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Green Nanoparticle Strategies: Utilizing Excipients Sourced from Nature

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Authors: Gulati, Neha; Gupta, Monica; Kanoujia, Jovita; Kymonil, Koshy Mamman; Saraf, Shailendra K.; Saraf, Shubhini A.

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Green nanotechnology offers a wide range of applications in nanotechnology-enabled and ecofriendly manufacturing processes, which not only reduce the use of chemicals/organic solvents but also promote the use of natural exipients. This review presents a detailed insight in to the green nanotechnology based strategies for nanocarriers, with special reference to solid lipid nanoparticles (SLNs), nanostructured lipid carriers (NLCs) and polymeric nanoparticles (PNPs). The literature has been exhaustively studied with respect to the use of excipients which are of natural origin, or derived from natural origin. The techniques with minimum utilization of organic solvents during formulation of lipoidal and polymeric nanoparticles have been highlighted. The use of green excipients represents one of the strategies towards the development of environment friendly approaches for the development of nanocarriers. The basic properties and structures of excipients and their principal constituents have also been discussed. The major applications of SLNs, NLCs and PNPs have been discussed in detail with respect to different delivery routes like topical, oral, ocular, parenteral, pulmonary and also for specific diseases like cancer, malaria and gene delivery. Nanotechnology as such has tremendous benefits, which may be further supplemented by the green nanotechnology approach.

Keywords: LIPID BASED NANOCARRIERS; LIQUID LIPID; MEDIUM CHAIN TRIGLYCERIDES; NATURAL EXCIPIENTS; POLYMER; POLYMERIC NANOPARTICLES; SOLID LIPID; SURFACTANTS

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