ABSTRACT

PREPARATION OF ACETAZOLAMIDE LOADED PARTICLES AND INVESTIGATION OF THEIR UTILIZATION AS A DRUG DELIVERY SYSTEM

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In this work, the production and application conditions of acetazolamide, a potent carbonic anhydrase inhibitor, as a drug, was investigated. First, production conditions of alginate/chitosan particles were investigated by 31 different combinations and optimized. The formula in which 88 % acetazolamide entrapped accepted as the best combination and the particles were characterized. FTIR and EDX measurements proved that the drug was incorporated in a noncovalent manner, whereas SEM and Zetasizer measurement revealed that the particles were in nanoscale with approximately 100-800 nm irregular dimensions. In the temperature experiments, conducted between 5-55°C, it was found that temperature does not effect the acetazolamide loading efficiency of the particles. Acetazolamide released from the produced and optimized nanoparticles was monitored for four hours in artificial stomach, small intestine and simulated tear fluid and the release of the drug was found to be 21, 27, 25 and 7.5 % respectively. The results were compared with the commercial oral acetazolamide pills. It is concluded that the nanoparticles produced it this work are appropriate for acetazolamide delivery and release but need further investigation.

Key words: Acetazolamide, alginate, chitosan, drug delivery, drug release.