

Development and in-vitro characterization of benzydamine loaded chitosan nanoparticles

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Abstract.

The aim of the present research was the preparation of chitosan nanoparticles intended for Benzydamine (BZ) delivery. The method of ionotropic gelation was applied for the nanoparticle's formation. Chitosan solution with three different concentration were used in this process. The crosslinking was performed by NaTPP and its concentration was also varied. Dynamic light scattering analysis showed that particle's sizes were in nano-scale and could be varied by changing the polymer and crosslinker concentrations. The yield of the gelation varied between 70 % and 90 %. The BZ loading efficiency differed in the range from 2 % to 12 %. Differential scanning calorimetry was applied for investigating the thermal stability of the nanoparticles and the BZ state. It proved that the BZ did not interact with the chitosan nanoparticles and changed its physical state from crystal to amorphous. The in vitro drug release profile along with kinetics and mechanism of release from the nano-spheres were studied under simulated physiological conditions for different incubation periods. The release rate could be changed by varying the chitosan and NaTPP concentrations.

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