) to peroxisome proliferator activated receptor (PPAR)- δ expression and mitochondrial function. This is likely to contribute to the muscle insulin resistance that predisposes to type-2 diabetes. Thus in this review the current developments in understanding the pathophysiological processes of insulin resistance in type-2 diabetes have been summarized and this study provides potential new target for treatment and prevention of type-2 diabetes.

Keywords: Insulin resistance, Endocrine disorder, lipoprotein lipase, Type-2 DM.

BCDACPT/P-51/2024

**Novel Drug Delivery System Based on Nanotechnology to Combat Atrial Fibrillation –
A Review Article**

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Abstract: Atrial fibrillation is a common persistent tachyarrhythmia, a global prevalence of AF currently ranges from 2% to 4%, and if screening of long-lived individuals and undiagnosed AF in the general population is expanded, the prevalence is expected to increase by a factor of 2.3. The current treatment strategies which used like intravenous drugs and long-term oral drugs having poor efficacy and a high recurrence rate. So, the aim of use nanotechnology in case of AF to provides drug delivery system for ablation of abnormal heart muscle cells and post-operative AF. Some types of nanoparticles which used like chitosan they used as botulinum toxin by reducing vagus-induced shorting of the early refractory period, poly-(lactide-co-glycolide) polymeric used as calcium chloride and L-glutamate by suppressing GPs function, increasing neuron apoptosis in GP and Poly(lactic-co-glycolic acid) (PLGA)-magnetite nanoparticles used with calcium chloride to inhibit GPs function they all use to enhanced solubility; bioavailability; drug protective effect and sustained released etc. The autonomic nervous system activity of heart become a potential target for AF therapy. Radiofrequency, ultrasound are used to increase tissues temperature through thermal effects, causing irreversible damage to the target to treat AF (Hyperthermia based therapy of AF). Nano drugs delivery systems for exosome binding have been developed to enhance the enrichment and retention of exosomes in tissues of interest, which can be applied for targeted delivery of exosomes to myocardial tissue. The application of nano drugs delivery system provides a new idea for the treatment of AF. Nonetheless, there are still some important limitations and challenges in the use of nano drugs delivery systems in the clinical treatment of AF and due .to the heterogeneity of nanodrug delivery systems in humans, some nanoparticles undergoing preclinical development have been retrospectively found to be

cytotoxic or immunogenic.

Keywords: atrial fibrillation (AF), botulinum toxin, exosome, nano drug delivery.

BCDACPT/P-52/2024

Potential benefits of Quercetin and it's recent advancements:

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ABSTRACT: Quercetin, one of the most abundant bioactive flavonoids in our diet, which has caught our eyes for its broad-spectrum health benefits. It is found in lots of fruits and vegetables i.e. onions, apples, cabbages, grapes, tomatoes, broccolis, okras, elderberries etc. It has a high amount of antioxidant property, because its structure contains four hydroxyl groups on the benzo-dihydropyran ring of the polyphenol. So, it has a strong capacity to eliminate free radicals produced in our body. Besides that, many studies shows that it has antimicrobial, antiviral, anti-inflammatory as well as anticancer property. It has a cardioprotective effect in our body, it reduces high blood pressure. Also helps in neurocognitive changes. According to studies that it has zinc ionophore effect, which means quercetin enhances transport of zinc into the cell membrane. That's why it can be a very good nutrient in terms of fighting viruses. Some clinical studies have assessed that quercetin has anti-cancer effects particularly in ovarian cancer, due to its cytotoxicity impact on cells and its cell apoptosis inducing effect. It has been shown to have anti-inflammatory and neuroprotective properties, it can activate AMP-activated protein kinase (AMPK) which helps in the modulation of inflammation and oxidative stress by reducing inflammation and protecting against neuroinflammatory toxicity, so quercetin has potential as a secure and efficient supplementary treatment for neurodegenerative illnesses and other brain disorders. Science is still uncovering its potential benefits and the future looks promising.

Keywords: Quercetin, flavonoid, health benefits, antioxidant, free radicals, anti-inflammatory, anti-cancer activity, cardio protective effect, ovarian cancer, neuroinflammatory toxicity, AMPK, oxidative stress, neurodegenerative, potential benefits.

BCDACPT/P-53/2024

A Brief Review on Medicinal Value of Neem

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Abstract: Neem (*Azadirachta indica*) is a wonder tree belonging to the Meliaceae family, native to the Indian subcontinent. Renowned for its vast array of medicinal properties, Neem has earned nicknames like "The village pharmacy" and "Divine tree." Traditionally used in Ayurvedic, Unani, and Homoeopathic systems, Neem is increasingly captivating modern medicine. The secret lies in Neem's rich tapestry of biologically active compounds, over 140 identified from various plant parts. Leaves, the most commonly used element, boast immunomodulatory, anti-inflammatory, and antibacterial properties. Neem leaf extracts can potentially help with inflammation, infections, fever, and skin conditions. Beyond leaves, Neem offers a treasure trove of potential benefits. Bark extracts exhibit anti-malarial and anti-diabetic properties. Seed oil possesses antifungal and antiviral qualities. Flowers even hold promise in managing ulcers. Research suggests Neem's diverse compounds might even play a role in combating cancer. By harnessing the wisdom of traditional medicine and combining it with scientific rigor, we can unlock the full potential of this remarkable tree. The future of Neem-based medicine is brimming with possibilities, offering a natural path towards improved health and well-being.

Keywords: Neem, *Azadirachta indica*, chemical compositions, Medicinal uses, Traditional uses, Research.

BCDACPT/P-54/2024

**Exploring the Cosmetic Applications of Synthetic and Semi synthetic Ethosomes:
Preparation, Characterization and Evaluation**

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Abstract: Novel Drug Delivery Systems (NDDS) are newly designed pharmaceutical dosage forms which are new, economical and effective formulations having optimized characteristics to toss out the limitations of traditional dosage forms. NDDS includes Nanoparticles, Liposomes, Microsomes and Hydrogels amongst many others. Ethosomes are unique category of NDDS which are soft, malleable liquid vesicles composed of phospholipids, alcohols (commonly Ethanol) in high concentration and water. They are elastic and non-invasive drug delivery systems for transdermal permeation of both lipophilic and hydrophilic drugs. The physicochemical parameters of Ethosomes facilitate it to permeate the stratum corneum of the skin. The synthetic and semisynthetic preparations are incorporated as it is or in other conventional preparations for transdermal delivery of drugs to treat skin diseases like melanomas and to beautify the skin. This article highlights the basic framework of ethosomes, their preparation, characterization and optimization for ideal pharmacokinetics and their evaluation. It also explains how the Ethosomes deliver the loaded drugs to cutaneous or systemic sites to treat hyperpigmentation and infections. Owing to a minuscule size, an upgraded solubility and biocompatibility, it can be used as vesicular carriers for drugs like Phenylethyl resorcinol (skin lightening agent), Minoxidil (promote hair follicle stimulation for hair growth), Brucine (has anticancer activity against melanomas) and also genes and hormones through a transdermal route. Laboratory studies are going on for many other drugs worldwide. To conclude, these alcohol-based vesicles have various advantages which make them a promising carrier for the delivery of cosmeceutical agents.

Keywords: NDDS, Ethosomes, vesicles, melanomas, hyperpigmentation, cosmeceutical.

BCDACPT/P-55/2024

Targeted Nanoparticles in Breast Cancer Therapy

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Abstract: In the recent era cancer is one of the prevailing incurable disease-causing huge mortalities of the female population. Many potent drugs are prevailing in the market but they lack in targeting the cancer cells rather these chemotherapeutic drugs due to their lack in target specificity are prone to kill normal cells too which ultimately causes multi-organ failure and death of patients. Therefore, target specific Nano carriers are required to help these potent anticancer drugs to reach the tumour environment. Tumour environmental conditions are very interestingly different to normal cell conditions. As we have studied that the tumour environment has acidic pH conditions, excess radical, reactive oxygen species again they require higher metabolic nutrients and energy for their growth. They require excess of folic acid, vitamin B12 and many more conditions for their metastasis. In order to reach target tumour cells, we can graft Nanoparticles carried with any of this targeted nutrition of such like that the bond of the Nanoparticles break only in acidic conditions or under high GSH conditions so that the release of the drug will only be tumour area specific. These targeted Nano therapy not only enhances patient rate of survival but also has better bioavailability of the drug as they can enhance the solubility of the drug with controlled release therefore targeted anticancer therapy is the future of treatment of breast cancer.

Keywords: Cancer, Breast Cancer, Nano Particles, Bioavailability, Metastasis.

BCDACPT/P-56/2024

Role of CYP46A1 In Alzheimer's Disease: A Review

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Abstract: Alzheimer's disease is a gradually advancing neurodegenerative condition that impairs memory and causes dementia. It results in brain atrophy and the loss of brain cells, affecting cognitive abilities and social functioning. CYP46A1 (Cytochrome P450, family 46, subfamily A, member 1) is a brain specific enzyme that regulates the cholesterol turnover by converting cholesterol to 24S-hydroxy cholesterol (24OH). Dysregulated brain cholesterol turnover and reduced CYP46A1 levels have been observed in Alzheimer's disease (AD). Some researchers discussed the effects of CYP46A1 overexpression in aged mice. It is shown that overexpression of CYP46A1 in aged female mice improves cognitive function and estrogen signalling in the hippocampus. However, overexpression of CYP46A1 in age-matched male mice resulted in anxiety-like behaviour, memory impairment, and increased 5 α dihydrotestosterone levels in the hippocampus. Research has also shown that 24S-Hydroxycholesterol (24OH) increases sex hormone signalling in neurons, including estrogen receptors, leading to different effects. Some researchers found that CYP46A1 overexpression prevented ovariectomy-induced memory impairment in female mice but had no effect in gonadectomised male mice. Additionally, study measured 24S-Hydroxycholesterol (24OH) levels in the cerebrospinal fluid of AD patients and also found that 24S-hydroxy cholesterol (24OH) was associated with neurodegenerative diseases seen in women and suggests that CYP46A1 activation may be an important target for clinical use to improve estrogen levels in women at risk for neurodegenerative diseases.

Keywords: *Alzheimer's disease, CYP46A1, Dysregulated cholesterol turnover, Estrogen signalling, ovariectomy.*

BCDACPT/P-57/2024

Gastrointestinal activity of amaranth (a daily used vegetable).

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Abstract: Amaranth, a nutrient-rich pseudo-cereal, has gained attention for its potential health benefits, including its impact on gastrointestinal function. This review explores the effects of amaranth consumption on gastrointestinal activity, focusing on its impact on digestion, absorption, gut microbiota, and overall gut health. Amaranth contains various bioactive compounds such as dietary fiber, polyphenols, and peptides, which contribute to its physiological effects. Studies suggest that amaranth consumption may promote digestive enzyme activity, enhance nutrient absorption, and modulate gut microbiota composition, leading to improved gastrointestinal health. Furthermore, the presence of soluble and insoluble fiber in amaranth may aid in bowel regularity and reduce the risk of gastrointestinal disorders such as constipation and diverticulosis. However, more research is needed to elucidate the mechanisms underlying the gastrointestinal effects of amaranth and its potential therapeutic applications in digestive disorders. Overall, incorporating amaranth into the diet shows promise for promoting gastrointestinal health and warrants further investigation into its functional properties.

Keywords: *Gastrointestinal Diseases, Amaranth, Potential gastrointestinal activity, fibres.*

BCDACPT/P-58/2024

AI Alchemy: Harnessing Generative AI for Novel Compound Design and Optimization

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Abstract: Generative AI (GAI), a subset of artificial intelligence, is revolutionizing drug discovery by expediting the identification and refinement of novel drug candidates. GAI models, such as generative adversarial networks (GANs) or variational autoencoders (VAEs), are adept at generating bespoke molecular structures tailored to specific therapeutic requirements. Drawing insights from vast datasets of chemical structures and associated properties, these models craft compounds with optimized characteristics, including bioactivity, selectivity, and pharmacokinetics. With applications spanning Lead Optimization, De Novo Drug Design, Compound Screening, Adverse Effect Prediction, Poly-pharmacology, and Multi-Target Drug Design, Generative AI offers immense promise in tackling drug development challenges. However, rigorous research and validation are paramount to ensure the reliability, safety, and efficacy of AI-generated molecules in real-world scenarios. In our current study, we introduce a cutting-edge GAI model tailored for designing novel chemical scaffolds with desired pharmaceutical profiles. Through meticulous training on clinically validated molecules and rigorous validation procedures, our GAI-generated chemical library stands primed for in silico screening, facilitating the identification of potential receptor binders with unprecedented efficiency and precision.

Keywords: Generative AI, Artificial Intelligence, GAN, VAE, Novel Molecules, Drug Design.

BCDACPT/P-59/2024

A Brief Overview on the Clinical Manifestations and Management of Maturity Onset Diabetes of the Young-3 (MODY3)

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Abstract: One of the most common and debilitating endocrine disorders is Diabetes Mellitus which is generally of four types but in 20th century, researchers came to know about a distinct form of diabetes with a genetic basis. They identified it as Maturity Onset Diabetes of the Young or MODY which has some totally different clinical characteristics from Type I and II DM. Maturity-Onset Diabetes of the Young (MODY) comprises inherited non-autoimmune diabetes mellitus disorders typically manifesting in early adulthood. It is found that up to 14 genes can cause MODY. Two of them are GCK-MODY (MODY2) and HNF1A-MODY (MODY3) which are contributing 30% to 60% of all MODY. HNF1A-MODY (MODY3) is linked to the development of diabetes during the late teenage years or early adulthood characterized by dysfunction of β cells in pancreas and defect in the insulin secretion. To some extent, insulin is required for some patients but low-dose sulfonylureas or meglitinides, GLP-1 agonists can be used for management of HNF1A-MODY (MODY3). This review provides a brief overview and insight on the understanding of MODY3 along with other types so that we can continue to evolve with ongoing scientific advancements in genetics and diabetes research and treatment.

Keywords: Diabetes, MODY, HNF1A-MODY, MODY3.

BCDACPT/P-60/2024

A Review on Recent Advancement in Targeted Cell Based Therapy Using PSC in Treatment of Parkinson's Disorder

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Abstract: Targeted cell delivery is emerging as a crucial strategy for the clinical implementation of pluripotent stem cell (PSC) therapies in the treatment of degenerative disorders such as Parkinson's disease, Alzheimer's disease, rheumatoid arthritis, and others. Parkinson's disease, in particular, poses a significant global health challenge, with over 10 million individuals currently affected worldwide, and this number is projected to rise in the coming years according to the Parkinson's Foundation. Pluripotent stem cell therapy offers a promising avenue not only for organogenesis to study in-vitro disease pathogenesis but also for designing targeted induced cell-based therapies for disease

management. Precise localization of transplanted cells is essential for maximizing therapeutic to efficacy and minimizing potential risks associated with off-target delivery. To achieve this goal, researchers are actively exploring diverse strategies, including biomaterial scaffolds, magnetic nanoparticles, and engineered cell-cell interactions. These advancements in targeted delivery techniques hold great promise for the future of regenerative medicine and represent a significant area of focus for ongoing research efforts. By leveraging targeted cell delivery approaches, clinicians may be able to administer therapeutic interventions with greater precision, improving treatment outcomes and patient safety. Moreover, these strategies have the potential to revolutionize disease management by providing more effective and tailored therapies for individuals affected by degenerative disorders. Continued investment and commitment to research in this field are essential to realizing the full potential of targeted cell delivery in regenerative medicine.

Keywords: PSC, biomaterial, magnetic nanoparticles, cell-cell interactions, regenerative medicine.

BCDACPT/P-61/2024

Treatment Of Parkinson's Disease

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Abstract: Parkinson's disease was first medically described by James Parkinson in 1817 as a neurological syndrome. Now a days Parkinson's disease is a common progressive disorder that effects the nervous system. There's currently no cure for Parkinson's disease, but treatments and few drugs are avail to help relieve the symptoms and maintain your quality of life. Some drugs can offer significant improvements to motor function, but they have some problematic adverse effects like hallucinations, delusions etc. Limited drug options can indeed pose challenges in managing Parkinson's disease. People with Parkinson's disease have low levels of brain dopamine, but dopamine can't give directly because it can't enter into the brain, so the most effective drug is levodopa, it is a natural chemical that passes into the brain and is converted to dopamine. Side effects may include nausea or light-headedness when you stand. Anticholinergics medicines were used for many years to help control the tremor associated with Parkinson's disease. Amantadine also prescribe alone to provide short-term relief in mild, early-stage Parkinson's disease. It also given with carbidopa -levodopa therapy during the later stage of Parkinson's disease to control involuntary movements called dyskinesia induced by carbidopa-levodopa. Most of the people with Parkinson's disease are treated with medication, in some cases a type of surgery called Deep Brain Stimulant is used. Some other types of surgery are Transplantation or Restorative Surgery, Ablative Surgery. Surgery has shown good results in patients with Parkinson's disease that cannot be managed with medication.

