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Nanosponge: An innovative drug carrier system - a review

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Drug targeting and enhancing the bioavailability of poorly water soluble drugs by an effective drug delivery system has been a dream for a long time. Designing of effective drug delivery system by using nanotechnology has gained importance in recent times. Nanosponge is one of such effective drug delivery system which overcome the problems of drug toxicity and poor bioavailability. Nanosponges are innovative carriers which are about a size of a virus with a 3-dimensional network or scaffold structure and a nanometric cavity size. These can act as the carriers for several hydrophilic and lipophilic drugs which have poor aqueous solubility. The backbone is a long length of polyester which is mixed in solution with small molecules called cross-linkers that act like tiny grappling hooks to fasten different parts of the polymer together. The net effect is to form spherically shaped particles filled with cavities where drug molecules can be stored. By the attachment of specific peptide linkers, nanosponges are targeted to specific sites in the body thus minimize the adverse effects and increase the efficiency of the drug. It holds a promising future in various pharmaceutical applications in the coming years like enhanced product performance and elegancy, extended release, reduced irritation, improved thermal, physical, and chemical stability of product. In this review, an attempt is made to summarize the methods of development, characterization, applications and future of this innovative carrier system.

Biography

Mamidi Hemanth Kumar completed Bachelors in Pharmacy from JNTU- Hyderabad and now he is pursuing his Masters in Pharmacy (second semester) from Anurag group of institution, School of Pharmacy.

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Isolation, phytochemical analysis and characterization of active compound from medicinal plant of *costus igneus* and evaluation of its antidiabetic activity in stz induced diabetic rats

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Diabetes is a condition in which the body fails to make enough of a hormone called insulin. It is a metabolic disorder characterized by hyperglycemia. Herbal medicines have fewer side effects and tend to be more effective for long-standing health complaints. Herbs with anti-diabetic property will eradicate this problem in a better way. The decoction prepared from the dry leaves of Costus igneus ,a weed found in tea plantations of India is used to reduce the symptoms of diabetes. In the present study, we have focused on phytochemistry, antibacterial activity and pharmacological studies of the plant Costus igneus. The phytochemical analysis confirmed the presence of tannins, flavonoids, phlobatannins, terpenoids, saponin, steroids and cardiac glycosides. The isolated compounds from sapogenin and flavonoids had better anti- diabetic effect and were separated using preparatory TLC.The fractions collected through preparatory TLC were also analysed through GC-MS, NMR and FTIR and the peaks were obtained.The isolated compound dissolved in polyethylene glycol from sapogenin extract showed lesser antibacterial activity than the isolated compound from flavonoid extract. The hypoglycemic potential of the plant's rhizome extract, isolated compounds of sapogenin and flavonoids extract were evaluated using invivo methods in normal and streptozocin induced-diabetic albino rats. The experimental data indicated the anti-hyperglycemic activity of various extracts on levels of blood glucose, lipids, total proteins and blood count. In histopathological study, effect on liver, pancreas, kidney and spleen were also studied. The isolated compounds from flavonoid extract showed better anti-hyperglycemic activity compared to isolated compounds from sapogenin. Likewise, rhizome extract showed better results than root extract.

Biography

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