
Research article

Preparation and characterization of alginate-chitosan capsule shells using tripolyphosphate crosslink method

Cut Intan Annisa Puteri^{*1}, Sumaiyah¹, Rosidah²

¹Department of Pharmaceutical Technology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia.

²Department of Pharmacology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia.

Key words: Alginate, Chitosan, Croslink, Tripolyphosphate, Capsule Shells.

***Corresponding Author:** Cut Intan Annisa Puteri, Department of Pharmaceutical Technology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia.

Abstract

Objective: This study aims to determine the effect of crosslinked tripolyphosphate (TPP) concentration variation on the nature of capsule shells formation and to determine the characteristics of capsule preparations that are the best with alginate-chitosan and tripolyphosphate. **Method:** This research includes the preparation of alginate solution, chitosan and TPP, preparation of capsule shells, capsule shells characterization, disintegration time analysis, the swelling degree test, functional group analysis (FTIR) and morphology (SEM). **Result:** The results showed that the best capsule shells formulations produced from alginate-chitosan and TPP crosslinking compounds were Formula F7 and F8. However, from the characteristics of the swelling degree test, the capsule shells formula F8 had a better degree of swelling compared to the formula F7. The mechanical strength produced from the F8 capsule shells was also better than the formula F7. **Conclusions:** Based on the description above, it can be concluded that the concentration of chitosan and crosslinking compounds significantly influence the formation of capsule shells and the characteristics of capsule shells preparations with alginate-chitosan and TPP crosslinks produce good physical properties so that it can be used as a drug delivery system.