Keywords: Parkinson's disease, Dopamine, Levodopa, Treatment, Deep Brain stimulant, Transplantation, Ablative Surgery.

BCDACPT/P-62/2024

Emerging Technologies for Solubility Enhancement of Poorly Water-Soluble Drugs

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Abstract: Drug solubility is said to be one of the important parameters to achieve desired concentration of a drug in a systematic circulation for desired pharmacological action. One of the greatest challenges for developing a pharmaceutical product is creating new formulation and a drug delivery system to limit drug solubility problems. We can say that 40 % of drugs developed in the past and 90% of drugs are now developed are all poorly soluble drugs. When the poorly soluble drugs administered orally, it first need to dissolve in our gastrointestinal fluid before it is absorbed in our body. The reviews suggested the technologies for solubility enhancement of poorly water-soluble drugs. The technologies involve are particle size reduction (micronization and nanosuspension), solid dispersion (spray drying and hot melt extrusion), lipid-based delivery system and inclusion

complexes. It also involves jet mill and high-pressure homogenizer for the preparation of nanosuspension. A various number of poorly water-soluble drugs are thus introduced into the market by all these technologies. Among these technologies, solid dispersion formulation and lipid-based formulations are most successful in pharmaceutical fields.

Keywords: micronization, nanosuspension, solid dispersion, spray drying, hot melt extrusion, inclusion complexes, jet mill and high pressure homogenizer.

BCDACPT/P-63/2024

Emerging Role of Pharmacists in Healthcare System: A Review

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Abstract: The healthcare system is a network of individuals, establishments, and assets that provide medical care to target populations' health requirements. The pharmacist is one of the major stakeholders in healthcare system. They play an important role in bridging the gap between the healthcare professionals and patient care system. The pharmacist helps to provide patients with medication therapy management services, to work along with other medical professionals, to put medication adherence techniques into practice, to make better use of technology in patient care and to stay up to date on the most updated clinical guidelines and best practices in pharmacy practice. The pharmacist and druggist also plays an important role in patient counselling, maintaining community health and pharmacy, drug dispensing, drug design and development, generating non diagnostic drug products, clinical health and many others. Our goal is to thoroughly examine the clinical roles that pharmacists play in enhancing the therapeutic safety, humanistic, and financial outcomes of patients. Pharmaceutical care is the practice of responsible drug therapy in an integrated health system with the goal of achieving optimal medication outcomes and patient satisfaction to improve patients' quality of life. As a result, pharmacist's role in health care is invaluable.

Keywords: Patient counselling, Community pharmacy, Drug dispensing.

BCDACPT/P-64/2024

Review on Advancements in Powdered Drug Delivery Systems

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Abstract: This study aims to explore the advancements in powdered drug delivery systems to optimize drug efficacy, stability, and patient adherence. Powdered drugs present notable advantages over traditional dosage forms, including ease of administration and improved stability. However, challenges such as poor flow properties, aggregation, and limited dispersibility have hindered their widespread adoption. To overcome these challenges, advanced techniques such as spray drying, freeze drying, and nanoparticle engineering are utilized to develop highly dispersible and stable powdered drug formulations. Through meticulous formulation optimization, uniform particle size distribution, controlled release profiles, and improved solubility are achieved. Additionally, the incorporation of excipients and surface modification strategies enhances powder flow ability and prevents aggregation, ensuring consistent dosing accuracy. Moreover, innovative packaging solutions are integrated to safeguard drug integrity and extend shelf-life. Specialized packaging materials and moisture barriers mitigate degradation risks associated with environmental factors, thereby preserving drug potency over extended storage periods. The efficacy and safety of the developed powdered drug formulations undergo rigorous evaluation through comprehensive in vitro and in vivo studies. Pharmacokinetic and pharmacodynamic assessments are conducted to evaluate drug absorption, distribution, metabolism,

and elimination profiles. Additionally, stability studies are performed to assess long-term storage viability under various conditions. This study adds to our knowledge about powdered drugs, paving the way for better medicines and improved patient care. By addressing current issues and exploring new ideas, it sets the stage for better treatments and healthier outcomes.

Keywords: Flow properties, spray drying, freeze drying, nanoparticle, controlled release

BCDACPT/P-65/2024

Treatment of Mast Cell Disease: A Nobel Approach

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Abstract: "Mast cell activation syndrome (MCAS)" is the primary illness. The activation of mast cell is the reason of various allergic reactions, mast cell activation related syndrome and other inflammatory conditions. The mast cell activation syndrome is classified as- primary /clonal MCAS , secondary MCAS or idiopathic MCAS. When a patient has nonclonal MCAS, their serum tryptase level may rise along with a variety of symptoms. The patient having clonal MCAS required a special treatment for decrease the number of mast cells to prevent the signs and symptoms of MCAS. The main treatment of MCAS are – prevention of mediator receptor (H1, H2 antihistamine, eg: Ranitidine, Cimetidine, Cetrizine, Loratadine etc.), leukotriene receptor blockers (Zafirlukast, montelukast ect.), mediator release (sodium cromolyn), IgE blocking antibodies, prevention of some mediators synthesis (aspirin), prevention of mast cell growth and mast cell activation. The effect of immunoglobulin E targeted therapy is increase when the patient takes Omalizumab. Vaccination is most one of the effective treatments for paediatric patients. No, permanent treatment is discovered for MCAS, so the treatment must be multidisciplinary and integrated. Here we discuss, detailed process of etiology, clinical data, advantages and limitations of these process.

Keywords: Mast cell activation syndrome, mediator, clonal MCAS, IgE blocking, Etiology

BCDACPT/P-66/2024

Enhancing Bioavailability and Efficacy Across Dosage Forms

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Abstract: In the realm of healthcare, a wide range of strategies are used to improve drug delivery efficacy across various dosage forms, including oral, ocular, and topical administration. Addressing the complex interaction of biological, physicochemical, and metabolic factors influencing oral drug bioavailability requires novel approaches. Cutting-edge techniques such as pharmaceutical polymers, lipid-based formulations, nanocarriers, and ion pairing, which are all intended to improve drug absorption and bioavailability in oral formulations. Furthermore, controlled-release methodologies are critical in this pursuit, incorporating gastroretentive technologies such as floating systems, mucoadhesive systems, and high-density systems. These approaches not only increase bioavailability, but they also significantly improve patient compliance by providing sustained and controlled release profiles. When it comes to ocular drug delivery, cellulose derivatives are at the forefront, they are widely used in liposome aggregate platform (LAP) systems and in-situ nanocomposite gels. These developments demonstrate the advanced steps made to improve the accuracy of medication delivery to the eyes. Turning back to topical medication delivery, polymeric microspheres, moisturiser integration, and the use of sophisticated skin reservoir assessment methods highlights the various approaches used to guarantee precise and efficient drug delivery through the skin. This

comprehensive overview offers an in-depth analysis of cutting-edge approaches, greatly advancing the field of pharmaceutical science and making a significant contribution to pharmaceutical research and development. It also offers invaluable insights into maximising drug delivery across a variety of dosage forms.

Keywords: Bioavailability, Drug Delivery, Dosage Forms, Pharmaceutical Polymers, Nanocarriers, Controlled-Release, Ocular Drug Delivery, Topical Drug Delivery.

BCDACPT/P-67/2024

A Brief Review of The Different Types of Natural Indicators Used In Titration

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Abstract: Titration is a familiar procedure of analytical experiment to detect the unspecified concentration of any substance by using a known concentration substance. An indicator is a component which helps to recognize the equivalence point of titration by its colour change. The flower extracts have a very promising analytical potential, as demonstrated by their use in titrimetry. In various titration types, several plant extracts such as pink *Mirabilis Jalapa* flower, turmeric powder, red hibiscus flower, violet cabbage, beetroot, red rose flower, and henna leaves worked admirably. For the violet cabbage, there was a noticeable and distinct color shift from pale pink to violet; for the beetroot, it was dark brown to red; and for the red hibiscus flower extract, it was pale yellow to pink. Their colors contrasted so well that the pigment might be used as an indicator. With their great performance and sharp color changes at the titration's endpoints, these flower extracts could replace standard indicators due to their easy, affordable, and ecologically friendly extraction process. There are a lot of synthetic indicators available in the market these days, which are expensive and toxic to the environment. Human toxicity is produced by several synthetic markers. Thus, to minimize environmental contaminants and toxicity, it is necessary to explore alternative indicators derived from natural sources while maintaining cost-effectiveness.

Keywords: Natural indicators, titrations, synthetic indicators, plant extract, titrations, pH range

BCDACPT/P-68/2024

Rational Design Guided Identification of Potential mTORC1 Receptor Binders from Conventional Edible Substances

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Abstract: mTOR, short for the mechanistic target of rapamycin, is a crucial protein kinase that regulates various cellular processes, including cell growth, proliferation, metabolism, and survival. It functions as a central component of two distinct protein complexes, mTOR Complex 1 (mTORC1) and mTOR Complex 2 (mTORC2), each with distinct signaling roles and downstream effectors. The mTORC1 is primarily involved in sensing and integrating diverse environmental cues, such as growth factors, nutrients (e.g., amino acids, glucose), energy levels, and cellular stress signals. Activation of mTORC1 leads to the phosphorylation of downstream targets, including ribosomal protein S6 kinase (S6K) and eukaryotic translation initiation factor 4E-binding protein 1 (4EBP1), promoting protein synthesis, ribosome biogenesis, and cell growth. mTORC1 also regulates autophagy, a cellular process involved in the degradation and recycling of cellular components, by inhibiting the initiation of autophagy under nutrient-rich conditions. The mTORC2 regulates cell survival, cytoskeletal organization, and metabolism by phosphorylating downstream effectors such as Akt (protein kinase B), serum- and glucocorticoid-induced protein kinase 1 (SGK1), and protein kinase C (PKC).

Activation of mTORC2 promotes cell survival and cytoskeletal reorganization through the regulation of Akt and other signaling pathways. The mTOR activity is tightly regulated by multiple inputs, including growth factor signaling (e.g., via the PI3K/Akt pathway), nutrient availability (e.g., amino acids, glucose), energy levels (e.g., ATP/AMP ratio), and stress signals (e.g., hypoxia, DNA damage). Dysregulation of mTOR signaling has been implicated in various diseases, including cancer, metabolic disorders, neurodegenerative diseases, and autoimmune disorders. Hyperactivation of mTORC1 is commonly observed in cancer, promoting uncontrolled cell growth, proliferation, and survival. Consequently, mTOR inhibitors, such as rapamycin and its analogs (rapalogs), have been developed as anticancer agents to target hyperactive mTOR signaling in cancer cells. In metabolic disorders such as diabetes and obesity, dysregulated mTORC1 signaling contributes to insulin resistance, aberrant lipid metabolism, and adipogenesis. Additionally, mTOR dysregulation has been implicated in neurodegenerative diseases (e.g., Alzheimer's disease, Parkinson's disease) and autoimmune disorders (e.g., systemic lupus erythematosus), highlighting its broad relevance in human health and disease. In the present work, a validated docking protocol-based virtual screening (ROC:0.7, RMSD:0.38, Threshold Docking score:-6.78 ~ -7.0 kJ/mol) was used to screen chemical compound library derived from conventional food material followed by molecular dynamics alchemy.

Keywords: mTOR, Docking, ROC, rapalogs Structure-based design

BCDACPT/P-69/2024

Role of Pharmacists in Vaccine and Drug Development

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Abstract: A vaccine is a suspension of live attenuated or killed microorganisms (bacteria, viruses, etc.), of their toxins or substances extracted from them to be introduced into the body for the prevention of infectious diseases. Despite the availability of various vaccines throughout the world, for a wide range of infectious diseases, the success of vaccines and vaccination programs are not fully achieved. The effectiveness of these programs depends upon overcoming several biological, social, logistic and epidemiological factors that act as barriers and challenges. Thus, pharmacists play an important role in this regard. They can act as immunizer, educator, etc. to improve vaccine related health literacy and vaccine coverage rate. They also help remove barriers and obstacles to the access to health care settings offering immunization services and primarily help in counteracting vaccine hesitancy. During recent COVID-19 pandemic outbreak, the role of pharmacists has increased in preparing suitable medications and vaccines against various pathogenic diseases. In clinical trials of certain drugs and vaccines pharmacists play a vital role. Therefore, pharmacists act as immunizer as well as educator for the common people to help them lead a healthy and disease-free life.

Keywords: Clinical Trial, Drug design

BCDACPT/P-70/2024

The Role of Nanotechnology in Diabetes Treatment: Current And Future Perspectives

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Abstract: Diabetes is a habitual complaint that presently affects roughly 11.4% of the Indian population, and that number is anticipated to increase significantly by the time 2030. Nanotechnology in diabetes exploration has smoothed the development of new glucose dimension and insulin delivery modalities which hold the eventuality to dramatically ameliorate quality of life for diabetics. Recent progress in the field of diabetes exploration at its interface with nanotechnology is our focus. We

examine glucose detectors with nanoscale factors including essence nanoparticles and carbon nanostructures. The addition of nanoscale factors generally increases glucose detector perceptivity, temporal response, and can lead to detectors which grease nonstop in vivo glucose monitoring. also, we survey nanoscale approaches to "closed- loop" insulin delivery strategies which automatically release insulin in response to changing blood glucose levels. "Closing the loop" between blood glucose level (BGL) measurements and insulin administration by removing the demand of patient action holds the potential to dramatically enhance the health and quality of life of diabetics. Advantages and limitations of current strategies, as well as future openings and challenges are also discussed.

Keywords: *Nanotechnology, Glucose Sensors, Insulin Delivery, Nanomedicine, Diabetes, Nanomaterials*

BCDACPT/P-71/2024

Comparative Analysis of OXA Enzymes family in Carbapenem Resistance Among Acinetobacter Species and designing of potential binders

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Abstract: Carbapenem-resistant Acinetobacter species represent a serious challenge in clinical settings, necessitating a comprehensive understanding of the mechanisms underlying resistance for effective treatment strategies. The OXA enzyme family, comprising various variants such as OXA-23, OXA-24/40, OXA-58, and OXA-143, plays a significant role in conferring carbapenem resistance. This abstract presents a comparative analysis of the OXA enzyme family, focusing on their structural characteristics, substrate specificity, and contributions to antibiotic resistance in Acinetobacter species. Through literature review and computational modelling, we explore the similarities and differences among OXA enzymes, elucidating their catalytic mechanisms and interactions with carbapenem antibiotics. We analyse the genetic diversity within the OXA enzyme family and assess its implications for the emergence and spread of carbapenem resistance among Acinetobacter isolates worldwide. Furthermore, this study discusses the design and screening of potential binders targeting OXA enzymes using computational approaches, such as molecular docking and molecular dynamics simulations. By employing a rational drug design strategy, we aim to identify novel compounds capable of inhibiting OXA enzymes and restoring susceptibility to carbapenem antibiotics. Our findings underscore the importance of understanding the structural and functional properties of OXA enzymes in combating carbapenem-resistant Acinetobacter infections. The design of potential binders offers promising avenues for the development of adjunctive therapies to enhance the efficacy of existing antibiotics and address the growing threat of multidrug-resistant Acinetobacter strains in clinical practice.

Keywords: *OXA, Acinetobacter, Phylogenetic tree, Docking, Dynamics*

BCDACPT/P-72/2024

Advances in Inhalation Drug Delivery: From Formulation to Device Design

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Abstract: Pulmonary drug delivery represents an attractive, non-invasive administration option. In addition to locally acting drugs, molecules that are intended to produce systemic effects can be delivered via the pulmonary route. Several factors need to be considered in the context of delivering drugs to or via the lungs—in addition to the drug itself, its formulation into an appropriate inhalable dosage form of sufficient stability is critical. It is also essential that this formulation is paired with a

suitable inhaler device, which generates an aerosol of a particle/droplet size that ensures deposition in the desired region of the respiratory tract. Lastly, the patient's (Patho-) physiology and inhalation manoeuvre are of importance. This Special Issue brings together recent advances in the areas of inhalation device testing, aerosol formulation development, use of in vitro and in silico models in pulmonary drug deposition and drug disposition studies, and pulmonary delivery of complex drugs, such as vaccines, antibiotics and peptides, to or via the lungs.

