



Water Soluble Cationic Xylan-Alginate Polymer as Packaging Retardant-Release Peptide Drug Delivery

Saber Ibrahim¹, Maha Sultan^{*1}, Zenat Adeeb²

¹Packaging Materials Department, ²Paper and Cellulose Department,
National Research Centre, Dokki, 12622, Egypt.

Abstract: To overcome the problem of peptide drugs degradation in acidic gastric juice of stomach upon oral administration, peptide drugs can be entrapped into pH-responsive hydrogel. Cationic xylan was prepared and characterized by FT-IR, X-ray diffraction, degree of substitution, and charge density. Cationic xylan/alginate hydrogel was prepared and characterized by FT-IR and SEM. The effect of cationic xylan and alginates components on drug loading, encapsulation efficiency percentages was investigated. The results revealed that the formulae 1:2 exhibited the better loading and encapsulation efficiency 42% and 85% respectively. The swelling behavior and release characteristics in different pH were studied. The swelling and release properties were pH - dependent. The formulation 1:2 resulted into the better swelling and release at pH 8.0. The kinetics of BSA release was determined using the Korsmeyer-Peppas equation. The BSA release suggested Fickian diffusion. The effect of cationic xylan and alginates contents on thermal stabilities was studied. Thermal stabilities increase with increasing alginates contents. Generally, the cationic xylan/alginate could be the most satisfactory protein delivery to the intestine.

Key words: Packaging, Drug delivery, Cationic, Hyrogel, pH-responsive.

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