

ABSTRACT

INVESTIGATION OF THE UTILIZATION OF ALGINATE/CHITOSAN NANOPARTICLES FOR TAMOXIFEN DELIVERY

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2012, 82 pages

In this work, usability of tamoxifen loaded alginate/chitosan nanoparticles as drug release system was investigated. Optimum conditions for the preparation of nanoparticles were determined and nanoparticles were characterized using fourier transform infrared spectroscopy (FTIR), atomic force microscopy (AFM) and scanning electron microscopy (SEM). FTIR results revealed that tamoxifen immobilization in polymer matrix did not involve any chemical bonds. According to AFM and SEM images the size of the nanoparticles varied from 50 to 800 nm. Temperature dependence of tamoxifen loaded nanoparticle production was investigated and it was found that nanoparticles showed maximum tamoxifen immobilization up to 25 °C whereas the immobilization declined at higher temperatures. Tamoxifen release from nanoparticles in simulated stomach and small intestine media were investigated and it was found that after 5 hours only 8 % of the immobilized drug was released in stomach medium whereas 92 % of the drug was released in small intestines. Results reveal that tamoxifen loaded alginate/chitosan nanoparticles can be used as controlled drug release system and this study has the potential to contribute to the field of controlled drug release system production.

Key words: Tamoxifen, alginate, chitosan, nanoparticle, drug release.