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SCIENTIFIC TRACKS



Hot melt extrusion an emerging drug delivery technology

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Hot melt extrusion (HME) is emerging technology which is gaining high importance in the pharmaceutical industry as a novel technique for the preparation of various dosage forms and drug delivery systems, for example granules and sustained release tablets. It is a fast growing technology platform that is utilized to solve difficult formulation challenges, primarily in the area of solubilization. Due to fast processing, high degree of automation, absence of solvents, simple and continuous operation and ability to process poorly compactable material into tablet form are some of the main advantages offered over conventional processing by this emerging technique. Applications of HME in pharmaceutical industry continue to grow and recent success of this technique has made it a useful tool of consideration as a drug delivery solution.

The use of hot-melt extrusion (HME) within the pharmaceutical industry is steadily increasing, due to its proven ability to efficiently manufacture novel products. HME involves the application of heat, pressure and agitation through an extrusion channel to mix materials together, and subsequently forcing them out through a die. Twin-screw extruders are most popular in solid dosage form development as it imparts both dispersive and distributive mixing. It blends materials while also imparting high shear to break-up particles and disperse them. HME extrusion has been shown to molecularly disperse poorly soluble drugs in a polymer carrier, increasing dissolution rates and bioavailability.

Biography

Rashid Mahmood has Master Degree in Analytical Chemistry and MS in Total Quality Management. He has 13 years of experience of Pharmaceutical Quality Operations and has participated in many international conferences as a keynote speaker. He has presented various talks in USA & China on Cleaning Validation, cGMP Guidelines and Quality Risk Management. Currently he is working as a Senior Executive Manager Quality Operations for Surge Lab. (Manufacturer of Microencapsulated APIs, Liquid & Dry Powder Parenterals) which is the best export oriented company in Pakistan.

Bixa orellana linn: various aspects of lipstick tree

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Bixa orellana or “lipstick tree” is mainly an ornamental plant mainly found in South and Central America, Asia and Caribbean islands. It is popularly known as “urucum,” has been used by indigenous communities in Brazil and other tropical countries for several biological applications, which indicates its potential use as an active ingredient in pharmaceutical products. In India, the plant is known as traditional dye in form of ‘Sinduri’ or ‘latkan’ and is used in medicine, cosmetics and food industries. The plant exhibits appropriate genetic variation and is wild in nature, sometimes also cultivated. The seeds are of profitable prominence as they produce a normal pigment bixin, a carotenoid, used in coloring dairy products, and in preparing “sindur” and “lipstick”, and also possess a worthy calorific value. It is mainly used for its bright red fruit or seedpods as a natural color, because of which it is named as “Lipstick tree. It has been widely used to cure different disorders such as Gonorrhoea, inflammatory, mosquito repellent, haemostatic, anti-dysenteric, diuretic, skin diseases and stomach problems. Annatto dye which is obtained from pulp is used for coloring edible materials. The unique red color of annatto is due to bixin and norbixin, which are Carotenoids. This work deals to explore various chemical constituents present in Bixa, which is responsible for various pharmacological actions.

Keywords: Bixa, lipstick, sindur, carotenoids, dye

Biography

Rashmi Saxena Pal is a professor from school of pharmaceutical sciences, of lovely professional university, Punjab. She did Ph.D. in the field of pharmacy.

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Portulaca oleracea: a multifaceted plant

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The use of plants for medicinal purposes is as old as civilization and, in the coming era, it is likely we will see the continuation of the increased demand of the natural products in the market due to multiple uses of single plant. *Portulaca oleracea* L. (Common Name Purslane) is an annual herbaceous plant with reddish stems and alternate leaves from family Portulacaceae. It is listed by the World Health Organization as one of the most used medicinal plants, and has been given the term “Global Panacea”. This plant has been used as a folk medicine in many countries and considered as multifaceted due to its various medicinal properties such as analgesic and anti-inflammatory along with anti-oxidant properties, cancer treatment ability, wound healing, bronchodilator, neuroprotective, ability to control cholesterol level, muscle relaxant, anti-ulcerogenic, anti-fertility, antimicrobial, hepatoprotective and many more. It is grown in all warm countries like India. Natural plant molecules always remain particularly interesting for new research. In this review paper, pharmacological activities of this plant are reviewed and its potential for further investigation and utilization is discussed.

