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Nano Therapeutics for Plant Based Natural Products for Respiratory Disorders

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ABSTRACT

Right from the ancient era, the plant-based natural products (NPs) were the only and extensively explored therapeutic options available for the health of general masses. With the advancement in the modern-day therapeutic discoveries, the trend of using natural products for even basic ailments saw a massive drop. But since, due to the ever-increasing problems of side effects and drug resistance of the synthetic biomolecules/compounds in modern medicine practice, there is a niche that's been created for these NPs. They offer multiple benefits and transform the treatment approach from being one-disease-one-target-one-drug strategy to the holistic approach, apart from showing negligible side effects. In current drug treatment scenario, around 25% of the active pharmaceutical compounds are derived from the NPs on the basis of the traditional and conventional knowledge. The major challenge to safeguard the bioactive constituents present in the NPs is their appropriate formulation and targeted delivery without any efficacy loss. Though there are still many associated challenges with this perspective, the use of nanotechnology techniques and concepts in designing the same, has solved the many problems up to certain rate. The associated pharmaceutical constraints with NPs formulation, like – their efficacy, solubility, bioavailability, hepatic metabolism, physicochemical instability, gut degradation etc. are the major blocker in getting the already existing benefits of NPs and which has been taken care by nanomedicines-based drug delivery system. Our lab works on natural products loaded micro emulsion system, liposomes, polymeric nanoparticles and hydrogels etc. for enhancing the therapeutic efficiency of such natural products. These nano drug delivery systems not only preserve their efficacy but also, increase their shelf life and stability. The nano herapeutic approach for NPs do enhances pharmacological activity of the NPs and also help them to cross through the various biological barriers and reach the targeted site and so are preferred and opted for designing the formulations for NPs. In the present article the novel nanotherapeutics for the plant based NPs and their enhanced efficacy to resolve the health concerns have been focused.

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