

Polymeric nanocapsules: An emerging drug delivery system



Dear Friends,

Polymeric nanocapsules are the nanostructures possessing special morphology and architecture as compared to other polymeric nanoparticles. Nanocapsules comprise a core in which actives, namely, drugs and proteins are contained inside and enveloped by typical polymeric membrane. Actives which undergo destruction, degradation, and metabolism during administration are excellent candidates for encapsulation into nanocapsules as the enveloping layer protects the drug from surrounding environment. Drugs can be in solid, liquid, or molecular dispersion form. In addition, this drug delivery system protects body against the toxic effects of drug (toxic metabolites). Controlled drug release and local drug delivery can easily be achieved with the formulation of nanocapsules. The techniques to produce nanocapsules include self-assembly and template based. The first one includes the aggregation of lipid molecules in aqueous solutions from a vesicular structure, but in the later approach, a shell of polymer is formed around the drug particle which can be eliminated afterward leaving

an empty shell. Polymeric nanocapsules possess improved stability and controlled release owing to its thick, tough, and less permeability of hydrophobic membrane. This membrane can be altered as per the desired targeting and controlled release effect. These nanocapsules hold excellent capability for the delivery of therapeutics and diagnostics. Nanocapsules have been discovered as a transdermal drug delivery system, tumor targeting, cancer treatment, etc., Moreover, nanocapsules are still finding the way for applications in cosmetics and cosmeceuticals.

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