Keywords: *inhaler, aerosol, lung disease, inhalation biopharmaceutics, respiratory tract*

BCDACPT/P-73/2024

A Review on Particle Characterization of Powdered Drugs

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Abstract: Powders are ubiquitous in various industries, ranging from pharmaceuticals to food processing and many more. Understanding the particle characteristics of powders is crucial for optimizing manufacturing processes, ensuring product quality and predicting material behaviour. In this present review, the key particle characteristics of powders, including size distribution, shape, surface area, density and their implications across different applications are addressed. Particle size distribution is a fundamental aspect of powder characterization, influencing flow properties, packing density, and dissolution rates. Techniques such as laser diffraction and sedimentation are common in analysing size distribution, enabling manufacturers to tailor particle sizes for specific purposes. Particle shape also plays a significant role in powder behaviour, affecting flow ability, cohesion, and compaction properties. Irregularly shaped particles exhibit different flow behaviours compared to spherical ones, impacting processes like mixing, filling and tablet compression. Surface area is another critical parameter affecting powder reactivity, dissolution, and adsorption phenomena. Specific surface area measurements provide insights into the material's reactivity and its interaction with other substances, guiding formulation design and process optimization. Density, both bulk and tapped, influences powder flow ability, compressibility, and packaging efficiency. Understanding density variations within a powder bed is essential for achieving uniformity in product dosage and ensuring consistent performance. In conclusion, thorough characterization of particle characteristics is essential for optimizing powder-based processes across diverse industries. By leveraging advanced analytical techniques, manufacturers can tailor powder properties to meet specific requirements, leading to enhanced product performance, efficiency, and quality.

Keywords: *size distribution, shape, surface area, density, dissolution, compressibility*

BCDACPT/P-74/2024

Microemulsion based Novel Drug Delivery Systems for enhanced Bioavailability.

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Abstract: Microemulsion is lipid-based pharmaceutical system, and it has high potentiality to increase the intensity of drugs through the skin. It dispersed between two non-miscible liquid (oil and water). Microemulsion is thermodynamically stable emulsion and its droplet sizes approximately 100-400 nm. The inner oil phase of microemulsion solubilizes lipophilic drugs. Its achieved high encapsulation rates, which are useful for drug delivery system. Microemulsion enhance the solubility, bioavailability and therapeutic efficacy of hydrophilic drugs within a thermodynamically stable and transparent emulsion. ME with hydrophilic drugs can improve the drug delivery by within a transparent and thermodynamically stable emulsion. This can optimize the drugs permeability and solubility leading to enhanced therapeutic efficacy and bioavailability. In this review we discuss

about various microemulsion based Novel Drug Delivery Systems for enhanced bioavailability. It will inspect the use of microemulsion for transdermal, oral, nasal and ocular delivery. This review also discusses the disadvantages, advantages and physicochemical properties associated with each one of it. Overall, the article gives an overview of the microemulsion as a drug delivery system for enhanced bioavailability, which are administered through different routes.

Keyword - Microemulsion, Novel Drug Delivery, Bioavailability, Drug Delivery System

BCDACPT/P-75/2024

A Brief Review on Medicinal Value of Tulsi

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Abstract: Tulsi (*Ocimum tenuiflorum*) popularly known as 'Holy Basil' in English and 'Surasā' in Sanskrit, is one of the sacred herbs for Hindus in Indian sub-continent. It has a versatile role to play in traditional medicine. Of all the herbs used within Ayurveda, tulsi (*Ocimum sanctum* Linn) is preeminent, and scientific research is now confirming its beneficial effects. There is mounting evidence that tulsi can address physical, chemical, metabolic and psychological stress through a unique combination of pharmacological actions. Tulsi boasts a complex mix of active ingredients like eugenol and urolic acid, contributing to its diverse medicinal effects. The presence of eugenol (1-hydroxy-2-methoxy-4-allylbenzene) suggests Tulsi might act as a COX-2 inhibitor, similar to pain relievers. Tulsi's broad-spectrum antimicrobial activity, which includes activity against a range of human and animal pathogens, suggests it can be used as a hand sanitizer, mouthwash and water purifier. The Rama Tulsi is the effective remedy for the severe acute respiratory syndrome. Juice of its leaves gives relief in cold, fever, bronchitis and cough. From top to bottom tulsi makes itself a treasure with full of medicinal value. Tulsi, a whisper of the forest, offering nature's balm in every leaf.

Keywords: Tulsi, *Ocimum tenuiflorum*, eugenol, COX-2 inhibitor, Ayurveda, antimicrobial

BCDACPT/P-76/2024

Recent Trends in Ocular Inserts

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Abstract: A significant advance in the medical management of eye diseases is the use of ocular surgical implants. A sterile, thin, multilayered, solid, or semi-solid device that is inserted into the cul-de-sac or conjunctival sac and made especially for use in ophthalmic applications is termed an ocular insert. The distribution of optically active pharmaceuticals is the pharmaceutical scientists' biggest obstacle. Optically active drug delivery is the biggest difficulty for pharmaceutical experts. The physiology, biochemistry, and design of the eye combine to give it exceptional resistance to substances from the outside world. The formulation struggles to pass through the protective layers of the eye without causing long-term tissue damage. Furthermore, more advanced delivery technologies are being developed to produce controlled release tactics for extended periods. More recent, successful, sensitive ocular delivery systems, such as biodegradable polymer systems and inserts. Conventional eye drops have displaced topical eye drops in the treatment of most eye-related disorders in recent years. These traditional eye drops do, however, come with two major drawbacks. Summarizing the benefits and drawbacks of these delivery methods was the goal of the current study.

Keywords: Ocular surgical implants, Optically active pharmaceuticals, Controlled release tactics, Biodegradable polymer systems, Conventional eye drops

BCDACPT/P-77/2024

Emerging Trends in Insulin Delivery System

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Abstract: One emerging trend in insulin drug delivery systems is the improvement of brilliant insulin delivery devices. These devices use sensors to screen blood glucose levels continuously and consequently regulate insulin while required, reducing the risk of hypoglycaemia and giving better glucose control. Another pattern is the utilization of novel delivery routes such as inhalation and oral insulin formulations. Inhalable insulin offers a non-invasive alternative to injection, improving Patient adherence and comfort. Oral insulin formulations aim mimic the natural route of insulin absorption, potentially improving bioavailability and reducing the need for injection. Furthermore, there is continuous investigation into the improvement of insulin patches and microneedle-based delivery systems. These patches and microneedles offer helpful, effortless options in contrast to customary infusions, upgrading patient consistence and usability. In general, these arising patterns in insulin drug conveyance frameworks mean to work on quiet results, improve accommodation, and decrease the weight related with insulin treatment for people with diabetes.

Keywords: Insulin, Diabetes mellitus, Drug Delivery Methods, Oral Insulin, Inhalable Systems.

BCDACPT/P-78/2024

Current Scenario of Chronic Obstructive Pulmonary Disease

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Abstract: Chronic obstructive pulmonary disease (COPD) is a common lung disease with breathing problem. COPD happened due to air pollution, smoking in common way. In worldwide this disease causes of death. People who have COPD, there lung clogged with phlegm and then damaged. The common symptoms of COPD are breathing problem, chronic cough that produce mucus, chest tightness, lack of energy etc. COPD increase with time; people have COPD their normal daily life activities are difficult to do. Tobacco and also the smoke irritates the lung and then inflammation happened in our lung. Alpha-1 antitrypsin is an enzyme that help to protect our lung to inflammation and damage, if we have alpha-1 antitrypsin deficiency then our lung become firstly damaged due to smoke, pollution and other irritating substances. When smoke goes down bronchial tubes, in end of tubes there are alveoli are present which are elastic and then alveoli lose their elastic quality and destroy the wall between alveoli and clogged with mucus. COPD symptoms begin at least 45 years old. In 2019, 3.23 million death happened because of COPD. COPD is not the disease which is curable, but it can be better by avoiding smoking, air pollution and dust and it can be treated by medicines, pulmonary rehabilitation and also oxygen mask.

Keywords: Tobacco, smoking, alveoli, mucus, air pollution

BCDACPT/P-79/2024

Targeting Dihydropteroate Synthase in *Streptococcus Pneumoniae*: A Promising Avenue for Antibiotic Development

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Abstract: Dihydropteroate synthase (DHPS) from *Streptococcus pneumoniae* plays a pivotal role as a key enzyme in the folate biosynthesis pathway of this bacterium. *Streptococcus pneumoniae*, commonly known as pneumococcus, stands as a significant human pathogen responsible for a spectrum of infections, including pneumonia, meningitis, and otitis media. The emergence of antibiotic-resistant strains of *S. pneumoniae* has underscored the urgent need for novel therapeutic strategies, making DHPS an appealing target for drug development. DHPS facilitates the condensation of p-aminobenzoic acid (pABA) with 6-hydroxymethyl-7,8-dihydropterin-pyrophosphate (DHPPP) to yield 7,8-dihydropteroate (DHP), a critical precursor for the synthesis of folate derivatives. Folate is indispensable for various cellular processes, including DNA synthesis, repair, and methylation. Inhibition of DHPS disrupts folate biosynthesis, leading to impaired cellular functions and ultimately hindering bacterial growth. Several classes of antibiotics, such as sulfonamides, exert their bacteriostatic effects by targeting DHPS. Sulfonamides structurally mimic pABA and competitively inhibit its binding to DHPS, thereby impeding folate synthesis in bacteria. However, the widespread use of sulfonamides has prompted the emergence of resistant strains of *S. pneumoniae* through mutations in the DHPS gene, diminishing the efficacy of these antibiotics. Despite the challenges posed by resistance, DHPS remains a promising target for drug development against *S. pneumoniae*. By focusing on DHPS, researchers exertion to develop new antibiotics capable of overcoming resistance mechanisms and effectively combating infections caused by *S. pneumoniae*. To this end, a *de novo* design approach guided the generation of a targeted chemical library. A validated molecular docking protocol then guided in-silico screening to identify potential DHPS binders.

Keywords: Dihydropteroate synthase (DHPS), *Streptococcus pneumoniae*, *denovo* design, Validation, Molecular Docking.

BCDACPT/P-80/2024

Innovation In Ocular Drug Delivery: Addressing Challenges and Improving Efficiency

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Innovation in ocular drug delivery has been a significant area of focus in the medical field due to the challenges associated with effectively delivering drugs to the eye. Some of the challenges include limited drug penetration, rapid clearance, low bioavailability, and potential side effects. Addressing these challenges and improving efficiency requires innovative approaches and technologies. The ocular inserts represents a significant advancement in the therapy of eye disease. Ocular inserts are defined as sterile, thin, multilayered, solid or semi-solid devices that are placed into the conjunctival sac and are designed specifically for ophthalmic applications. Biggest challenge for pharmaceutical scientists is the delivery of optically active drugs. The eye's architecture, physiology and biochemistry. In addition, newer delivery systems are being developed to create longer durations and controlled release strategies. In recent years, the majority of eye related diseases treated with topical eye drops application have been treated with conventional eye drops. However, these conventional eye drops have two main drawbacks. The present study was aimed summarizing of such addressing challenges and improving efficiency delivery.

Key Words: Innovation, ocular, ophthalmic, biochemistry

BCDACPT/P-81/2024

Recent Advancement in Transdermal Drug Delivery System

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Abstract: Transdermal drug delivery is an alternative way of delivering drugs via the skin layer. The drug is carried through the skin into the bloodstream and circulates systemically in the body before reaching the target site. There is various way in this drug delivery system like patches, microneedles etc. The drug is carried through the skin into the bloodstream and circulates systemically in the body before reaching the target site. Transdermal patches are a non-invasive method of drug administration. It is an adhesive patch designed to deliver a specific dose of medication through the skin and into the bloodstream throughout the body. Transdermal drug delivery has several advantages over other routes of administration, for instance, it is less invasive, patient-friendly, and has the ability to bypass first-pass metabolism and the destructive acidic environment of the stomach that occurs upon the oral ingestion of drugs. Here we review the existing literature on various recent advances on transdermal patches and microneedles in this system.

Keywords: Patches, Microneedles, Transdermal, Medications.

BCDACPT/P-82/2024

Importance of Protein in Human Health

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Abstract: Protein acts as a hero of nutrition in human health. According to recent data, almost 85% of the Indian population is protein deficient. Protein is made up of amino acids, some of which are essential and most of it comes from food. The whole package of essential nutrients comes along with proteins such as carbohydrates-lipids-vitamin- minerals, etc. It's recommended that a variety of protein foods are nutritious for health such as white meats, meats, eggs, dairy products, nuts & seeds, beans & lentils, soya, whole grains, etc. However all sources of protein are not healthy, e.g.-red meats and processed meats may increase the risk of chronic diseases. Depending upon the metabolic rate, and regular activity, a minimum of one gram of protein per kilogram of body weight per day is required in an individual. Just as protein helps in the growth and maintenance of tissues, boosts energy, controls transportation and storage of molecules & fluid, maintains pH balance, etc. However the deficiency of protein cause diseases like kwashiorkor, marasmus, delaying wound healing, cancer, osteoporosis, etc. But sometimes it shows that some of the proteins are not absorbed by the body or the body can't absorb the protein, in that case, natural protein supplements are required to fill the place of protein. For this reason, many researchers are involved in the formulation of protein supplements based on natural ingredients.

Keyword: Proteins, Nutrition, Population, Supplements, Natural Ingredients.

BCDACPT/P-83/2024

A Brief Review on Appendicular Skeletal System and Its Role in Health and Disease

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Abstract: Appendicular skeleton is a part of human skeletal system consisting of total 126 bones, consists of pectoral girdle with the upper limbs and the pelvic girdle with the lower limbs. The

pectoral/ shoulder girdle (4 bones) contains scapula (2) and clavicle (2), pelvic / hip girdle (2 bones). The upper limb (60 bones-30 bones in each upper limb) contains humerus (2), ulna (2), radius (2), carpals (16), metacarpals (10) and phalanges (28). The lower limb (60 bones) contains femur (2), fibula (2), tibia (2), patella (2), tarsals (14), metatarsals (10), and phalanges (28) there are many factors that can affect our appendicular skeleton. The factors can be fractures which is a most common injury occurs when a greater amount of unbearable force is applied to a bone and minor or major cracks occurs, needs a long time for healing. Another factor can be arthritis which is a kind of pain, swelling occurs due to inflammation of the joints, this can be genetical. Osteoporosis a disease in which bones of our body gets very weak to function properly. This might occurs when a bone breaks. It results in a decrease in bone mass. Other diseases are Paget's disease, osteomyelitis, bone cancer, etc. all the injuries and diseases can be treated with proper care and treatments. By having a regular check-ups, maintaining healthy lifestyle, proper diet. Sometimes, it can be genetical in that case family history plays a key role in taking early measures. Suitable medicines are suggested by physicians for proper treatment of skeletal disease. In extreme cases physiotherapy for arthritis and surgeries are also done for recovery of the patient.

Keyword: Appendicular Skeleton, Fractures, Arthritis, Osteoporosis, Physio-therapy, Surgery

BCDACPT/P-84/2024

Beneficial Role of Synbiotic on Human Health

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Abstract: A diverse community of microorganisms inhabits the human gastrointestinal tract. Not only are intestinal bacteria commensal, but they also co-evolve with their host in a synbiotic manner. Beneficial intestinal bacteria perform a wide range of vital tasks for their host, including producing different kinds of nutrients, warding off infections brought on by intestinal pathogens, and regulating the host's immune system. Consequently, alteration of the intestinal microbiota is required for the host's improved health to attain, restore, and maintain a favourable balance in the ecosystem and the activity of the microorganisms present in the gastrointestinal tract. The intestinal microbiota benefits from the addition of probiotics, prebiotics, or synbiotic to the human diet. They can be eaten as dairy products, fermented pickles, or raw fruits and vegetables. Functional foods and pharmaceutical formulas could be additional sources. The effects of probiotics, prebiotics, and synbiotic on human health are reviewed and the state of the field is summarized. Verified study results demonstrating those substances' effectiveness in human nutrition are presented along with a discussion of their beneficial action mechanism.

