

Novel Drug Delivery Systems for Loading of Natural Plant Extracts and Their Biomedical Applications

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Abstract

Many types of research have distinctly addressed the efficacy of natural plant metabolites used for human consumption both in cell culture and preclinical animal model systems. However, these in vitro and in vivo effects have not been able to be translated for clinical use because of several factors such as inefficient systemic delivery and bioavailability of promising agents that significantly contribute to this disconnection. Over the past decades, extraordinary advances have been made successfully on the development of novel drug delivery systems for encapsulation of plant active metabolites including organic, inorganic and hybrid nanoparticles. The advanced formulas are confirmed to have extraordinary benefits over conventional and previously used systems in the manner of solubility, bioavailability, toxicity, pharmacological activity, stability, distribution, sustained delivery, and both physical and chemical degradation. The current review highlights the development of novel nanocarrier for plant active compounds, their method of preparation, type of active ingredients, and their biomedical applications.

Keywords: nanomedicine, natural plant metabolite, biomedical application, carrier formulation, drug delivery