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Preparation and investigation of permeability and physical-chemical properties of buccal films with sodium alginate

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Nowadays the buccal administration of active ingredients is an innovative method. Mucoadhesive films represent one of these possibilities of drug administration. Mucoadhesive films can be used to introduce the API to the systemic circulation. By this way of drug administration, the API enters the circulation without degradation and avoids the first pass effect of the liver [1]. Besides, this drug delivery system can be applied in pediatrics and geriatrics. The bases of buccal mucoadhesive preparations are polymers which have mucoadhesive properties [2].

Our work was focused on preparing buccal mucoadhesive polymer films which were based on sodium alginate (SA) and contained cetirizine dihydrochloride (CTZ). Our main aim was the preparation and the physico-chemical investigation of the prepared mucoadhesive films.

In our present work SA and HPMC were used as film forming agents. Glycerol was added as plasticizer to the films, and CTZ was the API. The polymer films were prepared with solvent casting method at room temperature. The mechanical and physical-chemical properties of the films were investigated with different methods, such as thickness, tensile strength and in vitro mucoadhesion of films. The chemical properties were examined by FT-IR and Raman spectroscopy. The dissolution and permeation of the API were also tested. The results showed that almost all film compositions have sufficient mechanical properties. The API can distribute homogeneously in the films. In view of the above findings, we can find promising compositions.

References:

- 1 Castán, H. Drug Deliv. 22, 869–876 (2015)
- 2 Kelemen, A. Molecules 25(22), 5248. (2020)

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