Nanoparticles as platforms for delivery of curcumin

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Abstract

Curcumin, the active polyphenol isolated from Curcuma Longa, exhibited potent pleiotropic, antineoplastic activity, attributed with minimal toxicity to normal cells. Unfortunately, the clinical implementation of curcumin is limited due to its instability in physiological pH, low aqueous solubility (11 ng/ml) associated with extremely low systemic bioavailability after oral administration of 8 g/day. An intriguing approach to overcome these limitations is incorporation of curcumin in nanoparticles as delivery platforms such as solid lipid nanoparticles, nanoemulsions, liposomes and macrocyclic cavitands. A promising strategy for improvement of unfavorable physicochemical characteristics of curcumin consisting of its simultaneous loading in the phospholipid bilayer membrane and in the aqueous cavity of liposomes as inclusion complex with macrocyclic cavitands is presented.

Key words: curcumin, liposomes, macrocyclic cavitands, nanoparticles

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