

Formulation and Evaluation of a Mucoadhesive Thermo-responsive System Containing Brazilian Green Propolis for the Treatment of Lesions Caused by Herpes Simplex Type I.

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Abstract

The aim of the present work was to develop a topical delivery system that contains Brazilian green propolis extract (PE-8) to increase efficiency and convenience when applied to herpetic lesions. The cytotoxicity and antiherpetic activity were determined *in vitro* and *in vivo*. The PE-8 was added to a system that contained poloxamer 407 and carbopol 934P. The *in vitro* characterization of the system included rheological studies, texture profile analysis, and mucoadhesion analysis. The PE-8 inhibited the virus during the phase of viral infection, induced virion damage, and exhibited an ability to protect cells from viral infection. The system had advantageous mucoadhesive properties, including a suitable gelation temperature of approximately 25°C for topical delivery, a desirable textural profile, and pseudoplastic behavior. The *in vitro* release study showed a rapid initial release of the PE-8 in the first 3 h, and the rate of drug release remained constant for up to 24 h. The system appeared to be macroscopically and microscopically innocuous to skin tissue. Therefore, the mucoadhesive thermo-responsive system that contained the PE-8 appears to be promising for increasing bioavailability and achieving prolonged release of the PE-8 when applied to skin lesions caused by herpes simplex virus type 1.

KEYWORDS:

Brazilian green propolis; herpes simplex type I; mucoadhesive; rheology; viscoelastic

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