

Phenytoin sodium oral buccoadhesive polymeric film

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Background and Aims: Phenytoin could be effective in wound healing process by several mechanisms. From various available bioadhesives mucosal dosage forms, polymeric films may be preferred for buccal delivery because the films can protect the wound surface and reduce the pain. In this study a series of two layer sodium phenytoin polymeric films containing various ratios of carbapol 934, NaCMC, HPMC and constant amount of PEG 400 as plasticizer in first layer was designed. Second layer was contained cellulose acetate phetate which acts as a water resistant layer.

Methods: The formulations were prepared using solvent casting. All of formulations were prepared and studied for their physical properties, pattern of in vitro drug release, swelling behavior, strength of adhesion and in vivo bioadhesion by estimating the film residence time on oral mucosa of some human volunteers.

Results: The results show that HPMC polymer is more promising as far as its properties are concerned such as suitable physical behaviors, more sustained drug release, increased residence time on buccal mucosa and its tolerance towards swelling provided its percentage in the film is high (>50%), and the ratio HPMC to CP934 must be almost over 2/1 to obtain more suitable results.

Conclusions: The buccoadhesive film containing 60% HPMC, 20% NaCMC and 20% CP934 showed best results in all aspects as compared with other formulations.

Keywords: Phenytoin; Plasticizer; Mucoadhesive film; Wound healing; Adhesive polymer