Keywords: Synbiotic, Prebiotic, Probiotic.

BCDACPT/P-85/2024

A Perspective on Pharmacological Overview of Coumarin and It's Derivatives

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Abstract: Coumarins are members of the family benzopyrone. These compounds, which can be produced from naturally occurring plants or synthesized, exhibit a broad range of biological functions and have a broad therapeutic range. Their pleiotropic biological responses are defined by their structural features that are associated with physicochemical attributes. When benzene and the pyrone ring fuse, a bicyclic oxygen-bearing heterocyclic scaffold known as coumarin is created. Coumarin

offers medicinal chemists a privileged scaffold due to its distinct physicochemical properties and its facile transformation into a broad variety of functionalized coumarins during synthesis. Coumarins come in a wide variety of structural forms. Significant pharmacological properties of coumarin have been explored that includes anti-inflammatory, anti-HIV, anti-cancer, anti-oxidant, anti-inflammation, anticoagulant, antibacterial, analgesic, and immune-modulating properties. The idea that this class of compounds could provide medications for the treatment of various ailments is very intriguing. These include new discoveries about how to stop cell division processes by disrupting the function of mitotic spindle microtubules, lowering Matrix Metalloproteinase (MMP) activity, and blocking the cell cycle in the S or G2/M stages. In the wide area of drug discovery, coumarin and its derivatives is reviewed here.

Keywords: Coumarin, pharmacological effect.

BCDACPT/P-86/2024

Anthelmintic Activity Containing Plants

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Abstract: Parasitic worms, also known as helminths, are large macroparasites; adults can generally be seen with the naked eye. Many are intestinal worms that are soil-transmitted and infect the gastro intestinal tract. Other parasitic worms such as schistosomes reside in blood vessels. The clinically relevant groups are separated according to their general external shape and the host organ they inhabit. There are both hermaphroditic and bisexual species. Helminth infections can cause a variety of health problems like Malnutrition, Anaemia, Intestinal obstruction, Neurological problems, such as seizures, Infertility, Ectopic pregnancy, Pancreatitis. Anthelmintics, also known as antihelmintics, are a group of drugs that treat parasitic worm infections in animals and humans. They work by killing or stunning parasitic worms without causing significant harm to the host. Plant derived drugs are much safer in use. Many anthelmintic drugs marketed are now derived from plant source. Plants such as tulsi (*Ocimum sanctum*); Myrrh (*Commiphora myrrha*); Papaya (*Carica papaya*); Chinaberry tree (*Melia azedarach*). Anthelmintic activity is evaluated by comparing worm egg counts before and after treatment. This test is called the Fecal Egg Count Reduction Test (FECRT). In this review work we have tried to portray some information that we have gathered regarding the plants showing anthelmintic activity.

Keyword: helminths, parasitic worms, anthelmintics, anthelmintic activity.

BCDACPT/P-87/2024

Volatile Oil in Psoriatic Skin Lesions

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Abstract: They evaporate when exposed to the air at ordinary temperature, so they are called volatile oils or essential oils. They are called essential oil because volatile oil represents the enhancement of plants. It is used for studies on inflammation- related skin disease such as psoriasis and for the treatment of psoriasis such as psoriasis natural plant essential oil resources. Psoriasis is an autoimmune skin disorder that causes scaling and patches. Many types of volatile oil are used in psoriasis skin lesions like Bergamot oil, tea tree oil, chamomile oil and lavender oils. Essential oils have antiviral, antifungal and antibacterial which help treat different symptoms of psoriasis. Essential oils also help to provide a healthy immune system. You can use essential oil for psoriasis scalp. It helps to ward off infection and in the case of inflammation. Cong-ai Volatile Oil (CAVO) is an

aromatic Chinese medicine with potent antibacterial and immune regulatory properties. While CAVO has been used to treat upper respiratory tract infections, depression, otomycosis and bacterial infections in the skin. Its effect on psoriasis is unknown.

Keywords: psoriasis, antifungal, inflammation, depression, otomycosis.

BCDACPT/P-88/2024

Organophosphorus Poisoning: Mechanisms, Symptoms & Management

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Abstract: Organophosphorus poisoning is a critical medical condition resulting from exposure of organophosphate compounds which are prevalent to insecticides, medication and nerve agents. Organophosphorus compounds constitute a heterogenous category specifically designed for the control of pests. The pathophysiology involves the inhibition of acetylcholinesterase, an enzyme essential for the breakdown of acetylcholine in the nervous system. This inhibition leads to an accumulation of acetylcholine, causing overstimulation of cholinergic receptors and a characteristic toxidrome. The symptoms of Organophosphorus poisoning include frothing from mouth, severe bradycardia, urinary incontinence, constricted pupil and restlessness. For treatment the administration of atropine is crucial for counteracting muscarinic effects, while pralidoxime is used to reactivate acetylcholinesterase. The ministry of agriculture of India should encourage farmers to use natural pesticides.

Keywords: Atropine, Pralidoxime.

BCDACPT/P-89/2024

Artificial Intelligence in Clinical Data Management

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Abstract: The word "Clinical Data Management" indicates an overall process, which starts from the approval of a study in the therapeutic area by FDA and ends at the point when the study results are finally approved by FDA and it goes for marketing. Though it is a lengthy process but still it is not limited to these steps only, it also includes post marketing research, i.e., Real World Evidence studies. The whole process includes lots of steps, like, creation of a Protocol, Case Report Form, Creation of a Database, Development of Statistical Analysis Plan, clinical study report and so on. But we can't automate the whole process through AI, as there are different types and phases of studies worldwide. In this presentation our objective is to show how to automate the statistical analysis part of a clinical trial, not for all the studies but for most of the Early Phase studies, like, phase I, II. As most of the early phase study has the objective to explore the data, like, establishing biosimilarity, checking Pharmacokinetics and pharmacodynamics profile of a drug, assessing dose proportionality etc. so most of this type of studies uses some common statistical approaches. So, we can create a system by which we can analyse the collected data, recorded through clinical trials, based on the objective and the prespecified models along with tuning our system parameters. Which helps us to complete the study analysis within a short period of time for an Early phase study which always has a tighter schedule.

Keywords: Clinical data management, Artificial Intelligence, Biosimilarity, phase I.

BCDACPT/P-90/2024

Preparation of Antitussive Chewies Containing Herbal Extracts

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Abstract: The use of herbal medicine dates back thousands of years. The majority of people on the planet who live in developing nations still get their basic medical care from herbal medicine. The interest in and use of herbal remedies has grown significantly in recent years, even in places where access to contemporary medications is available. Present project tries to formulate an antitussive chewy of extracts. Aqueous extract concentrates were prepared using Rotary evaporator. The extracts were blended with standard pharmaceutical excipients and casted as chewie blocks. They were then evaluated for various physico-chemical properties. In-depth studies are in progress to standardize the formulation.

Keywords: anti-inflammatory, antitussive, respiratory, contemporary.

BCDACPT/P-91/2024

A Review on Phytochemistry and Therapeutic Potential of *Hibiscus Rosa-Sinensis*

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Abstract: World Population uses herbal medicine as the primary sources of medication, reported by World Health organisation. It plays an important role in rural areas and various locally produced drugs are still used as household remedies for different ailments. This review is focused on the phytochemistry and the pharmacological activity of *Hibiscus rosa-sinensis*. Leaves extract of *Hibiscus rosa-sinensis* contains antimicrobial activity on UTI Bacteria. Different researches showed the antibacterial activity of methanolic, acetone, chloroform and aqueous extract of *Hibiscus rosa-sinensis* against UTI bacteria. Presence of various bio-chemicals have been reported in the *Hibiscus rosa-sinensis* plant like flavones, flavonoids, glycosides, hibiscetin, cyanidin, cyanin glycoside, campesterol, cyclopropenoid, taraxerol acetate, sitosterol, stigmaterol, ergosterol, citric acid, tartaric and oxalic acids and anthocyanin pigments. The *Hibiscus rosa-sinensis* shows its potential as expectorant, diuretic, anti-infections, anti-inflammatory and antipyretic. It also used in the treatment of Bronchitis as a cough, sore throat, treats dysentery, Urinary bladder infection, High Blood Pressure, prevention of constipation headaches, boils, swelling, abscesses and mumps. clinical trials on the toxicity of this plant and its pharmacological effects must be carried out to assess its safe application.

Keywords: in-vitro, Antibacterial activity, *Hibiscus rosa-sinensis*, methanolic, acetone, chloroform, UTI bacteria.

BCDACPT/P-92/2024

Recombinant DNA Technology and Gene Therapy

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Abstract: Genetic Engineering have undergone a revolutionary change in modern times which lead to the creation of recombinant DNA. rDNA technology is the process of introducing only a set of desirable genes into the target organism. The various enzymes including this process are restriction enzymes or the molecular scissors. There are several steps involving this process such as isolation of DNA, fragmentation of DNA by the help of restriction endonucleases, isolation of a desired DNA fragment, ligation of DNA fragment introduced into a vector, then the rDNA is transferred into the host, and culturing the host cells in a medium is done and finally leading to the extraction of the desired product. At first the DNA is isolated and then the DNA is cut at the specific locations with the restriction enzymes and ligase then joins the gene of interest. Furthermore, amplification of gene of

interest is done by polymerase chain reaction and then the rDNA is introduced into the host cell leading to the obtainment of the foreign gene product. Gene therapy is the process of treatment of hereditary disorders by replacing a faulty gene by a normal healthy functional gene. This process helps in correction of a gene defect which has been diagnosed in a child or embryo. It was tried for sickle cell anaemia and Severe Combined Immuno Deficiency diseases.

Keywords: Recombinant DNA technology, DNA polymerase, polymerase chain reaction, gene therapy.

BCDACPT/P-93/2024

The Future of Diabetes: Research and Advancements

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Abstract: Diabetes Mellitus is a chronic metabolic disorder which is characterized by hyperglycemia (high blood sugar) resulting due to the defects in insulin secretion, action or both. Insulin is a hormone produced by the pancreas that regulates blood sugar levels by allowing cells to absorb glucose from the bloodstream. There are mainly two types of diabetes Type 1 Diabetes(T1D) and Type 2 Diabetes(T2D). In Type 1 Diabetes, the body attacks insulin-producing cells, leading to insulin deficiency. In Type 2 Diabetes, the body becomes insulin resistant or does not produce enough insulin. This is a serious global condition affecting millions of people every year. Around 422 million people worldwide are suffering from diabetes, the majority belonging to developing and underdeveloped countries. For people living with diabetes, having access to affordable treatment, including insulin, is critical to their survival. The ongoing researches are targeted to improve the affordability and accessibility of new technologies and medications, development of effective prevention strategies to reduce the growing global burden of diabetes and address the psychological aspects of living with diabetes and provide better support system. Some of the key areas of the research includes Artificial Pancreas Systems (APS), Beta-cell Regeneration and Replacement, Gene Therapy, Novel Medications etc. In summary, the future of diabetes research is hopeful and constantly moving forward to control this widespread condition.

Keywords: Diabetes, hyperglycemia, insulin, complications, treatment and research, medications.

BCDACPT/P-94/2024

Current Trends: First Pass Metabolism or Pre-Systemic Metabolism

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Abstract: First-pass metabolism, also known as presystemic metabolism or first-pass effect, refers to the biochemical transformation of a drug or substance that occurs in the liver or gastrointestinal tract before it reaches systemic circulation. The bioavailability, effectiveness, and possible adverse effects of medications can all be strongly impacted by this process. The degree of first-pass metabolism can be influenced by variables such as individual variability, drug formulation, route of administration, and liver enzyme activity. Knowledge of first pass metabolism can assist the prescriber when deciding on doses and dose schedules to ensure that patients receive their medications at the correct dosing, by the correct route for optimum therapeutic effect. To achieve the best possible therapeutic results and reduce hazards, it is essential to comprehend and anticipate first-pass metabolism during the drug development and optimisation process. An overview of the importance, workings, and consequences of first-pass metabolism in pharmacokinetics and drug distribution is given in this abstract.

Keywords: First-pass metabolism, bioavailability, adverse effects, drug development, pharmacokinetics.

BCDACPT/P-95/2024

Health Benefit of Agarwood

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Abstract: This study reviews agarwood oil and determines its quality. It was discovered that the predominant species in Malaysia, Thailand, and Indonesia is *Aquilaria malaccensis*. It is widely accessible in Thailand, Malaysia, and other South East Asian nations. It is among the priceless non-timber found in tropical woodland, has a fragrant wood whose ethereal attar has long been valued in Asia for use as tranquilizers in traditional medicine and as incense. Agarwood oil is frequently used directly in perfumes, attars, aromatherapy, and traditional medicine. In addition to being a tonic, sedative, and cardiac caring agent, its usual uses include the treatment of knee joint discomfort, inflammatory-related symptoms, and diarrhoea. Our goal is to give a general review of phytochemistry. Pharmaceutical activity, ethnomedical application, and defence of plant materials against *Aquilaria* spp. as a foundation for additional research into its possible application as a source of beneficial health components. We think that numerous People want to know what the true value is that makes it the most renowned, revered, and valuable wood in the world. Similar to how agarwood has a unique property or mark, it is a vital emollient. Based on their grade, they are exchanged at varying prices. Empirical evidence demonstrated that the chemical constituents of agarwood distinguish them from one another and, consequently, impact their quality. Their classes have been determined by physical attributes including color and smell. This inquisitiveness drew researchers in and is necessary to guarantee superiority of oil produced agarwood.

Keywords: *agarwood, aquilariamalaccensis, Phytochemistry, ethnomedicinal.*

BCDACPT/P-96/2024

Nanoparticles As Targeted Drug Delivery System in Cancer Therapy

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Abstract: Cancer is a disease in which abnormal cells divide without control and destroy body tissues. Over the past two decades, various studies have been performed on cancer to follow solutions for effective treatment. Current cancer treatment strategies include combination of radiation, chemotherapy and surgery. Nanoparticles (NPs) plays a broad role in cancer diagnosis and has various advantages over the other common chemotherapeutic drug delivery. To improve the targeting potential of the anticancer drugs, nanoparticles were optimized for the size and surface characteristics to enhance their circulation time and targeting efficiency. One of the essential benefits of utilizing nanoparticles (NPs) in cancer treatment is their high accommodation for modification and amalgamation of different physicochemical properties to boost their anti-cancer activity. Various biocompatible nanoparticle-based drug delivery systems such as liposomes, dendrimers, micelles, silica, gold and carbon nanotubes have already been reported for successful targeted cancer treatment. NPs possess more specific and efficient drug delivery to the targeted tissue, cell, organs and minimize the risk of side effects. NPs undergo active and passive mode of drug targets to tumour area with less elimination of the drug from the system. Active targeting involves chemical interaction with certain antigen, genes, receptors which are over expressed during development of disease. FDA approved very few nanotechnology drugs for cancer therapy, a large number of studies are undergoing for the development of novel nanocarriers for potent cancer therapy. The review summarizes topical advances about the drugs for cancer treatment, their targeted drug delivery systems based on nanoparticles (NPs).

Keywords: *Nanoparticles (NPs) based Drug Delivery System, Uses, Advantage, Cancer, Nanotechnology.*

BCDACPT/P-97/2024

Natto: A Superfood Treating Atherosclerotic Plaque

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Abstract: Natto is a traditional Japanese food made from fermented soybeans. It is a rich source of vitamin K2 which has shown a very good effect on the cardiovascular system. Clinical trial on a large scale has given proof that Natto has the ability to suppress atherosclerosis, but the mechanism behind this is yet to be known. Three different strains of natto were taken with different Vitamin K levels and were done on a mouse model. Bone marrow expressing infra-red fluorescent protein (iFRP) transplanted from mice was put into LDLR-deficient mice, that allowed a non-invasive procedure for observing foam cells expressing iFRP into atherosclerotic lesions. Natto containing high vitamin K was applied and significant reduction of aortic staining and iFRP fluorescence was observed, indicating decreased atherosclerosis. Mice administered with natto also showed a decrease in serum CCL2 (chemokine (C-C motif) ligand 2) expression in macrophages as well as there was an increase in anti-inflammatory cytokine IL-10 expression. Natto also improved gut microbiota of the mouse especially there was a marked increase in natto bacteria in caecum. The regressive clinical trials on mice suggest that administration of natto inhibits atherosclerosis. It does so by reducing CCL2 expression in macrophages and suppressing intestinal inflammation.

