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Chitosan polymer as nano carrier delivery system for siRNA targeting against HCV 4

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Hepatitis C virus is a major cause of chronic liver diseases which can lead to permanent liver damage, hepatocellular carcinoma and death. RNA interference (RNAi) is a powerful silencing approach for molecular therapeutics. It works through a sequence-specific RNA degradation process. It can represent an alternative option, due to the limited effectiveness of current therapy. In this study, we can use chitosan polymer and tripolyphosphate (Tpp) in the formulation of small interfering RNA (siRNA) nanoparticles. Because of the cationic nature of chitosan, it can easily complex the negative siRNA and thus readily forming the nanoparticle. Chitosan nanoparticles can be prepared by loading with siRNA using HCL and NaOH using different N/P ratios. Encapsulation efficiency for siRNA NPs performed by using gel electrophoresis using ethidium bromide (EtBr) as staining agent with absorbance from 300-360nm detected by UV camera. Z-average size (hydrodynamic diameter), PDI and zeta potential measurements of prepared NPs was measured by Zetasizer Nano ZS instrument (Malvern Instruments Ltd., UK).

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