

DEVELOPMENT AND EVALUATION OF CHEMICAL MODIFIED POLYSACCHARIDE FOR NANO PARTICULATE DELIVERY SYSTEMS

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Abstract

In the present investigation, polysaccharide hyaluronic acid (HA) was chemically modified with cysteine ethyl ether (CYS). By immobilization of the thiol bearing ligand on the polymeric backbone the thiolated bioconjugate was obtained, namely hyaluronic acid- cysteine ethyl ether (HA-CYS). HA-CYS was characterized and explored for its mucoadhesive, permeation enhancing and stability potential. Thiomer HA-CYS was evaluated for its mechanical, physicochemical properties as well as mucoadhesive strength, contact angle, swelling index and residence time. The developed thiolated bioconjugate displayed enhanced mucoadhesiveness on buccal mucosa as well as permeation behavior and polymer stability. The near neutral pH and negative cytotoxicity studies indicated their non-irritability and biocompatible nature with biological tissues. Further, the model drug sulforhodamine 101 (SRH101) was incorporated to determine its drug release profiles. In vitro and ex vivo drug release studies demonstrated a controlled release of SRH101 over a period of 8h in simulated salivary fluid (SSF) pH 6.8. Thus, the promising results encourage further investigations and exploitation of this versatile polysaccharide.

Keywords: Polysaccharide, cytotoxicity, LDH, Resazurin viability assay, nanoparticulate delivery system

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