



ORIGINAL ARTICLE

COMPARATIVE EFFICACY OF 1% CURCUMIN NANOMICELLE GEL AND 2% CURCUMIN GEL FOR TREATMENT OF RECURRENT APHTHOUS STOMATITIS: A DOUBLE-BLIND RANDOMIZED CLINICAL TRIAL

MahinBakhshi^a Arash Mahboubi^b Mahmoud Reza Jaafari^c Faezeh Ebrahimi^d Maryam Tofangchiha^e Ahad Alizadeh^f

Department of Oral Medicine, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Food Safety Research Center, Department of Pharmaceutics, School of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Department of Pharmaceutical Nanotechnology, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran

Shahid Beheshti University of Medical Sciences, Tehran, Iran

Department of Oral and Maxillofacial Radiology, Dental Caries Prevention Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

Medical Microbiology Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

Received 27 May 2021, Revised 13 December 2021, Accepted 13 January 2022, Available online 26 February 2022, Version of Record 19 April 2022.

ABSTRACT

Objective

Recurrent aphthous stomatitis (RAS) is a highly prevalent painful inflammatory condition. Curcumin is currently used as a medicinal herb with optimal anti-inflammatory properties for many inflammatory conditions. However, due to its low water solubility and consequently low bioavailability, its nanoparticulate formulation has been considered for use. This study aimed to compare the efficacy of topical application of 1% curcumin nanomicelle gel and 2% curcumin gel for treatment of RAS.

Methods

This double-blind randomized clinical trial evaluated 48 RAS patients. The patients randomly received 1% curcumin nanomicelle gel or 2% curcumin gel, and were asked to apply it 3 times/day for 1 week. The severity of pain was measured using a visual analog scale (VAS), and the size of lesions (in millimeters) was measured by a periodontal probe before (baseline), and at 4, and 7 days after treatment. Data were analyzed by repeated measures ANOVA.

Results

No significant difference was noted in the pain score ($P = .160$) or size of lesions ($P = .432$) between the 2 groups at baseline. At 7 days, the pain score and size of lesions significantly decreased in both groups ($P < .05$). The reduction in pain score and lesion size was significantly greater in the curcumin nanomicelle gel group at both 4 and 7 days ($P < .05$). Also, the efficacy index (EI) was higher in curcumin nanomicelle gel group.

Conclusions

The 1% curcumin nanomicelle gel can be effectively used to enhance the healing of RAS.

Keywords: Recurrent aphthous stomatitis; Treatment; Nano-curcumin; Curcumin