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Synthesis and characterization of cysteine xyloglucan conjugate as muco adhesive polymer

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The aim of this study was to improve the mucoadhesive potential of xyloglucan polymer by the covalent attachment of cysteine as thiol moiety. The parent polymer xyloglucan was chemically first modified to carboxymethyl-xyloglucan intermediate then this was further converted to xyloglucan-cysteine conjugate by introducing sulphydryl bearing compound L-cysteine HCl in presence of EDAC as coupling agent. Different batches of conjugates were prepared at varying reaction pH (2-6) and evaluated for optimum thiol incorporation, disulphide group content, swelling behavior, rheological properties and mucoadhesive properties. The obtained conjugates characterized in vitro by quantification of immobilized thiol groups; showed maximum thiol incorporation on xyloglucan (8.63 ± 0.14 %) at pH 5. The disulphide group content was found maximum (3.54 ± 0.12 %) at pH 6. The % swelling index at end of 4 hr was 83.87 for xyloglucan and was found to decrease in thiolated derivatives, it was least for TH2 (76.93 %) and increased slightly till TH5 (82.78 %) and decreased further in TH6 (79.98 %). Mucoadhesion studies revealed that improvement in mucoadhesion of conjugate was three times compared to the unmodified polymer. The viscosity of thiomer was more than that of xyloglucan because of formation of disulphide bonds.

Biography

Ms. Savita Sonawane has completed her B. Pharm & M. Pharm from Pune University. She is now pursuing her Ph.D. from JNTU, Hyderabad. She is having 2 yrs of an industrial & 5 yrs of an academics experience. She has published paper in reputed journals and also presented posters in various conferences.

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Recombinant spider silk particles for controlled delivery of protein drugs

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Particulate drug delivery systems made of different types of biodegradable polymers have been in the focus of research for decades due to their excellent controllability. Commonly used polymeric carriers for this purpose are of synthetic origin and polyesters like polylactic-coglycolic acid (PLGA). Unfortunately, polyester-based matrices often failed to be suitable drug delivery systems for protein drugs due to the required usage of organic solvents during preparation as well as the acidic microenvironment that is created by polymer degradation. The engineered and recombinant spider silk protein eADF4 (C16) has been shown to be a promising biomaterial for the use as a drug delivery system. Silk proteins including silk fibroin from Bombyx Mori and recombinant spider silk proteins are very promising candidates regarding their non-cytotoxic and customizable properties as well as their easy processing into scaffolds, films and spheres. Using silk fibroin from Bombyx Mori, microspheres as well as nanoparticles were prepared. Different kind of therapeutic agents were incorporated and acceptable in vitro release profiles were obtained using these systems. The silk fibroin from B. Mori is a completely natural product and the quality of the protein may vary. Therefore, the engineered and recombinantly produced spider silk protein eADF4 (C16), which is adopted from the natural occurring spider silk protein ADF4 from the European garden spider Araneus diadematus, represents a more favorable biomaterial.

Biography

M. Shakuntala Devi had completed her B pharmacy with Distinction from Sitha Institute Of Pharmaceutical Sciences and she is currently pursuing her M. Pharm (Pharmaceutics) I Year from G. Pulla Reddy College of Pharmacy. She has recently participated and presented in a national seminar on "innovative emerging approaches in drug discovery" held in the Vishnu Institute of Pharmaceutical Education and Research in March 2012. Till date she gave 4 presentations in different educational institutions.

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