

Hyaluronic Acid as Potential Excipient for Buccal Delivery

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Abstract : Summary: Biomaterials have gained immense interest in the pharmaceutical research in the last decades. Hyaluronic acid a carbohydrate and mucopolysaccharide was chemically modified in order to achieve and establish a promising platform for buccal drug delivery. Aim: Novel biomaterial was tested for its potential for buccal drug delivery. Background: 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 HA-CYS was obtained. Methodology: Mucoadhesive, permeation enhancing and stability potential as well as mechanical, physicochemical properties further mucoadhesive strength, swelling index and residence time were investigated. 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 was incorporated to determine its drug release profiles. Results: The synthesized thiomers showed no toxicity. The mucoadhesion of thiolated hyaluronic acid on buccal mucosa was significantly improved in comparison to unmodified one. The biomaterial showed 2.5-fold higher stability in polymer structure. The release of sulforhodamine in the presence of thiolated hyaluronic acid was 2.3-fold increased compared to hyaluronic acid. Conclusion: Thus, the promising results encourage further investigations and exploitation of this versatile polysaccharide. So far, hyaluronic acid was not evaluated for buccal drug delivery.

Keywords : buccal delivery, hyaluronic acid, mucoadhesion, thiomers

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