Keywords: Natural Plant, Traditional uses, Antioxidant

Biography

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Monoclonal antibody and blood plasma abo blood group based therapy against covid-19

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In new decade new coronavirus emerged. COVID-19 (SARS-CoV-2) has nucleic acid sequence similarity 96% with bat coronavirus, 79.6% SARS-CoV-1. SARS-CoV-2 and SARS-CoV-1 have common human host-cell ACE2 receptor. This similarity helps for effective vaccine and antibody development. At Wuhan, China, convalescent plasma therapy achieved 70% recovery results. ABO blood group susceptibility study revealed O blood group were very low risk whereas A were at high risk against COVID-19. ABO natural antibodies have positive effect to slowdown COVID-19 in less hygienic environment (less developed) regions. Isolation of specific antibody from EBV transformed B-lymphocyte recovered patients is encouraged. Production of potent neutralizing antibody and vaccine is required. We identified the sensitive immunogenic amino acid segment (318-510) in S1-protein domain that contains important and essential amino acids including cysteine, glutamic acid and aspartic acid, which associated with ACE2 expression.

Keywords: Monoclonal antibody, COVID-19, Spiked protein, ACE2, ABO blood group

Biography

Shimuye Kalayu Yirga is an assistant professor from woldia university, Ethiopia. He did Ph.D. in the field of pharmacy. Currently, he is postdoctoral staff at Department of internal medicine (Hematology), Fujian Medical University Union Hospital, China.

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Change and innovation in the pharmaceutical industry (a focus on developing countries)

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According to Petrova, E. (2014) “Continuous innovation is one of the pharmaceutical industry’s most defining characteristics. New medications can be crucial for maintaining the quality of human life, and may even affect its duration”. The European Pharmaceutical Review (2021) also puts the pharmaceutical market at \$574.63 billion by 2030. This speaks to why innovations are necessary to meet these targets. Innovations are a necessary factor in every industry and more importantly the pharmaceutical industry due to its critical and sensitive nature. The pharmaceutical industry comprises the establishments that focus on medicines for clinical use and other chemicals for external/industrial use. The manufacturing of these products requires a high value of precision and care in order to meet global quality standards. In developing countries however there is still a gap between the demand for pharmaceutical products and how best to manufacture them. This has led to the over reliance of importation on finished drugs and also the over reliance of uncertified herbal products which are relatively affordable but unknowingly dangerous.

Conclusion: As innovation is the driving force of modern industries there is therefore the need to invest in modern technological advancements. With this mind-set the goal of reducing the mortality rate in developing countries will be assured. Pharmacists are morally obliged to save lives. This can only be possible with the use of continuous improvements techniques and innovation. The Approach to the solutions especially for developing countries must be tailor-made to produce the most optimum results. A collaborative approach is needed greatly in the industry, especially for developing nations where individuals and firms do not have the capacity to do it all. Innovation is also catalyst for growth in global and national economies and in meeting several SDGs which we are all called to help achieve

Biography

Bernice Brempong is the current CEO of Makhealth Pharmaceuticals Limited. She holds a Bachelor degree in Pharmacy from University of Ghana. She studied MSc. Entrepreneurship in University College of London and holds a doctorate degree in Pharmacy from the Kwame Nkrumah University of Science and Technology.

Root Cause analysis (ishikawa diagram) and patient safety

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Root cause analysis (RCA) is a structured and systematic investigation of adverse events or narrow escapes that determine what happened, the root cause, and what can be done to prevent recurrence. -certified medical institutions are required to perform and submit RCA for all sentinel events and significant error. Action plan for this improvement. It outlines the five steps an organization should take to implement RCA.

