

Development and Characterization of a Film Based on Hydroxypropyl Methyl Cellulose Incorporated by a Phenolic Extract of Fennel and Reinforced by Magnesium Oxide: In Vivo - in Vitro

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Abstract : In the last decades, biodegradable polymers have been considered as one of the most popular options for the delivery of drugs and various conventional doses. The film forming system (FFS) can be used in topical, transdermal, ophthalmic, oral and gastric applications. Recently this system has focused on improving drug delivery, which can promote drug release. In this context, the aim of this study is to create polymeric film-forming systems for the stomach and to evaluate and test their gastroprotective effects, comparing the effects of changes in composition on film characteristics. It uses a plant-derived polyphenol extract extracted from fennel to demonstrate anti-inflammatory activity in the film. The films are made from hydroxypropyl methylcellulose polymer and different types of plastic, glycerol and polyethylene glycol. The ffs properties show that MgO-glycerol-reinforced hydroxypropylmethylcellulose (HPMC-MgO-Gly) is better than that based on MgO-PEG-reinforced hydroxypropylmethylcellulose (HPMC-MgO-PEG). It is durable, has a faster drying time and allows for maximum recovery. Water vapor strength and blowing speed and other additions show another advantage of HPMC-MgO-Gly compared to HPMC-MgO-PEG, indicating good adhesion between the support (top) and film production. In this study, the gastroprotective effect of fennel phenol extract was found, showing that this plant material has a gastroprotective effect on ulcers and that the film can absorb the active substance.

Keywords : film formin system, hydroxypropyl methylcellulose, magnesium oxide, in vivo

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