



The Clinical Efficiency of Thuja Extract Compared with Kenalog in Orabase in Treatment of Recurrent Aphthous Stomatitis

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Abstract

Aims: The study aims to appraise the clinical efficiency of 2% ethanolic thuja orientalis extract in comparison to the effect of kenalog in orabase in patients with recurrent aphthous stomatitis RAS. **Materials and methods:** This clinical research included eighty patients with active lesions, twenty patients were treated with ethanolic thuja extract, twenty patients were treated with kenalog in orabase, twenty patients were treated with orabase as a control positive, and twenty without treatment as a control negative. **Results:** The results showed a good effective response of topical ethanolic thuja extract compared with the effect of kenalog in orabase in patients with recurrent aphthous stomatitis. **Conclusion:** conclude that herbal medicine can be employed as an alternative RAS therapy.

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الخلاصة

الاهداف: تهدف الدراسة الى تقييم الكفاءة السريرية لمستخلص ثمار نبات العفص الإيثانولي بنسبة 2% مقارنة بتأثير كينالوج في أوراباز في المرضى الذين يعانون من التهاب الفم القلاعي المتكرر **المواد وطرائق العمل.** اشتمل هذا البحث على ثمانين مريضاً يعانون من آفات نشطة في هذه التجربة السريرية، وعولج عشرين مريضاً بمستخلص ثمار نبات العفص الإيثانولي، وكذلك تم معالجة عشرين مريضاً بالكينالوج في قاعدة الأورباز، وعولج عشرين مريضاً بقاعدة الأوراباز كمجموعة تحكم إيجابية، وعشرون مريضاً بدون علاج باعتباره مجموعة تحكم سلبية. **النتائج:** أظهرت النتائج استجابة فعالة جيدة لمستخلص ثمار نبات العفص الإيثانولي المرضعي مقارنة بتأثير كينالوج في أوراباز في المرضى الذين يعانون من التهاب الفم القلاعي المتكرر. **الاستنتاجات:** نستنتج أنه يمكن استخدام الطب الطبيعي كعلاج بديل لالتهاب الفم القلاعي المتكرر.

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INTRODUCTION

Recurrent ulcers are common oral problems ⁽¹⁾, and recurrent aphthous stomatitis RAS is one of them ⁽²⁾.

The origin of the word aphthous is the Greek word *aphthai*, which means an ulcer ⁽²⁾ or mouth disorders ⁽³⁾.

RAS is one of the most prevalent oral ulcers, which is characterized by painful, round or ovoid ulcers with yellow or gray floor and circumscribed by erythematous margins ⁽⁴⁾.

Clinically RAS is classified to minor aphthous (ulcer diameter less than 1 cm and heal within 7-14 days) which is the commonest, major aphthous (ulcer diameter more than 1 cm and heal within weeks) the herpeti form type (multiple and small ulcers) ⁽⁵⁾.

Many factors play a role in its evolution include, heredity, immunologic abnormality, hematologic deficiency, hormonal and psychological factors ^(1,5).

As there is no definite cause of RAS, there is no definite therapy. The aim of treatment modalities is to reduce pain and ulcer duration ⁽⁶⁾.

Consequently, analgesics and corticosteroids are favorable choice for treatment of RAS patients but, this treatment modality may induce secondary fungal infection and resistance to the drug ⁽⁷⁾.

Natural medicines are healthful to get rid of the side effects of chemical drugs ⁽⁸⁾. They have antibacterial, antiviral, antifungal, analgesic, and antioxidant

properties ^(9, 10), and they have been widely used as an alternative RAS therapy ^(11, 12, 13).

Thuja orientalis or Chinese arborvitae (tree of life) of the cypress family is an ornamental conifer that have been used in Chinese medicine ⁽¹⁴⁾. *Thuja orientalis* has astringent, antipyretic, antitussive, diuretic, expectorant, and nerve stimulant activity ^(15, 16).