Keywords: Natto, Soyabean, Vitamin K, infra-red fluorescent protein.

BCDACPT/P-98/2024

Advent of AI & Its Integration in Diabetes Management in Pharmaceutical Industry

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Abstract: DIABETES MELLITUS is a chronic metabolic condition which is characterized by insulin insufficiency induced hyperglycaemia. Excess levels of growth hormone, glucagon etc. may also be involved in addition to insulin insufficiency. Ketosis may occur. The free fatty acids cause ketone bodies to be more synthesized and to accumulate in the body's fluids and circulation by acting on several metabolic pathways. Diabetes Mellitus patients who receive little or no treatment are susceptible to a wide range of neurological and vascular problems. There are two main types of Diabetes Mellitus: Type 1 Diabetes: Occurs due to its failure to produce Insulin. Type 2 Diabetes: Occurs due to failure to utilize Insulin to balance plasma Glucose level. Artificial intelligence, specifically machine learning algorithms, is at the heart of contemporary diabetes management in today's new technologically advanced world. By analysing the massive amounts of data generated by Continuous glucose monitoring sensors, artificial intelligence (AI) systems are able to identify patterns, identify trends, and produce accurate projections. This powerful combination enables data-driven insights and real-time analysis to be achieved, empowering patients and healthcare providers to make informed decisions for optimal glycaemic control. One of the key advantages of AI-driven diabetic management is personalization and allows a risk-based approach to diagnosis as AI can analyse patient data to predict the likelihood of diabetes-related complications, such as cardiovascular issues, kidney disease, or retinopathy. Early identification allows for proactive management and preventive measures. AI has been used more and more in the treatment of diabetes mellitus in a number of areas, such as: Systems for Supporting Predictive Analytics Decisions; continuous glucose monitoring; Insulin Dosing Optimization; Therapeutic Discovery and Development; Behavioural Coaching and Support to patients; Data Integration and Interoperability.

Keywords: Diabetes Mellitus; diagnosis; Insulin; Artificial intelligence; Continuous glucose monitoring; personalization; Analytics.

BCDACPT/P-99/2024

Sustained-Release of Dosage Form

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Abstract: Sustained-release dosage forms gradually release medication over an extended periods, maintaining therapeutic levels in the body and reducing the frequency of dosing, enhancing patient compliance and optimizing treatment outcomes. These formulations gradually release API(active pharmaceutical ingredients) over an extend period. Sustained release formulations allows for less frequent dosing compared to immediate release formulations. Mainly these dosage forms action by controlling the rate and duration of drug release. These approaches minimize side effects, enhance patient compliance and optimize therapeutic outcomes in pharmaceutical formulations. For concepts include matrix systems, where drugs are dispersed within a polymer matrix for gradual release, reservoir systems, with drug reservoirs enclosed in membrane for control diffusion, and osmotic systems utilizing osmotic pressure to release drugs. Sustained-release dosage forms find broad application in managing chronic conditions such as hypertension, diabetes and pain management. They provide controlled release of medication, reducing dosing frequency and improving patient adherence and minimizing side effects. For patient quality of life, sustainable release dosage forms are mainly used. For minimizing side effects and controlled drug delivery, it is very useful dosage forms.

Keywords: API, Hypertension, Diabetes etc.

BCDACPT/P-100/2024

Microencapsulation Technology: A Review

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Abstract: The medical society change itself in a dynamic way so, it needs more research work to tune it in right place. we have get some fruitful result in drug delivery system microencapsulation is one of them. in this process we can secure the highest bioavailability. Microencapsulation is a process in which solid even droplets are enclosed by filming. In microencapsulation we from free-flowing fluid. In the work of filming, we generally use polymer. we use core material or API and coating material to enveloped them. The vison of microencapsulation is uncounted. We normally us this technique for stabilization of vitamin like drug from oxidative damage. It also helps in compatibility between liquid and solid from and it also effective for test masking for acetaminophen like drug, it prevents GI irritation and many more advantages are already proved some other ways are yet to discover. It is helpful to reduce bulkiness of the medicine. Hear we only use API and coating element so excipient related disorder like receptor blocking, excipient accumulation, slow poison and many more.so, in a nut shale we can say that microencapsulation is a plate for multiple problem. There is not a single scope to Denay that this is a novel invention for drug delivery system.

Keyword: Droplets, bulkiness, microencapsulate, API.

BCDACPT/P-101/2024

Pharmaceutical Dose Are Very Important for Patient Recovery

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Abstract: For the recovery of a patient, the pharmaceutical dose plays a significant role. These doses are not the same for everybody. The dose for any infant and the dose for any adult is not the same. This dose calculation depends on some factors like Age, Body weight, Hepatic function, Renal function, etc. Determining the required drug dose, we need to maintain the time sequence in case of

taking the drugs which is also known as Drug dose frequency. It is important for achieving desired therapeutic efficacy and avoiding undesired effects. In some cases, we take the drugs in excessive amounts by mistake, and then there are some side effects or negative effects that occur in our bodies. If we take sugar tablets excessively, then the glucose level or insulin level of our body decreases. Metformin is one of the drugs used to treat sugar or diabetes. It caused also kidney damage by decreasing the sugar level. On the other hand, if someone takes any drug for a long time, some excipients cause slow poisoning in the body. Digoxin is used to treat Congestive heart failure. Digoxin's therapeutic half-life is 30-40 hours, so this drug is taken excessively in the body intentionally or unintentionally and it causes slow poisoning in our body by increasing toxicity. Also one takes a drug more than the dose, the drug receptor may be blocked and after this, the drug can't bind with the receptor and the desired efficacy can't achieved. To avoid this problem we need to take the drug according to the dose and also take the drug maintaining the drug dose frequency.

Keywords: Hepatic function, therapeutic efficacy, metformin, digoxin.

BCDACPT/P-102/2024

Asthma And Its Treatment

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Abstract: Over the past century, asthma treatment has undergone significant evolution, progressing from belladonna alkaloids to targeted therapies such as anti-IgE medications. The introduction of systemic and inhaled corticosteroids marked a pivotal moment in asthma management, despite initial concerns regarding their impact on growth. However, recent longitudinal studies have provided reassurance, demonstrating that at conventional doses, inhaled corticosteroids do not significantly affect long-term growth. Asthma itself has little effect on attained adult height, although untreated asthma may lead to pubertal delay, potentially influencing perceived growth failure. While all currently available inhaled corticosteroids result in short-lived growth suppression, growth typically reverts to pretreatment levels after cessation of therapy. Younger, prepubertal children appear more sensitive to these effects. Asthmatic children receiving conventional doses of inhaled corticosteroids are likely to attain an adult height indistinguishable from their predicted height based on mid parental height, and no different from non-asthmatics. While concerns persist regarding potential decrements in adult height among severe asthmatics, evidence suggests any such decrease is minimal. As our understanding of asthma biology deepens, the anticipation grows for the development of more effective targeted treatments, offering further improvements in asthma management while mitigating potential side effects.

Keywords: Belladonna alkaloids, Anti-IgE medications, Systemic corticosteroids, Inhaled corticosteroids, prepubertal children.

BCDACPT/P-103/2024

Safety Efficacy of Patient from Industrial Pharmaceutical Dosage Form

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Abstract: Medical industry is one of the branches industries in the world in presence scenario. In this industry we have formulated different types of dosage form. In the product we have used API along with some excipients, such like; colouring agent, sweetening agent, binder, coating and such like that. This all excipients may be act as a slow poisoning for patient. Like the synthetic colouring agent "yellow & iron red oxide", "titanium dioxide" etc. This all are carcinogenic in nature. But after consumption of high amount of these kinds of colouring agent. So, if anybody consume this kind of colouring agent containing drug for long time, he/she will tend to suffer from cancer or like that. In most of the cases these excipients resist drug receptor reaction so that patient can suffer from many kinds of in compatibility. So, in industry formulation we have to give the first priority of safety of the patients.

Keywords: safety, API, excipients, colouring agent, carcinogen.

BCDACPT/P-104/2024

Various Natural Coloring Agents Used in Pharmaceutical Dosage Forms

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Abstract: Coloring agents are chemical compounds used to create a distinguishable appearance of a pharmaceutical dosage form. For example: Titanium dioxide, Tartrazine, Quin-oline Yellow, Beta-Carotene, Indigo, Cochineal etc. These colorants are of three types Organic, Inorganic and Natural. Organic colorants can be synthetically controlled as per the requirements while inorganic or mineral colorants have higher stability toward light and considerable opacifying capacity. Apart from these beneficial properties non-natural colorants impart carcinogenic and mutagenic activity, DNA damage, irritation, allergic reactions etc. This is where natural i.e. plant and animal sourced coloring agents come into play. Natural colorants e.g. Carmine, Curcumin, Paprika, Crocin not only lack of previously mentioned toxic effects but also possess a notable amount of health benefits such as anti-oxidative and anti-inflammatory effect of Curcumin, anti-peroxidation effect of Paprika, cancer cell growth inhibitory effect of Crocin. Although these favourable properties of natural colorants seem to be promising and widespread, some of them lack enough experimental evidence. Natural colorants also possess poor staining quality, low stability towards environmental conditions and often a higher cost. Therefore, comparing the properties of natural and non-natural colorants we can conclude that although natural colorants have several disadvantages, they can be a convenient option of toxin free coloring agents.

Keywords: *Beta-Carotene, Carmine, Paprika, Anti-oxidative, Anti-inflammatory.*

BCDACPT/P-105/2024

IMPORTANCE OF HERBAL COSMETICS

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Abstract: Cosmetics are pharmaceutical products whose main function is to improve skin appearance and body odor. These products are available in various forms, ranging from lotions, creams, powders, and so forth. Cosmetics are mainly used to cleanse, protect and moisturize the skin. Healthy skin is very important these days. Our environment has many harmful toxic substances that cause a great deal of damage to the skin. Synthetic cosmetics are not always able to prevent our skin from these toxic substances so Herbal cosmetics are used more frequently. Herbal formulation is a dosage form that consists of one or more herbs or processed herbs in given quantities to provide specific nutritional, cosmetic benefits meant for the use to diagnose, treat, mitigate diseases of human beings or animals. It alters the structure or physiology of human beings or animals. The best part about using herbal cosmetics is that it is purely made up of herbs and shrubs. The natural contents in the herbs do not have any bad side effects but rather they provide the body with nutrients and other useful minerals. The bioactive ingredients from plants include antioxidants, vitamins, essential oils, tannins, alkaloids, dyes, carbohydrates, and terpenoids, which are used as cosmetics for the care of skin, body, and its other parts. Consumers nowadays are aware of the adverse effects of the synthetic chemicals on skin. This awareness has led to an increase in demand of herbal cosmetics and has thus prompted the growth of herbal cosmetic industries.

Keywords: *Herbal cosmetics, Antioxidant, Vitamin, Tannin, Terpenoid.*

BCDACPT/P-107/2024

Advancement In Nano-Medicine for Targeted Drug Delivery

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Abstract: The area of Nano-medicine has gained significant traction and has the potential to transform drug delivery methods by providing previously unheard-of levels of accuracy and efficacy in the treatment of a wide range of illnesses. This abstract offers a succinct summary of current developments in Nano-medicine with a particular emphasis on targeted drug delivery. The creation of Nano-carriers with distinct dimensions, forms, and surface features is made possible by the application of nanotechnology in medicine, providing exact control over the kinetics of drug release. One of the main goals of Nano-medicine is targeted medication delivery, which aims to maximize therapeutic effects while reducing negative effects. The creation of intelligent Nano-carriers that react to particular biological stimuli and enable site-specific medication delivery is one recent advancement in this field. Furthermore, the integration of imaging agents is made easier by Nano-medicine, allowing for real-time tracking of medication distribution throughout the body. This improves our knowledge of pharmacokinetics and offers insightful information for individualized treatment plans. Furthermore, drug release patterns are further refined by the use of stimuli-responsive Nano-materials, such as pH-sensitive and temperature-responsive nanoparticles, guaranteeing ideal therapeutic concentrations at the target site. Furthermore, multifunctional Nano-carriers that may transport many therapeutic drugs at once have been made possible by advances in Nano-scale materials and manufacturing techniques. Combination therapy, which tackles the complexity of diseases with a multimodal approach, is made possible by this synergy. In conclusion, there is a lot of hope for better patient outcomes from the ongoing advancements in Nano-medicine for targeted drug delivery. The capacity to accurately administer therapeutic chemicals to particular cells or tissues, in addition to improved diagnostic capabilities, highlights the revolutionary potential of nanotechnology in the field of medicine. As this field of study develops, a new era of highly effective and individualized medicine becomes certain as these discoveries are translated into clinical settings.

Keywords: Nano-medicine, Nano-medicine on targeted drug delivery.

BCDACPT/P-108/2024

A Review Article on Natural Binder of Tablet

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Abstract: Natural binders like different starch, gums, mucilages, dried fruits prassesses binding capacity as well as some other properties like filler, disintegrant & natural polymers are safe & economical than polymers like PVP. Natural binders like acacia and tragacanth are used in solution from in the concentration of 10-25%, alone in combination for wet granulation and they can be added as powder for the direct compression process. Binders are added to tablet formulation to impact plasticity and thus increase the interparticulate bonding strength within the tablet. The development of new excipients for potential use as binding agent in tablet formulation, continues to be of interest. The advantages and challenges associated with these natural binders, focusing on their impact on tablet characteristics and drug release.

Keywords: mucilages, prassesses, disintegrant, tragacanth, interparticulate.

BCDACPT/P-109/2024

Tablet Is Not Only a Solid Dosage Form It's a Unit Solid Dosage Form

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Abstract: In pharmaceutical industries main motive is to prepare and disperse the perfect dose in the perfect dosage forms. In where the solid dosage form plays a important role for dispersing the equal amount of dose. Our human body requires a constant or a specific amount of dose in every dosage formulation. In that case, tablet shown a precising way for dispersing equal amount of dose in every unit. For equal dose APIs shown the best bioavailability. In an example if any patient required 500mg APIs per intake for his treatment then only tablet is the only way for dispensing the accurate amount of APIs, in other hand if we use other dosage form for dispense the same amount of APIs like syrup or emulsion then there is a high chance of dosage are not uniformly distributed. So, in this case patient might have suffer form many kinds of irritating effects for either overdose or underdose. In other hand tablet is most stable dosage form than other form because other formulary form has several incompatibilities like as in paracetamol 500mg tablets and paracetamol syrup which content same amount of APIs for single dose but paracetamol tablet is more reliable than syrup for unit dose dispensing. So, here we can conclude that tablet is not only a solid dosage form it's a solid unit dosage form.

Keywords: Tablet, unit dose, dosage form, specific amount, API etc.

BCDACPT/P-110/2024

An Overview of The Effects of Clinical Trial on Our Pharmacy Education

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Abstract: The Clinical Trial is an industrial drug evaluation process that is intended to find out the safety efficacy, and dose selection of drugs to prevent and cure a disease or any health condition. Based on the recorded history of clinical trials goes back to the biblical descriptions in 500 BC when King Nebuchadnezzar a resourceful military leader invented it. The father of the clinical trial is James Lind. The journey moves from dietary therapy – legumes and lemons – to drugs. After the basic approach of the clinical trial was described in the 18th century, efforts were made to refine the design and statistical aspects. It includes various phases phase 0 (preclinical trial), phase 1, phase 2, phase 3, and phase 4. In the Drug development stage, Clinical Trial plays a major role in the benefits of safety and efficacy. Clinical Trials help to detect specific drugs from the market which have unacceptable toxicity. It will help to increase drug stability and to find out the adverse effects of drugs. Designs of clinical trials in the coming years will be a huge benefit for pharma education and its effect will be beneficial for future work.

Keywords: Clinical Trial, Drug Development, Safety Efficacy, Pharmacy knowledge.

