Original Article

Evaluation of the effect of Artemisia Sieberi mouthwash 1% on denture stomatitis (A preliminary study)

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Abstract

Background: *Artemisia is a herbal plant that its anticandidal effect has been investigated in different studies. The aim of this study was to assess the effect of Artemisia sieberi mouth wash on denture stomatitis.*

Methods: *This double blind clinical trial study was performed on 30 patients with denture stomatitis (type II, III). They were randomly divided into two groups. The patients in control group were asked to use Nystatin mouth wash 500,000IU qid and the patients of case group were asked to use Artemisia mouth wash 1% qid. The patients were visited weekly up to 1 week after complete resolution of stomatitis. In each visit, smears and cultures were provided, candida colony counts were performed and candida identification tests were done. Analyses of the data were done by Friedman, Chi-square and Mann Whitney tests.*

Results: *All patients showed complete clinical healing after 1 week (in the second visit) except for 1 patient in each group who was healed after 2 weeks. There were no statistically significant differences in healing time between the two groups.*

Conclusion: *The results show that the extract of Artemisia Sieberi1% could be effective on the treatment of denture stomatitis.*

Key words: *Denture stomatitis, Artemisia, Nystatin, Candidiasis.*

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Denture stomatitis is a common form of the maxillary denture-bearing areas inflammation which is often associated with angular cheilitis. There are two major etiologic factors for denture stomatitis: prosthetic factors such as trauma caused by an ill-fitting denture, poor oral and prosthetic hygiene, the second one is infectious factors including Candida spp. mainly Candida Albicans (1,2). Because of the resistance of candida species, the treatment with local medications such as nystatin is prior to systemic agents such as fluconazole. Artemisia is a plant from Compositae family used in some countries folklore (3-5). Artemisia Sieberi is widely distributed in Northern parts of Iran (6). Various species of the genus Artemisia are used in herbal medicine for antimicrobial and antioxidant activities (3). Artemisia oils have inhibitory effects on the growth of bacteria (Escherichia coli, Staphylococcus aureus, and Staphylococcus epidermidis), yeasts (Candida albicans, Cryptococcus neoformans), dermatophytes (Trichophyton rubrum, Microsporum canis, and Microsporum gypseum), Fonsecaea pedrosoi and Aspergillus niger (4, 7-9). According to the relation of denture stomatitis and candida, this study evaluates the effect of Artemisia mouthwash on denture stomatitis.

Methods

This study was a double blind randomized clinical trial which was carried out in Babol University of Medical Sciences from January 2007 to April 2008. Thirty healthy patients with maxillary complete denture who had denture stomatitis (type II and III Newton) were enrolled.

The excluding criteria were smoking and taking antibiotics in the last recent months The written informed consents were taken from all the participants in the beginning of treatment. This project has been approved by the Ethics Committee of Babol University of Medical Sciences. The patients were randomly divided into two groups of intervention and control in such a way that the two groups were the same considering the grade of stomatitis. The patients in control group were asked to take nystatin mouthwash (Made by Jaber-ebne-Hayan Company, Tehran, Iran) 500000 Units 4 times/d. The patients in intervention group were asked to take 20 ml of Artemisia mouthwash 1%, 4 times/d. The patients were advised to swish mouthwash for 1 minute and avoid eating and drinking for 30 minutes afterwards. The patients were examined weekly up to one week after the complete clinical resolution of stomatitis. During the study, all patients did not use their dentures. In the beginning of the study and the following visitations, smear and culture (Sabouraud's dextrose agar) were prepared from the infected area of palate. The patients and the clinical examiner were blinded about what they received and also whether they were in intervention or in control group.

Microbiologic procedure: After sampling, the plates were incubated at 37?c for 72 hours. The presence of yeast in the lesions was evaluated as presence/absence (+/-) according to the colony growth of Candida. The scoring system for growth of colonies was: Score 0: no growth, Score 1: < 10 colonies , Score 2: < 50% of plate is covered by colonies, Score3: > 50% of plate is covered by colonies, Score 4: all the plate is covered by colonies (10). The smears were also stained with methylene blue staining and observed under transmission light microscope. Candida albicans was identified by the germ tube analysis and culture on chrome agar.

Statistical analysis: The analysis within groups was performed using the Friedmann test and the analysis between groups was done using the Chi-square and Mann-whitney tests. P value less than 0.05 was considered significant.

Results

All the patients completed the treatment course. The age, sex and grade of stomatitis of patients are shown in table 1. The taste of Artemisia mouthwash was reported desirable. No complaints were reported by the patients who received Artemisia mouthwash, but one patient in the control group complained of undesirable taste of nystatin mouthwash. In each group, 14 patients showed complete clinical resolution of stomatitis after one week. One patient in each group showed complete resolution at the end of 2nd week of the study. The outcomes of the treatment in two groups were completely the same. There was no significant difference in healing time between the two groups (p>0.05).

According to the laboratory results, the candida species were isolated from all the patients (C. Albicans in 18 patients, C. Tropicalis in 6 patients, C Krusei in 6 patients). The scores of colony growth decreased significantly in each group during the study (p<0.0001) (Table 2). There were no significant differences in the decrease of colonies between the two groups (p> 0.05).

Table 1: Characteristics of patients in study groups

Drug	**Artemisia**	**Nystatin**
Age (mean ± SD)	**61.33±9.49**	**58.13±8.30**
Sex (n)		
M	6	7
F	9	8
Denture Stomatitis (n)		
(Newton classification)		
II	9	9
III	6	6

Table 2: The scores of colony growth in study groups during the treatment

Drug Score	**Nystatin**					**Artemisia**				
	0	I	II	II	IV	0	I	II	III	IV
1st visit	0	2	0	2	1	0	1	9	4	1
2nd visit	14	1	0	0	0	3	2	0	0	0
3rd visit	15	0	0	0	0	15	0	0	0	0

Discussion

Herbal and alternative medicines are popular worldwide. A great number of modern drugs are still derived from herbs. The results of this study showed that the scores of colony growth decreased significantly in each group and there were no significant differences in the decrease of colonies in both drugs. The present results indicate that Artemisia Sieberi has activity against Candida. The main components of Artemisia sieberi are beta-thujone camphor and alpha-thujone (3). Probably, the anti-Candida activity of Artemisia Sieberi is due to the above compounds (3, 11). Farzaneh et al. have shown that Artemisia sieberi has

stronger anti-fungal activity compared to genus Artemisia. They tested the essential oils of Artemisia sieberi for their anti-fungal activity against some soil-borne pathogenic fungi (2). Yigit et al, have shown that the ethanol extracts of Artemisia exhibited good activity against both the clinical and the standard strains of Candida (5). Gundidza reported that the essential oil of Artemisia exhibited significant activity against Candida (4). The results of this study showed that Artemisia mouthwash 1% could be as effective as nystatin mouthwash in the treatment of denture stomatitis. Further studies with larger samples are needed to confirm the results of this study.

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