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Chitosan microparticles for IL-12 gene delivery to cervical cancer treatment

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Polysaccharides and other cationic polymers have recently been used in the industry, pharmaceutical research and the biomedical sciences for their properties to control the release of antibiotics, proteins, peptide drugs, vaccines and DNA. Among them, chitosan is an excellent polymer that has attracted attention in the biomedical fields since it possesses well known beneficial biological properties including biocompatibility, low toxicity, biodegradability, mucoadhesiveness, haemostatic ability and antimicrobial/antifungal activities. Chitosan is one of the most widely used non-viral vectors gene delivery and will be an excellent vehicle to treatment of cancer. Our intention is use the chitosan conjugates with the IL-12-gene to release the gene into tumor cells as cervical cancer treatment. Nanoparticles were generated with Plasmid pNGVL3-mIL-12by coacervation method using 0.25%, 0.50% and 0.75% of chitosan and 50 µg of plasmid DNA. Plasmid DNA encapsulation efficiency in the microparticles was approximately 89-98% into the polymers. The high MW chitosan was the best polymer able to encapsulate the plasmid DNA (98%). We observed increase the viscosity with the concentration of DNA-chitosan and with the molecular weight of the polymer. Chitosan microparticles provide a good polymer to encapsulate the DNA and protection of degradation.

Biography:

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