BCDACPT/P-111/2024

Nanotechnology Used in Cancer Treatment

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Abstract: Cancer is caused by damage of genes which control the excrescency and division of cells. Discovery diagnose/ treatment is practicable by attesting the excrescency of the cells and treated by amending the dangerous medium of the genes or by stopping the race force to the cells or by destroying it. usual discovery of the cancer is done by observing the physical excrescency/ changes in the bulletin by X-rays and/ or CT reviews and is verified by vivisection through cell cultivation. still, the restriction of these styles is that these aren't veritably sensitive and the discovery is practicable only after physical excrescency of the cancerous cells. Nano patches (NP) being of a many of nano

measures size and the cells being of the size of many microns, NP can enter inside the cells and can pierce the DNA motes Genes and thus, there's a potentiality that the disfigurement in the genes can be detected. The usual treatment options of cancer are surgery, radiation remedy and chemo remedy. In the nanotechnology styles, certain NP can be aimed to absorb preferentially certain surge extent of radiation and if they enter in the cancerous cells, they will burn them. Nanotechnology can be exercised to produce remedial instrumentalities that target special cells and deliver poison to kill them. The NP will propagate through the body, descry cancer associated molecular changes, help with imaging, release a remedial agent and also cover the forcefulness of the intervention. In this paper, the details of these practicable discovery diagnose/ treatment styles of nanotechnology are offered. In extension the poisonous goods of NP and their nonsupervisory aspects are also discussed.

Keywords: *Cancer, Nanotechnology, Cantilevers, Nanopores, Nanoshells, Quantum Dots.*

BCDACPT/P-112/2024

Protective Effect of Probiotics Against Acetaminophen Induced Nephrotoxicity

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Abstract: Acetaminophen (APAP) is a widely used analgesic and antipyretic drug, but its overdose can lead to severe hepatotoxicity and nephrotoxicity. Metabolism of APAP is done by oxidation or conjugation by glucuronate and sulphate and forms the toxic metabolite N-acetyl-p-benzoquinone imine (NAPQI). Metabolism of APAP is also taken place in the kidney by deacetylation reaction in the presence of N-deacetylase enzyme and forms another severely toxic metabolite, p-aminophenol. Both the metabolites show nephrotoxicity and hepatotoxicity. As a result, long term therapeutic dose or overdose of APAP can cause nephrotoxicity and hepatotoxicity. The prolong negligence of this can be cause of uremia and finally kidney failure. Probiotics, known for their beneficial effects on gut health and immune modulation, have emerged as potential candidates for mitigating drug-induced nephrotoxicity. This review focuses on the protective role of various probiotic strains which have been already examined on various animal models against APAP induced nephron toxicity.

Keywords: *Acetaminophen, Nephrotoxicity, Hepatotoxicity, Probiotic, Kidney.*

BCDACPT/P-113/2024

Intervention of Medication Error in Intensive Care Unit

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Abstract: Any preventable event that may result in inappropriate medication use or patient harm while the medication is under the control of the health care professional, patient or consumer, may termed as Medication Error. This definition of medication errors emphasizes the preventable nature of these events and acknowledge, that medication errors can occur at various points in the health care process. Medication errors in the intensive care unit (ICU) can have serious consequences, so interventions are crucial. Some strategies include implementing barcode scanning systems for medication administration, double-checking high-risk medications, standardizing medication protocols, providing education and training for healthcare staff and fostering a culture of open communication where errors can be reported. Reducing such errors involves a collaborative effort between healthcare professionals, patients and systems to enhance safety measures and communication. Regular audits and reviews of medication practices can also help identify areas for improvement and prevent future errors. Knowledge campaigns should be implemented for health care professionals and similarly, awareness of the serious side effects of drugs and how to manage them should be provided to the general public. A systematic approach is urgently needed to reduce organizational vulnerability to errors by providing the tools necessary to track, evaluate and implement successful interventions.

Keywords: *Medication Error, Intensive Care Unit, Awareness, Prevention*

BCDACPT/P-114/2024

Nucleic acid amplification strategies for enhanced biosensing and bioimaging

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Abstract: Nucleic acid amplification techniques have emerged as pivotal tools in molecular diagnostics, enabling the sensitive detection of nucleic acid sequences. Beyond their traditional application in nucleic acid testing, these techniques have found broader utility across diverse domains, including protein analysis, cellular investigations, and the detection of small molecules. In this comprehensive review, we explore four key signal amplification methods: isothermal amplification, the CRISPR/Cas system, DNA Walker, and DNAzymes. These techniques play a crucial role in magnifying detection signals, thereby enhancing the sensitivity of bioanalytical assays. By synergizing with functional nanomaterials, they offer versatile solutions for biosensing and bioimaging applications. Their principles, applications, and the challenges faced in the rapidly evolving landscape of biomedical technology are explored. Insights into the current state of nucleic acid amplification strategies and highlights future opportunities for innovation in this field also highlighted.

Keywords: *Molecular diagnostics, Nucleic acid sequences, Isothermal amplification, DNA Walker, and DNAzymes.*

BCDACPT/P-115/2024

Lead Toxicity Induced Neurodegeneration: A Mechanistic Approach

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Abstract: As per recent reports of WHO, lead exposure killed nearly Imillion lives in 2019. Long term effects causes 30% idiopathic intellectual disability, 4.6% cardiovascular diseases, 3% chronic kidney diseases globally. Lead can concentrate in plants, single-celled algae in aquatic ecosystems causing inhibition of growth, interference with cell division, reduction of photosynthesis and disrupting various other vital processes. A number of studies have shown the ability of marine organisms, fishes, invertebrates and even birds take up lead and pose threat for their existence. Lead competes with other minerals in cellular system especially zinc & calcium. It therefore disrupts several cellular pro cesses that depend on these minerals. Lead directly affects the hematopoietic system by inhibiting haeme-synthesis pathway. Lead can pass through BBB & cause damage to cerebral cortex & cerebellum. Children are at a greater risk of lead toxicity because it interferes with their Synapse & Ion channel formation. This can cause neurodegenerative disorders like Alzheimer's, Parkinson's disease & Schizophrenia. Experimental animal studies have shown significant CNS damage. This is accompanied by muscle twitches, paralysis of tongue, stargazing. The present work focuses on the detrimental effects of lead, its molecular mechanism for toxicity, nerodegenerative biomarker study by reviewing current animal experimentations thereby paving a way for the development of therapeutic & environmental solutions.

Keywords: Leadpoisoning; Neurotoxicity; Neuro degeneration; Molecular Mechanisms.

BCDACPT/P-116/2024

Role of Mangrove Flora in Combating Bio-film Formation

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Abstract: Bacterial biofilms are complex surface attached communities of bacteria held together by self-produced polymer matrix mainly composed of polysaccharides secreted proteins, and extracellular DNAs. The National Institute of Health (NIH) revealed that approximately 80% of chronic and recurrent microbial infections in the human body are due to bacterial biofilm. Urinary tract and bloodstream infections can be caused by the biofilm initially formed on medical implants, such as heart valves, catheters, contact lenses, IUDs and dental unit. Bio film formation is detrimental in healthcare, drinking water distribution systems, food, and marine industries, biofilm have been demonstrated to be more than 1000 fold resistant to treatment with conventional antibiotics. The formation of a biofilm involves the following stages: attachment to a surface, formation of microcolonies, maturation and dispersal. Biofilms are a successful long-term survival strategy employed by bacteria in the environment and during infection due to the resistance to hostile conditions and antibiotic treatment. Natural products can be very useful in combating biofilm infections. Mangroves are one such natural product whose extracts have scientifically been proven to reduce biofilms. Mangroves were chosen as they have already been proven to be promising in interfering with planktonic and sessile bacteria and fungi. They are used in ethno botany for the treatment of several diseases, including infections, and also as pesticides. An advantage of using the extracts is their putative additive and synergistic activity, as they can act on multiple targets, which is an interesting strategy when dealing with the complex biofilm formation phenomenon. The present study focuses on biofilm formation mechanism and stages, toxic impact of biofilm and role of mangrove extract in bio film reduction.

Keywords: Bio-film, Stages of Bio-film, Mangrove, Natural bio-active product.

BCDACPT/P-117/2024

Methods and Considerations for Toxicity Screening of Herbal Remedies

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Abstract: Worldwide, the use of herbal remedies in complementary and alternative medicine has grown in popularity. Still, questions remain about their possible toxicity and safety. This study addresses important factors to take into account when assessing the safety profiles of herbal treatments and gives an outline of the approaches used in toxicity screening. Numerous techniques for toxicity screening are examined, such as in vivo animal research, clinical trials, and in vitro experiments. Assays conducted in vitro, such as enzyme inhibition and cytotoxicity assays, provide important information on the possible cellular toxicity of herbal substances. Studies conducted on living animals offer insights into the toxicity of various organs, systemic toxicity, and possible side effects. To evaluate the safety of herbal treatments in human populations, clinical trials are necessary. This review also emphasizes the significance of taking into factors including herb-drug interactions, variations in herbal preparations, and possible heavy metal, pesticide, or other toxic substance contamination. To ensure the safety and effectiveness of herbal products, standardization and strict quality control procedures are essential. In general, a multidisciplinary strategy combining pharmacology, toxicology, chemistry, and traditional knowledge is needed for the toxicity screening of herbal treatments. Researchers and practitioners can more accurately determine the safety profiles of herbal treatments and encourage their responsible use in healthcare by utilizing suitable screening techniques and taking important factors into consideration.

Keywords: Herbal remedies Toxicity screening, Safety evaluation

BCDACPT/P-118/2024

Herbal Drugs Used in Hair Care

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Abstract: Herbal medication used for hair care has drawn a lot of interest as a holistic and all- natural way to support healthy hair. For centuries, people from diverse cultures have utilized herbal remedies, which utilize the medicinal qualities of compounds derived from plants to treat a wide range of hair-related issues. This review delves into the wide variety of herbal medications used for hair care, highlighting their potential advantages for hair growth, scalp health, and general upkeep. This paper explores the photochemical makeup of popular herbs, emphasizing important bioactive ingredients like flavonoids, polyphenols, and essential oils that support the effectiveness of these herbs in promoting hair vitality. The mechanisms by which herbal medications affect hair health are also covered, including their antibacterial, anti-inflammatory, and antioxidant qualities. Additionally, this abstract clarifies the different ways that herbal remedies are formulated and used in relation to hair care products, such as oils, conditioners, and shampoos. This review aims to provide light on the potential role of herbal drugs in treating hair loss, dandruff, and premature graying by critically analyzing the scientific evidence that supports their efficacy in comparison to conventional hair care methods. It is critical to comprehend the scientific rationale for the use of herbal medications in hair care as consumer preferences move toward more sustainable and natural options. The purpose of this abstract is to present a thorough summary of the status of research in this area and to shed light on the intriguing possibilities of herbal remedies as a workable and environmentally responsible hair care option.

BCDACPT/P-119/2024

Unravelling the Genetic Complexity of Migraine: Insights from Monogenic Forms and Genome-wide Studies

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Abstract: Migraine, a multifaceted neurological disorder, arises from the intricate interplay of genetic predisposition and environmental influences. Within this spectrum, monogenic forms like familial hemiplegic migraine and migraine with aura associated with hereditary small-vessel disorders have provided invaluable insights into the genetic underpinnings of the condition. These forms are characterized by specific genetic mutations affecting proteins expressed in various cellular components of the brain, including neurons, glial cells, and blood vessels. The net effect of these mutations is an increased susceptibility to cortical spreading depression, a phenomenon implicated in migraine pathophysiology. The Investigation into monogenic migraines has shed light on the pivotal role played by the neurovascular unit in migraine pathogenesis. This unit comprises a complex interplay of neurons, glial cells, and blood vessels, all of which are implicated in the initiation and propagation of migraine attacks. Moreover, genome-wide association studies have identified a multitude of genetic variants associated with migraine susceptibility. Despite each variant contributing only modestly to the overall risk of developing migraine, their collective impact is substantial. These variants, numbering over 180, are organized into intricate networks of molecular abnormalities, primarily affecting neuronal and vascular pathways. Furthermore, genetic research has unveiled shared genetic factors between migraine and its major comorbidities, such as depression and

hypertension. This finding underscores the interconnected nature of these conditions and provides a basis for understanding their co-occurrence in clinical practice.

Keywords: *Migraine, Familial hemiplegic migraine, Genetics, Genome-wide association studies, Polygenic*

BCDACPT/P-120/2024

Effect of extraction solvents on the phenolic content and antioxidant properties of two papaya cultivars

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Abstract: In this study, three types of solvent extracts from two cultivars of papaya fruit (Hongkong and Eksotika) were used to examine the effects of extraction solvent on total phenolics content (TPC), total flavonoids content (TFC) and antioxidant activity by ferric reducing antioxidant power r (FRAP), 1,1-diphenyl-2-picryl hydroxyl radical scavenging (DPPH) and 2,2-azino-bis-3-ethylbenzothiazoline-6-sulfonic acid (ABTS) were determined spectrophotometrically. Results showed that extraction solvent had significant effects on TPC, TFC, and antioxidant activity of methanol and acetone extract. The highest content of TPC, TFC, and antioxidant activity (FRAP and DPPH) was found in 50% methanol and 50% acetone extracts. The TPC varied for both cultivars (Hongkong and Eksotika) from 16.35 to 46.65, 67.50 to 23.38 mg gallic acid/100 g fresh weight, and TFC were between 19.40 and 36.17, 39.81 and 21.04 mg quercetin/100 g fresh weight and antioxidant activity (FRAP from 124.84 to 90.23, 190.59 to 159.98 mg Trolox equivalents/100 g fresh weight) and DPPH was between 47.82 and 28.72%, 74.56 and 38.57%) respectively. The largest amount of TPC and TFC which leads to a more effective radical scavenging effect was shown by 50% methanol extract. Moreover, the number of phenolic compounds and antioxidant activities increased in methanol and acetone extract. Therefore, a positive correlation occurred between antioxidant activity and phenolic compounds. Methanol 50% and acetone 50% solvent showed the greatest capability in extracting antioxidants and inhibiting the free radicals produced. It was concluded that extraction solvents play important roles in the phenolic compounds and their antioxidant activity of papaya fruit extract.

Key words: Papaya, extraction solvent, antioxidant activity, phenolic compound.

*Abstracts
for
Oral presentation*

BCDACPT/OP-01/2024

Optimization of the Process of Extraction of Silk Fibroin from Mulberry Silk Cocoon

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Abstract: The Silk cocoons are composed of two types of protein namely; fibroin and sericin. The biomedical application of the silk protein requires regeneration of the same to meet the desired characteristics. The fibroin is the protein for which the cocoon gets its tensile strength and sericin is the gummy material which binds the fibroins to makeup the cocoon. The extraction of fibroin for different biomedical application requires removal of the sericin which is also known as degumming. The degumming process requires Sodium Carbonate and heat. The fibroin is also regenerated into solution form by the treatment of Lithium Bromide followed by dialysis. In this study, the use of Sodium Carbonate and Lithium Bromide is optimized in order to limit the entry of these chemicals through formulation. The independent variables are concentration of Sodium Carbonate and temperature in degumming process and Lithium Bromide and temperature in silk fibroin regeneration process .The dependent variable is time taken for the process to complete. The regenerated silk fibroin after dialysis is examined by ICP-MS for the concentration of lithium.

Keywords- Silk cocoon, fibroin, Sericin, ICP-MS.

BCDACPT/OP-02/2024

Investigation of The Anti-Inflammatory Mechanisms of *Plumbago Zeylanica* Root Extracts through In-Vitro Studies

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Abstract: The purified roots of *Plumbago zeylanica* are used in Ayurveda for treating various painful inflammatory conditions. Therefore, the aim of the study is to assess the anti-inflammatory potential of its different extracts using various *in-vitro* models. Furthermore, the mechanism of anti-inflammatory action of bioactive extract was elucidated by studying gene expression in croton oil-induced inflammation using RAW 264.7 cells. The purified roots underwent successive extraction to produce extracts with increasing polarity. The antioxidant properties of the extracts were evaluated using *in-vitro* methods, including DPPH and hydroxyl radical scavenging, and by estimating total phenolics and flavonoids while the *in-vitro* anti-inflammatory activity was evaluated by albumin denaturation and hypotonicity-induced hemolysis assays. The results of the *in-vitro* studies revealed that the methanolic extract was the most potent extract. Further, RAW 264.7 cells were treated with the methanolic extract and croton oil, and subsequent assessments of cell viability and gene expression were conducted. Real-time PCR was employed to quantify the expression of inflammatory genes (COX-II, VEGFA, and iNOS), illustrating the concentration-dependent inhibitory effect of the methanolic extract on croton oil-induced up-regulation. Furthermore, the Griess method was utilized to measure nitric oxide (NO) production, indicating a significant reduction in croton oil-induced NO generation with increasing concentrations of extract. These results indicate that the methanolic extract of the purified root of *P. zeylanica* exhibits robust anti-inflammatory properties, as evidenced by its ability to reduce the expression of inflammatory genes such as COX-II, VEGFA, and iNOS, along with lowering NO production in croton oil-stimulated RAW 264.7 cells.

