ABSTRACT

INVESTIGATION OF THE UTILIZATION OF ALGINATE-CHITOSAN NANOPARTICLES FOR COLCHICINE DELIVERY

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In this study we aimed to assess appropriate production steps for binding and controlled delivery of colchicine, an anti-inflammatory drug, to glutaraldehyde cross-linked alginate/chitosan nanoparticles. This study is designed to develop materials using in controlled drug delivery. The reason lying behind choosing colchicine as trial drug was that colchicine is still the gold standard for treatment of several chronic diseases like gout, Familial Mediterranean Fever and Behçet's Disease and the necessity of chronic use of this drug in treatment of these diseases. Nanoparticles used for drug release was produced by using alginate and chitosan natural polymers. Glutaraldehyde was used as cross-linker. Colchicine entrapment capacity was investigated and a positive correlation between temperature and colchicine entrapment was observed. Release of colchicine from nanoparticles was investigated in various artificial body fluids. No colchicine release in *in vitro* artificial gastric juice. Reelease of colchicine in *in vitro* simulated gastric juice environments reach to a plato in 3 hours and continued up to 5 hours with the same. Colchicine is used by oral administration and can be toxic in case of overdose. Colchicine is a commonly used drug for treatment of gout, FMF and Behçet's Disease but there is not enough study in the literature about entrapment of colchicine by polymer systems. With this study we aim to contribute to assessment and production of colchicine delivery systems made of natural polymers.

Key words: Colchicine, alginate, chitosan, nano, drug delivery, glutaraldehyde