A fishbone diagram is a simple yet powerful way to brainstorm potential causes of problems and how they interact. Using one during your next brainstorming session can help you narrow in on the root cause of problems, giving you a holistic look at quality issues and where to focus your problem solving

Biography

Dr. Fatima Yousef Ali Gheethan did Master degree in pharmacology. She is head of Quality and Medication safety Department King Abdullah Medical City. She is Certified Medication Safety Officer from AIHQ USA, Certified Key Performance Indicator Professional from KPI Institute Australia, and Certified Key Performance Indicator Practitioner from KPI Institute Australia.

7-ethyl-10-hydroxy-camptothecin (sn38)

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Objective: 7-Ethyl-10-hydroxy-camptothecin (SN38) is the most biologically active member of camptothecins but the usage of drug was restricted because of its poor solubility in pharmaceutical solvents. Irinotecan as a prodrug of SN38 is the only commercially available formulation of this group but individual differences induce different metabolism rate of Irinotecan to SN38. In this study, we investigated the effect of aptamer functionalization on therapeutic efficiency of PAMAM dendrimers containing SN38.

Methods and Materials: AS1411 aptamer conjugated formulation of PEGylated PAMAM containing SN38 was prepared. Nanoparticles were characterized for drug loading and PEGylation efficiency. In vitro cytotoxicity and cellular uptake of SN38 in prepared formulations after 3 hours of exposure to murine colon carcinoma (C-26) cell line were investigated. Then in vivo anti-tumor efficacy and survival analysis were studied in C-26 mice bearing tumor during 54 days.

Result: In vitro evaluations revealed significantly higher cytotoxicity and much lower IC₅₀ for all preparations compared to SN38 solution. Cellular uptake studies showed a higher values of uptake for aptamer conjugated formulations after 3 hours of exposure. Regarding to in vivo results, all prepared formulations improved survival of animal model. All PEGylated formulations conjugated with aptamer in dose of 1 mg/Kg and 2 mg/Kg and formulation conjugated with aptamer in dose of 2 mg/Kg indicated significantly better tumor growth inhibition compared to Irinotecan (25 mg/Kg).

Conclusion: The results of this study showed that encapsulation of SN38 in dendrimer and modification of dendrimer by A1411 aptamer improved the anti-tumor effect of drug.

Keywords: 7-Ethyl-10-hydroxycamptothecin (SN38), Irinotecan, Camptothecins, Chemotherapy, Poly (amidoamine) (PAMAM) dendrimer, AS1411 aptamer.

Biography

Kiana Sherkat Sadi did Ph.D. in the field of pharmacy from Mashhad University of Medical Sciences, Iran. She published lot of papers related to the field of pharma.

The discovery of black seed concoction for the effective treatment of all forms of cancer

Rahalli Lawali

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After Heart Disease, Cancer is the second leading cause of deaths in the world. According To the Cancer Global Statistics ascertained by The International Agency for Research on Cancer (IARC), it was expected that by the year 2040, the number of new cases of cancer will rise to 27.5 Million per Year and the number of cancer related deaths will be up to 16.3 Million Worldwide. We need to ask ourselves the following question: Why the number of diseases keeps on increasing despite the current advancement in science and technology? Let assume the answer is: something is missing in the system of drug discovery and to bridge the gap, we need find out the fundamental parameters upon which the System of Drug Discovery has been conceptualized. The result of the research study shows that the whole System Of Drug Discovery can be analyzed using a simple quadratic equation: $x+y+z=3$, provided that there will be no collecting like terms, and no crossing over the equal sign. This is a simple technically that will help us bring cancer under control and reverse its future statistics.

Biography

Rahalli Lawali is a Registered Nurse (RN) from the nursing department Usman Danfodiyo University & Teaching Hospital, Sokoto, Nigeria.