Keywords–Anti-inflammatory potential; Gene expression; In-vitro models; *Plumbago zeylanica*

BCDACPT/OP-03/2024

Antidiabetic Potential of Quercetin Derivatives in Cafeteria -STZ Induced Diabetes in Wistar Rats.

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Abstract: Diabetes mellitus (DM) is a chronic disease caused by inherited and/or acquired deficiency in the production of insulin by the pancreas, or by the ineffectiveness of the insulin that is produced. Such a deficiency results in increased concentrations of glucose in the blood, which in turn damages many of the body's systems. The synthetic drugs are effective in controlling the blood sugar but with many other adverse drug reaction. To overcome this, the need for natural products, which may be used as a dietary supplement to prevent diabetes. The cafeteria diet followed with low dose streptozotocin (35mg/kg /i.p) to induced type II diabetes in rats. In the present study, we aimed to investigate the protective effect of quercetin derivative against cafeteria diet-streptozotocin(STZ) induced type-2 diabetes (T2DM) in the experimental animals. Male Wistar rats (180-200 g) were fed with cafeteria diet for 21 days followed by the administration of STZ (35 mg/kg, i.p) . After 72 hours, we have checked the fasting and postprandial blood glucose level and then the animals were divided into several groups. Diabetic animals were treated with pioglitazone (10mg/kg, p.o) and quercetin (50 mg/kg, p.o) for 3 weeks. After completion of experimental . Diabetic animals showed hyperglycemia, impaired glucose tolerance and lipid profile. While, treatment with the quercetin, restored all these abnormalities. On the basis of these observations, we concluded that quercetin can protect diabetic rats from insulin resistance through the regulation of GLUT-4 transporter and AMPK pathways.

Key words: *Hyperglycemia, quercetin, oxidative stress, GLUT-4,AMPK .*

BCDACPT/OP-04/2024

Preparation and Evaluation of Moringa Leaf Powder Tablets

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Abstract: Moringa is a plant native to India and other countries. "Moringa oleifera" is scientific name of Moringa. It contains proteins, vitamins, and minerals making it useful to fight malnutrition, its having antioxidant and anti-inflammatory properties, other attributed benefits are, speeding up wounds healing, managing blood glucose. In this present work, we have formulated various batches of Moringa powder tablets by direct compression method using standard tablet excipients. We leverage its nutritional richness in tablet formulation contributing to medical research for health enhancement, particularly in nutritionally challenged areas. The compressed tablets were then evaluated for various official and unofficial tests. Initial findings suggested, we were successful in our meeting of the laid objectives.

Keywords: *malnutrition, antioxidant, anti-inflammatory properties, tablet excipients.*

BCDACPT/OP-05/2024

Nutraceutical Mix Tablets of Bee Pollen and Vitamin C

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Abstract: Nutraceuticals over the years have cemented its place in therapy. Many of the Healthcare professionals believe in strengthening the immunity of an individual with balanced nutritional supplements. The current project aimed at formulation of a tablet by direct compression containing Bee pollen and Vitamin C along with standard pharmaceutical excipients. Bee pollen is rich in amino acids and a great source of protein and minerals, while Vitamin C has diverse metabolic roles in the body. Compressed tablets were evaluated for the various physico-chemical properties. The method of analysis is under development as in depth research, and the stability aspects are our prime consideration. We can conclude Formulation of the tablets was a success, further studies would strengthen the claims we have put forward.

Keywords: *Nutraceutical, Bee pollen, Nutritional supplements, Pharmaceutical excipients*

BCDACPT/OP-06/2024

Formulation and Evaluation of Graphites-Borax Hydrogels

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Abstract: Hydrogels are basically three-dimensional crosslinked polymeric network structure which can be synthesized from natural or synthetic polymers or combination of these two. We have formulated the hydrogels containing Graphites and Borax from homeopathy origin for topical applications. Our literature reviews suggested that though in homeopathy, graphites & borax are often used for clinical management of skin diseases, microbial infections etc., but there are no available marketed topical formulations of the same. In our current project we formulated Graphites-Borax hydrogels for the treatment of microbial infections specially wound dressing in bed sores. Graphites-Borax hydrogels were prepared by crosslinking method using polymers and other excipients with Graphites and Borax homeopathic powdered drugs. Stable Graphites-Borax hydrogels were successfully prepared and evaluated for physico-chemical, antimicrobial properties. All the prepared batches gave desired expected results. The present study was carried out to formulate Graphites-Borax hydrogels for wound dressing. A stable formulation with desired properties was prepared. The present project was a success in establishing the desired objectives.

Keywords: *graphites, borax, hydrogels, topical formulations.*

BCDACPT/OP-07/2024

Formulation and Evaluation of Poultry Egg Shell Powder Chewable Tablets as a Natural Source of Calcium Supplement

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Abstract: Poultry Egg shell is a great natural resource of calcium as it contains high proportions of calcium carbonate containing which can be used as an excellent calcium supplement. Now a days physicians and researchers are using egg shell powder to treat a host of conditions like osteoporosis, arthritis and loss of dental enamel and also helps to increase the bone mineral density. In this research

project using direct compression method, a chewable tablet is formulated as a natural resource of calcium supplement using fine egg shell powder as calcium carbonate resource along with ascorbic acid to increase the bioavailability of the calcium as well as an antioxidant. We have efficiently blended the formulation with flavouring and sweetening agents to address the palatability characteristics. We managed to compress good tablets with desired objectives. The tablets are very stable over a period of time.

Keywords: Egg shell powder, calcium supplement, ascorbic acid.

BCDACPT/OP-08/2024

Formulation and Development of Sarsaparilla Elixir for the Treatment of Renal Calculi

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Sarsaparilla (*Hemidesmus indicus*) is a tropical plant. The roots of Sarsaparilla are rich in antioxidants, flavonoids, and phenolic acids and considered safe for most people. Sarsaparilla contains many chemical constituents that have beneficial effects on the human body. Sarsaparilla contains many chemical constituents that have beneficial effects on the human body. It is used to treat PCOS, urinary tract infections, kidney stones. Around 12% of the world population has been infected by renal calculi disease, which has multiphase etiological factors and a high recurrence rate. In order to reduce the recurrence rate, the use of homoeopathic intervention can be the most effective alternative option and Sarsaparilla is one of the frequently prescribed medicines by homoeopaths for renal stones. Elixirs are intended for oral use and are basically clear, sweetened hydro- alcoholic, pleasantly flavored liquids. These are better than the aqueous syrups to maintain both water soluble and alcohol soluble components in the solutions because of their hydroalcoholic character. Hence, an optimised sarsaparilla elixir is formulated and developed and multiple stability studies are performed.

Keywords- Sarsaparilla Elixir, Renal Calculi, Hydro- Alcoholic Liquid

BCDACPT/OP-09/2024

Formulation of *Eleocharis dulcis* (water chestnut) suspension as a nutritional supplement

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Abstract: Balanced nutrition is the need of the hour. Indian subcontinent is full of rituals and fasting is being carried out by individuals more often than not. Our current project aimed to formulate an oral suspension containing *Eleocharis dulcis* (water-chestnut) aqueous concentrate with standard pharmaceutical excipients. *Eleocharis dulcis* (Water-chestnut) is a good source of edible fibres, antioxidants, and minerals and is soothing for the gut. We have managed to formulate a stable suspension though further studies are very much needed to stabilize the formulation.

Keywords- Waterchestnut, Nutritional supplement, Suspension formulation.

BCDACPT/OP-10/2024

Croton bonplandianum Baill: A Current Study

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ABSTRACT

Plants are abundant natural product suppliers. Both the Rig-Veda and the Atharva-Veda have comprehensive drug regimens for treating various illnesses. The two most significant texts in this medical system are thought to be the Charaka Samhita and the Shrusuta Samhita. There is evidence of approximately 99 medicinal plants to treat various ailments in the Rig-Veda, approximately 82 in the Yajur-Veda, and approximately 28 in the Atharva-Veda. After Fabaceae, Euphorbiaceae in which croton belongs is the most claimed family used as medicinal purposes. Croton bonplandianum is an alien plant species, its alkaloids, flavonoids, terpenoid, saponins, steroids, resins, phenols, and rutin make it very medicinal. It's one of the 50 basic herbs that traditional Chinese medicine uses. It is used to treat high blood pressure and also to treat skin problems, wounds as the Croton bonplandianum Baill leaves have the antifungal potential of against some human pathogenic fungi. Croton oil is also used as laxative. It has also the Phyto-toxic effect towards Weedy associates. It is observed that it has the Analgesic, Anaesthetic as well as muscle relaxant activity. It is also cardio- and hepatotoxic. It may have clastogenic property.

Keywords: *Croton bonplandianum Baill.*

BCDACPT/OP-11/2024

Formulation of Tablets with Puffed Rice and Cod Liver Oil as Nutritional Supplements

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Abstract

Puffed rice is highly nutritious for our health and consist of many macronutrients and micronutrients. Consuming fortified puffed rice can aid in our overall health. Cod liver oil used is an incredibly nutritious type of fish oil supplement. It is very convenient and contains mainly omega-3 fatty acids, vitamin A and vitamin D. It also provides some benefits like stronger bones, reduced inflammation, less joint pain for rheumatoid arthritis. The present project aimed at formulation of uncoated tablets of Puffed rice and Cod liver oil by modified direct compression method using standard tablet excipients. Compressed tablets were then evaluated for various official and unofficial tests. Initial findings suggests that if further studied in depth such type of dosage forms can be an effective health supplement with great affordability.

Keywords: *Puffed rice, Cod liver oil, Health .*

BCDACPT/OP-12/2024

Application of Coloring Principles of Dragonfruit pulp in Pharmaceutical dosage Forms

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Abstract: Red variety of dragon fruits scientifically known as *Ashylocereus undatus* belonging to the family cactaceae. Pulp used for extracting the coloring principle betacyanin, a type of pigment, generally dark red. Red coloring principles from the dragon fruit pulp widely used in food and beverage industry but till now, coloring principles are not used in pharmaceutical industry in terms of application. Natural closure generally non-allergenic, non-toxic, and biodegradable. In pharmaceutical

formulations natural colors are used as they are non-carcinogenic and maintain the safety profile. Firstly, red pulp from various origin of dragon fruit was collected and separation of the fruit pulp was done followed by separation of seeds, preparation of the puree was done by using laboratory grinder, clarification and filtration was done to obtain concentrated pulp mix, drying the same, application of the obtained color concentrate in various dosage forms was carried out. Tablets showed the maximum stability though further studies are required to ascertain the claims.

Keywords: *non-allergenic, carcinogenic, biodegradable, non-toxic.*

BCDACPT/OP-13/2024

Computational Insights into Inhibition: Towards Novel Antimicrobial Strategies Targeting *Acinetobacter Baumannii*

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Abstract:

Peptidyl-tRNA hydrolase (Pth) is a crucial enzyme involved in protein biosynthesis, facilitating the hydrolysis of the ester bond between amino acids and tRNA molecules. This process is essential for preventing the accumulation of peptidyl-tRNAs, which can hinder protein synthesis. *Acinetobacter baumannii*, a Gram-negative bacterium notorious for its multidrug-resistant nature, poses significant challenges in healthcare settings. Its peptidyl-tRNA hydrolase (AbPth) is of particular interest due to its role in protein biosynthesis and its potential as an antimicrobial target. Utilizing deep docking and molecular dynamics analysis, we investigated the interactions of potential inhibitors with AbPth. Our findings revealed insights into the binding modes and dynamic behavior of inhibitor molecules within the active site of AbPth. These computational approaches enabled the identification of promising lead compounds with favorable binding affinities and stability profiles. AbPth, a conserved enzyme in *A. baumannii*, shares structural and functional similarities with Pth enzymes from other organisms. It is essential for efficient tRNA recycling and maintaining optimal protein synthesis rates, critical for bacterial growth and survival. Inhibitors targeting AbPth, identified through deep docking and molecular dynamics analysis, could disrupt protein synthesis, offering potential bacteriostatic or bactericidal effects. The integration of computational techniques such as deep docking and molecular dynamics analysis enhances our understanding of AbPth inhibition and aids in the rational design of novel antimicrobial agents. However, the emergence of resistance against AbPth inhibitors remains a concern, necessitating ongoing research into resistance mechanisms and the development of strategies to mitigate them. Further exploration of the structure, function, and inhibition of AbPth using computational approaches is warranted to unlock its full potential as a therapeutic target against *A. baumannii*. The development of AbPth-targeting antimicrobial agents holds promise for combating infections caused by this challenging pathogen.

Keywords: *Deep Docking, Molecular Dynamics, Anti Microbials, Water Mapping*

BCDACPT/OP-14/2024

In-Vitro Comparative Dissolution Study & Assay of Marketed Aceclofenac Sustained & Controlled Release Tablets

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Abstract: Aceclofenac (2-(2,6-dichlorophenyl) amino phenyl acetoxy acetic acid) is a widely used non-steroidal anti-inflammatory drug (NSAIDs) considered to be the first-line drugs in the symptomatic treatment of rheumatoid arthritis, osteoarthritis and spondylitis. The objective of the study was to determine the difference between commercially available Aceclofenac sustained & controlled release tablets. To perform the study two commercially available tablets Hifenac SR (200 mg) & Zerodol CR (200 mg) manufactured in India were investigated by the performance of quality control tests (Assay & Dissolution profile) and confirmed with IP standards. The assay showed that Zerodol CR contained 199.2 mg of drug, having % purity of 99.2% and Hifenac SR contained 199.6 mg of drug, having % purity of 99.6%, both having acceptable readings. The % of drug release in phosphate buffer pH 7.2 in 6 hours for Hifenac SR was 98.24% and Zerodol CR was 69.87% & 0.1N HCl in 6 hours for Hifenac SR was 40.01% and Zerodol CR was 29.35%. Both results showed that the drug release is more controlled in case of the CR tablet. Hence, the therapeutic effect from the CR tablet can be obtained for a prolonged period compared to SR tablet.

Key words: Aceclofenac, sustained, controlled, drug release.

BCDACPT/OP-15/2024

In-Vitro Evaluation of Two Marketed Brands of Paracetamol Tablets Using Quality Control tests

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Abstract : Paracetamol or acetaminophen (4-hydroxyacetanilide) is a widely used non-opioid analgesic and non-steroidal anti-inflammatory drug (NSAID). The study was performed to evaluate the quality of two brands of Paracetamol 650mg tablets from different manufacturers. To perform the study, two commercially available tablets Calpol-650 & P-650 manufactured in India were evaluated for five in vitro parameters, both official and non-official, that is weight variation, hardness test, friability, disintegration and dissolution test. Both the brands had passed the weight variation uniformity test as per IP not exceeding 5% deviation. The friability values were ranged from 0.1 to 0.2%. The overall disintegration time for both brands were in the range from 24 seconds to 4 minutes 52 seconds & they had acceptable crushing strength between 4 kg/cm² to 10 kg/cm² & % drug release for Calpol-650 was 90% and for P-650 was 84%. This study states the necessity for constant surveillance on the marketed drugs by the regulatory bodies to ensure good quality pharmaceutical products circulating in the market. Finally, as quality control parameters are related to one another from initial step to pharmacological action of the drug, a high-quality tablet should meet all the standard quality parameters for getting its desired therapeutic response.

Key words: Paracetamol, friability, disintegration, dissolution, drug release.

BCDACPT/OP-16/2024

Utilizing Knitwear Waste Fibers for Sustainable and low-cost Sanitary Napkin Production

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Abstract: This study suggests a unique method for making inexpensive sanitary napkins using of leftover fibres from the knitting industry. Knitwear waste fibres, which are frequently thrown away as byproducts, are recycled to make sanitary napkin absorbent cores. The viability and efficiency of using these waste fibres are assessed by means of a number of tests and material analysis. In order to maximise sanitary napkin function and comfort while lowering production costs, the study looks into a variety of processing methods. Furthermore, the environmental consequences of recycling waste fibres from knitwear are evaluated, emphasising the sustainable advantages of this method. The findings show that sanitary napkins manufactured from waste knitwear fibres have comfort and absorbency qualities that are on par with those of traditional goods, but at a substantial cost savings during production. This creative approach not only meets the urgent demand for reasonably priced. The abstract describes the process of transforming knitwear waste into usable fibers for sanitary napkin production. The benefits of utilizing recycled materials for cost reduction and environmental impact are highlighted. The potential for this innovation to address affordability and sustainability concerns in feminine hygiene products is presented.

