Promote Recurrent Aphthous Ulcer Healing with Low Dose Prednisolone Bilayer Mucoadhesive Buccal Film

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Abstract:

BACKGROUND: Recurrent aphthous ulcer (RAU) is one of the most common ulcerative diseases of the oral mucosa which is recurrent, painful and slow to heal. Treatment is primarily for pain relief and promotion of healing to shorten the disease duration or reduce the rate of recurrence.

OBJECTIVE: Development of a new design of topical buccal bilayer mucoadhesive films containing sodium alginate and gellan gum loaded with low dose of 1 mg prednisolone sodium phosphate to reduce the treatment period and decrease side effects of systemic treatment.

METHODS: Films were prepared by solvent casting technique and evaluated to ensure optimum film characteristics, and in vivo efficiency.

RESULTS: The bilayer films were thin, flexible with good water uptake, mucoadhesive and mechanical properties. In vitro drug release was sustained and showed anomalous non-Fickian kinetics. SEM confirmed the development of bilayer formation. Fourier Transform Infrared Spectroscopy and Differential Scanning Calorimetery indicated no chemical interaction between the layers. In vivo study in rabbits with induced oral ulceration showed complete ulcer healing within 4-5 days by once daily treatment of the studied film. Histological examination indicated no inflammation on treatment sites compared to inflamed tissue on the control sites.

CONCLUSION: The results suggested that buccal application of the developed bilayer mucoadhesive films loaded with only 1mg of prednisolone provided mucoadhesive and convenient application and was able to promote RAU healing with shorter treatment duration. Copyright© Bentham Science Publishers; For any queries, please email at epub@benthamscience.org.

Reference:

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