Development and validation of hplc method-a review

Muhammad Jehangir

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Many different strategies of high performance liquid chromatographic method development are used today. This review describes a strategy for the systematic development of High performance liquid chromatographic (HPLC) methods. HPLC is an analytical tool which is able to detect, separate and quantify the drug, its various impurities and drug related degradants that can form on synthesis or storage. It involves the understanding of chemistry of drug substance and facilitates the development of analytical method. A number of chromatographic parameters were evaluated in order to optimize the method. An appropriate mobile phase, column, column temperature, wavelength and gradient must be found that affords suitable compatibility and stability of drug as well as degradants and impurities. Forced degradation or alternatively referred as stress testing and it demonstrates specificity when developing stability indicating methods, especially when little is known about potential degradation products. Force degradation studies are helpful in development and validation of stability-indicating methodology, determination of degradation pathways of drug substances and drug products, discernment of degradation products in formulations that are related to drug substances versus those that are related to non-drug substances (e.g. excipients).

Biography

Muhammad Jehangir has 15 years diversified experience of Quality Control, Quality Assurance, Registration Affairs, Product development and Pharmaceutical manufacturing, Process Planning, Method development, Method validation, Statistical Methodology, Process & Cleaning Validation, and Equipment Validation etc. Certificate Courses on cGMP, cGLP, Process Validation, CTD Documents, ISO 9001:2008, 13485-2003, 14001-2004 and 17025:2017 have strong scientific, analytical, statistical, managerial and training skills. Currently he is working as a Senior Manager Quality Control and validation for Novamed Pharmaceuticals. It is toll manufacturing oriented company, manufacturing of companies like Getz Pharma, ICI, SEARLE, Macter, Ray, and for Sanofi-Aventis. He is also looking after the Quality of Novamed Healthcare, the nutraceutical and cosmeceutical manufacturing plant.

Antiviral activity of green silver nanoparticles produced using aqueous buds extract of *Syzygium aromaticum*

Humayun Riaz

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Poultry is the second gigantic industry of Pakistan but because of various bacterial and viral diseases its progress was affected, the most noteworthy ailment is Newcastle disease. Clove enhances the immunity of a human body. This study was performed to assess the immune provocative activity of *Syzygium aromaticum* extracts (SAE) against Newcastle Disease (ND). ND is an ailment which is accountable for enormous deprivation in unvaccinated rural chicken inhabitant in Pakistan. In current investigation, the antiviral activity of clove buds silver nanoparticles was inspected in-vitro and in-ovo. Embrocated chicken eggs were used to perform the cytotoxicity assay of the Clove extract silver nanoparticles (CESN). We designed the green-synthesis of silver nanoparticles (AgNP) as a novel and effectual tool against the ND virus. *Syzygium aromaticum* extract was used as reducing and stabilizing agent for synthesis of AgNP. AgNP was characterized using diversity of biophysical methods inclusive of UV-vis spectroscopy, Fourier transform infrared spectroscopy (FTIR), TEM, X-ray diffraction (XRD), and sorted for size categories. AgNP showed in vitro antiviral activity against ND virus in embrocated eggs.

Biography

Prof. Dr. Humayun Riaz completed his B. Pharm & M. Phil Pharmaceutics from Faculty of Pharmacy, University of The Punjab, Lahore Pakistan, and MBA Marketing. PhD Pharmaceutics from University of Sargodha, Sargodha Pakistan. He, the prolific professionally, has got more than 26 years of professional and teaching experience in Pharmacy profession. Currently He is working as CEO in oxy Pharma, Marketing Manager Nova Med Pharmaceuticals (Private) Ltd. and Principal/Professor of Pharmaceutics in Rashid Latif College of Pharmacy, 35km ferozpur road, Lahore, Pakistan. His areas of expertise are Teaching, Pharmaceutics Marketing, Leadership, Launching of New Products, Administration, Marketing Strategy, Communication, Team Building, Analysis, Multi-Tasking, Negotiation, Time Management, Workload Distribution, Conflict resolution. Prof. Dr. Humayun Riaz has 41 Publications in National and International Journals.