Keywords: Sanitary napkins, Knitwear waste Fibers, Recycling, Cost reduction, Sustainability

*Abstracts
for
Innovative Model Exhibition*

BCDACPT/M-01/2024

Self-Heating Inoculating Loop: Handy Tool in The Usage Of Microbiological Field

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ABSTRACT

INTRODUCTION: - Self-heating inoculating loop is needed for efficient and reliable microbiological inoculation tools in laboratory settings. Highlighting the limitations of traditional methods, it explores the significance of a self-heating design in enhancing microbial transfer accuracy and speed. This section sets the stage for understanding the technology's innovative features and its potential impact on microbiological research and analysis.

CONCEPT:- Creating a self-heating inoculating loop involves integrating a heating element into the loop's design. Consider using a small, rechargeable battery to power the element. Ensure the materials used are heat-resistant and safe for laboratory applications.

TARGETED APPLICATIONS:- The self-heating inoculating loop is designed for efficient and rapid microbial sample inoculation. The targeted application focuses on streamlining microbiological processes, enhancing precision, and expediting sample preparation in diverse laboratory settings.

CONCLUSION:- In conclusion, creating a self-heating inoculating loop offers a practical and efficient solution for microbiologists. The incorporation of a heating element not only streamlines the inoculation process but also enhances the precision and reliability of microbial transfers. This innovation facilitates a more controlled environment for experiments, ultimately contributing to the overall efficiency and accuracy of microbiological procedures. Self-heating inoculating loop is cost-effective, eco-friendly, and safer compared to gas Bunsen burner for microbiological applications.

BCDACPT/M-02/2024

Portable Bench Top Fuming Chamber

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Fuming chamber is a type of ventilation system with the primary function to exhaust chemical fumes , vapours, gasses, dust , mist and aerosol. Chemical fumes are exhausted and diluted many times over in the atmosphere and have a negligible effect on human health. A suitable fuming chamber face velocity very important so as to be safe and for an effective operation of a fume chamber. In general , a fuming chamber is recommended to be between 0.3m/s and 0.5 m/s , however it is important to check with local safety regulations on the face velocity recommendation before using this. Material use in this model are Fan, Pipe, Transperant plastic, steel box. Fuming chamber are used to capture and removed the contaminants (gas, vapour or dust) away from the users and out of the laboratory. Fuming chamber is a local ventilation device found in all laboratories. Fuming chamber control contamination by drawing air through the face of the chamber and away from the users and labs. Through ventilation fuming chamber minimise the risk of contamination.

Keywords: *Fuming Chamber , Harmfull Cehmical Fumes , Risk Of Contamination.*

BCDACPT/M-03/2024

Improvisation of Nasogastric Tube Feeding

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Nasogastric tubes (NGTs) play a crucial role in medical practice, serving as a vital conduit for administering nutrition, medications, and decompression of the gastrointestinal tract. This abstract provides an overview of NGT insertion techniques, indications, complications, and nursing care considerations. The versatility of NGTs extends beyond nutritional support, encompassing diagnostic and therapeutic functions in various clinical settings, including intensive care units, emergency departments, and surgical wards. Despite their widespread use, challenges such as patient discomfort, displacement, and potential complications underscore the importance of proper insertion techniques, monitoring, and patient education. This abstract highlights the essential role of NGTs in modern healthcare and emphasizes the importance of comprehensive nursing care to optimize patient outcomes.

Keywords: *Nasogastric Tube ,Concept ,Targeted Application.*

BCDACPT/M-04/2024

Atm (Any Time Medicine) for OTC Drug Delivery

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Medicines play a crucial role in maintaining health, preventing illness, managing, and curing disease. Any Time Medicine (ATM) is a machine which delivers the medicine in emergency cases and ensure availability of drugs 24x7 and hence the name "Any Time Medicine". ATM will be very useful in saving life in case of an accident on highways, remote areas, rural areas and places where medical stores are not within the reach in case of emergency. This project consists of Advanced RISC Machine PIC microcontroller which controls the other sub systems such as RFID Reader. To use our machine, it works on the following steps. User Selection: * Users input their specific medicine requirements, typically through a touch screen or keypad interface on the vending machine. 2* Inventory Check: * The machine verifies its inventory to ensure the availability of the selected medicines. This is often done through a barcode or RFID system. 3 * Payment Processing: * Users make payments through a specific card for ensuring a secure transaction. 4 * Dispensing Mechanism: * Once payment is confirmed, the machine activates a dispensing mechanism. 5 * Packaging: *, ensuring they are in proper condition and labelled correctly. 6 * Security Measures: * Medicine vending machines often incorporate security features, such as surveillance cameras and secure dispensing methods, to prevent misuse or theft.

Keywords : *RISC system, PIC controller, RFID system*

BCDACPT/M-05/2024

Infrared Spectroscopy: A Model

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Abstract

Introduction: Infrared (IR) spectroscopy is one of the most common spectroscopic techniques used by organic and inorganic chemists. It is the measurement of the absorption of various infrared frequencies by a sample placed in the path of an infrared beam. Identifying the chemical functional groups present in the sample is the primary objective of IR spectroscopy investigation. Various functional groups absorb infrared radiation at different frequencies. IR spectrometers may accept a wide range of sample types, including gases, liquids, and solids, with the use of numerous sampling accessories. As a result, IR spectroscopy is a widely used technique for identifying compounds and elucidating their structures.

Concept: Green Laser light is used as radiation source, glass slide is used as sample holder, prism is used as monochromator, detector and recorder is developed by using cardboard and wire is used as spring to describe IR spectrometry principle.

Targeted Applications: Used for the identification of functional groups present in the sample and structural elucidation of compounds.

Conclusion: By measuring the atoms' vibrations, infrared spectroscopy (IR) may identify the functional groups. It is an indispensable tool for researchers due to its capacity to offer comprehensive details regarding the composition and structure of materials. Correlating the known absorption frequencies for different types of bonds with the absorption bands in the spectrum of an unknown molecule is necessary to understand infrared spectra.

BCDACPT/M-06/2024

"Innovative Design of a Miniature Tablet Coating System"

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Abstract: The goal of this project is to create a highly effective miniature tablet coating apparatus while addressing issues that arise with larger equipment. This apparatus is designed for small-scale operations and research and development settings, minimising material loss, space requirements, and installation costs associated with heavy equipment. The key components are loading and unloading openings and a controller that modifies parameters like pan rotation, a tablet coating pan, a regulating pan, a jet sprayer, and an inlet air supply for drying the coating solution. Secure operation is ensured by safety features, such as an emergency stop mechanism. In addition to addressing the drawbacks of larger machines, this small apparatus has other benefits like less material waste, cost effectiveness, and space efficiency. It is the perfect option for manufacturing tiny tablets because of its creative design and thoughtful inclusion of safety features, which satisfy the demands of both small-scale production and research.

Keywords: *Miniature tablet coating apparatus, Small-scale operations, Research and development settings, Space efficiency, Safety features*

BCDACPT/M-07/2024

Portable Reservoir Unit for Wound Management

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MODEL ABSTRACT: Wounds heal faster when a moist environment is provided. This moist wound environment has several benefits that result in faster and better quality of healing. This facilitates autolytic debridement, reduces pain, reduces scarring, activates collagen synthesis, facilitates and promotes keratinocyte migration over the wound surface, and supports the presence and function of nutrients, growth factors, and other soluble mediators in the wound microenvironment, protects the wound against trauma and contamination. The main objective is uninterrupted supply of sterile dressing solution. The basic design of the model is composed of a portable reservoir containing sterile dressing solution, a channel attached to the reservoir, gauge/bandage at the end of the channel to attach to the wound. With time the rate of sterile dressing solution flow through the reservoir via the channel is controlled using sensors to maintain a continued moist environment in the wound. It is mainly aimed to treat the wound faster by providing a continued moist environment, to control an optimal water vapor transmission rate (WVTR) and absorptive capacity, to protect the wound against trauma and contamination, easy to apply and carry effortlessly, for uninterrupted supply of sterile dressing solution.

Keywords- *portable reservoir, moist wound environment, basic model design.*

BCDACPT/M-08/2024

Application of AI Combined With Urine Detection for Disease Diagnosis and Treatment

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The urinary system plays a crucial role in the body by removing waste products and excess fluid. Its main components include the kidneys, uterus, urinary bladder and urethra. A urine culture test can identify bacteria or yeast causing a urinary tract infection (UTI). Many diseases can be detected by the culture of urine.

We generally opt for laboratory tests to monitor our health and its diagnosis. But those can sometimes be time consuming, the results may come after few days. In the 21st century, there are so many advanced technologies are available to contribute in the medical field make our life easy. In recent years, the advantages of artificial intelligence in data processing and model analysis have emerged in the medical field enabled by computer technology developments. Artificial Intelligence technology can provides the possibility to process and used the information in urine. Through such technology those test can be easier to conduct which can be even possible at home. They will be less time consuming and can easily receive the results and information through the phone with the help of AI.

Our aim of the project is to show or give a basic idea through our model that AI combined with urine detection will help individuals to get various results and updates received as the result of the test. AI combined with urine detection will not only provide new possibilities and treatments but also helps to promote non-invasive diagnosis and treatment.

Keywords: *Urine, disease, diagnosis, Artificial Intelligence.*

BCDACPT/M-09/2024

AI Driven Brain Mapping Assembly for Animals

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Abstract

To get the thought process in the brain of animals, signal processing, interpretation of the emotions and clinically treating the conditions. Artificial intelligence (AI) as well as neuroscience have long been partners in research. Over the past few decades, significant advancements in computer processing power coupled with advances in neuroscience have led to the development of a new generation of in silico neural networks that draw inspiration from the architecture of the brain. The sophisticated cognitive and perceptual skills of biological systems, including as object recognition and decision-making, are already largely possessed by these AI systems. AI is also changing our understanding of how the brain works by being used more and more as a tool in neuroscience study. Specifically, convolutional layers and recurrent connections in the cerebral cortex of the brain have been modelled using deep learning to explain how vital activities such as memory, motor control, and visual processing are regulated. Interestingly, applying AI inspired by neuroscience to treatment plans may help us better understand how abnormalities in brain networks give rise to psychopathologies. In this article, we'll talk about recent developments in four fields where the discipline has advanced significantly as a result of the interaction between neuroscience and AI: (A) AI models of working memory; (B) AI visual processing; (C) AI analysis of large neuroscience datasets; and (D) computational psychiatry. Keyword: Ai, Neuroscience, In silico neural networks, Convolution layers, Recurrent connections, Cerebral cortex, Deep learning, Memory, Motor control, Visual processing, Psychopathologies, Computational psychiatry, Working memory, Object recognition, Decision-making, Large neuroscience datasets, Treatment plans, Brain networks.

BCDACPT/M-10/2024

An Ideal Community Pharmacy Setup

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Abstract

Introduction: Medicine dispensing is a critical aspect of healthcare delivery, where trained pharmacists provide patients with prescribed medications to treat their ailments or manage their health conditions. So, to create awareness about the layout and facilities of pharmacy shop, we are going to design a model of an ideal community pharmacy setup.

Concept: The design of the model revolves around creating an area that optimally promotes patient care, complies with legal requirements, and fulfils patients' demands in an effective manner. The shop should have proper space for workers and patients. The medicines should be arranged in proper manner according to alphabetical order and formulation type. The floor needs to be covered with tiles. Ventilation should be provided. Trade licence and drug licence is must for the shop owner. Proper counseling of patients should be done by the pharmacists. Without prescription no medicine should be sold.

Targeted applications: It refers to particular situations or circumstances in which pharmaceutical dispensing is customized to satisfy the particular requirements of particular patient populations or healthcare environments. Our goal is spread awareness about good dispensing practice and to ensure that the right medicines of desired quality are delivered correctly to the right patient with the right dose, strength, frequency, dosage form and quantity, together with clear instructions.

Conclusion: In conclusion medicine dispensing is a fundamental aspect of healthcare delivery that plays a crucial role in ensuring patient access to safe, effective, and appropriate medications. Throughout this exploration, we'll highlight the importance of various factors in the dispensing process.

BCDACPT/M-11/2024

Processing of Biofuel from Polluted Air

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Introduction—Recently it has been notified a huge amount of carbon emits from industrial area. We all need a sustainable solution for climate change. Here biological technologies are being used for capturing industrial carbon. It's possible only through implementation of an upstream flue gas polishing system.

Concept –1. Plant a suction, consisting huge fans which will suck atmospheric air

2. The air is passed through filter chambers which will remove particulates, dust, impurities.

3. Air passed through a chamber consisting stack of charged electrochemical plates. As the battery charges, electrochemical reaction takes place at the surface of each of a stack of electrodes. Stacks coated with polyanthraquinone (carbon nanotubes) stacks readily reacts with atmospheric CO₂ which will attach on surface. CO₂ detaches when battery is discharged.

4. The concentrated CO₂ ejected out in a chamber consisting algae which absorbs CO₂ and converts into lipid.

5. We can make biofuel by further processing of lipids namely Transesterification where lipids reacts with short chain alcohol in presence of catalyst and forms biofuel.



Application— Secondary biofuels are being used in industrial settings in pharmaceutical manufacturing facilities, Primary biofuels are used in heating purposes and also used in Transportation etc.

Conclusion—The whole process comes under DAC technology. We used renewable energies which requires low OPEX and environmental friendly.

Keywords- DAC (direct air capture), Electrochemical plates, Polyanthraquinone, Transesterification.

BCDACPT/M-12/2024

AI Driven Wound Scanner

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Abstract: This model delves into the cutting edge topic of AI powered wound scanning technology, which is changing the face of health care diagnoses and treatment. This model assess the wound in terms of the possible viable micro-organisms, cell debris, blood flow, granulation in one go. The hand held scanner with bio sensors, sensory signals being processed, analysed and recorded by AI Driven software, the overall analysis would predict the line of treatment on the present condition. This model is a boon to Surgeons, Physicians, Hospitals, clinics, first aid and care givers etc.

BCDACPT/M-13/2024

BLOOD DIALYSIS

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Abstract: Blood dialysis is a medical procedure that replicates the function of the kidneys when they are unable to effectively filter waste and excess fluid from the blood.

A machine called a dialyzer is used during blood dialysis to help clean the blood. When the patient's blood is run through the dialyzer, it is filtered through a membrane that removes waste products and excess fluid, then the clean blood is returned to the patient's body. Dialysis helps body imbalances caused by kidney failure and is often used as a life-saving treatment for people with end-stage renal disease. Dialysis helps to remove waste products, excess fluids, and toxins from the blood that the kidneys can no longer filter out effectively. Dialysis helps to maintain proper levels of electrolytes such as sodium, potassium, and calcium in the blood, which is essential for overall health and proper bodily function. Dialysis helps to maintain the pH balance of the blood by removing excess acids or bases, which is crucial for various metabolic processes in the body. Patients who have experienced kidney failure are given a lifeline and a new hope of vitality through the blood dialysis system. It's importance cannot be overstated, as it contributes significantly to health. Health of patients with kidney failure

Key words : dialyzer, membrane, filtered, electrolytes, contribute, Metabolic etc.

BCDACPT/M-14/2024

Innovative model for evaluating the efficacy of antibiotic using optical phenomena

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Abstract: The rising threat of antibiotic resistance has spurred research into novel methods for assessing the effectiveness of antibiotics. This study explores the utility of optical phenomena, in evaluating antibiotic efficacy. Optical phenomena help to measure changes in microbial growth inhibition, providing real-time and quantitative assessments of antibiotic activity. Through controlled experiments, we compared the effectiveness of various antibiotic agents against a panel of pathogenic microorganisms. Results demonstrated the optical phenomenon ability to accurately discern differences in antibiotic potency, offering valuable insights for drug development and antibiotic stewardship efforts. This research underscores the potential of turbidity meter as a promising tool in the fight against antibiotic resistance.

Keywords: Minimum inhibitory concentration (MIC), bacterial growth, cell culture, antibiotics.