The phytoconstituents flavonoids, terpenoids, coumarine, tannins, carbohydrates, alkaloids, glycosides, phenol, fixed oils and fat in various parts of *Thuja orientalis* have biological activities ^(17, 18). Tannic acid is a polyphenol, used in pharmaceutical industry. It is water soluble metabolites, which is able to complex macromolecules and metal ions this property gives it antimicrobial, antioxidant, and healing activity ⁽¹⁹⁾. Thus, *Thuja orientalis* extracts are a good source of antioxidant, antimicrobial, anti-inflammatory and anticancer activity ^(14, 18, 20).

The aim of this research is to appraise the efficacy of topical *Thuja* extract as compared to the prescriptive treatment with Kenalog in orabase, in treatment of RAS.

MATERIALS AND METHODS

The study was approved by Research Scientific Committee Board in Oral and Maxillofacial Surgery Dep.(University of Mosul, College of Dentistry, reference No. 4S/257, in 14/11/2018).

Patients with minor aphthous ulcer less than 2 days, age between 18-40 years,

without any systemic disease, from the college of dentistry in Mosul city were participated in this clinical trial.

The study was explained to the participant, and they were divided into four groups.

Group 1: included 20 patients treated with ethanolic Thuja extract.

Group 2: included 20 patients treated with Triamcinolone Acetonide in oral paste (kenalog in orabase from unipharma Damascus-Syria) according to many studies ⁽²¹⁻²³⁾.

Group 3: included 20 patients treated with orabase from ConvaTec UK as a control positive group.

Group 4: included 20 patients without treatment as a control negative group.

Ethanolic Thuja fruits extract was prepared according to (Harborne, 1973) ⁽²⁴⁾, and 2% was prepared by mixing the extract

with the oral base, the patients were directive to apply the topical treatment four times a day QID and stop eating or drinking for 30 minutes ⁽²⁵⁾. A daily follow up of the patients to determine pain duration, time of complete healing ⁽²⁶⁾ and ulcer size, which was measured by using a William's graduated periodontal probe, after 48 hours and 120 hours ⁽²⁵⁾.

IBM SPSS statistics for windows (version 25), was employed for statistical analysis, using Descriptive statistic, ANOVA test and Duncan Post Hoc test, Kruskal-Walli's test.

RESULTS

There were 80 patients in all with a current history of RAS included in this study. Descriptive statistic for age and sex is shown in table 1 and 2 sequentially.

Table (1): Descriptive Statistics of study sample according to age.

Groups	Minimum	Maximum	Mean	Std. Deviation
1	18.00	40.00	26.50	7.32
2	19.00	40.00	26.85	6.11
3	19.00	39.00	25.80	6.95
4	18.00	39.00	26.30	6.61
Total	18.00	40.00	26.3625	6.64896

Table (2): Descriptive Statistics of study sample according to sex.

Groups	Frequency		Percent	
	male	female	male	female
1	7	13	35	65
2	9	11	45	55
3	6	14	30	70
4	10	10	50	50
Total	32	48	40	60

Table 3 and 4 shows significant differences among studied groups in relation to pain

duration, except the last two groups show statistically non-significant difference.

Table (3): Kruskal-Wallis Test compare the duration of pain (hours) among treatment groups.

GP	N	Mean Rank
1	20	14.95
2	20	34.78
3	20	55.25
4	20	57.03
Total	80	$P \leq 0.05$

Table (4): Mean rank, sum of ranks of the pain duration among the treatment groups.

Groups	NO.	Mean Rank	Sum of Ranks	P Value
1	20	13.70	274.00	
2	20	27.30	546.00	≤ 0.05
Total	40			
1	20	11.38	227.50	
3	20	29.63	592.50	≤ 0.05
Total	40			
1	20	10.88	217.50	
4	20	30.13	602.50	≤ 0.05
Total	40			
2	20	14.48	289.50	
3	20	26.53	530.50	≤ 0.05
Total	40			
2	20	14.00	280.00	
4	20	27.00	540.00	≤ 0.05
Total	40			
3	20	20.10	402.00	
4	20	20.90	418.00	> 0.05
Total	40			

Table 5 ANOVA test and Duncan Post Hoc test, shows significant differences in the healing time of the lesion with the least

time in group 1 followed by group 2 then group 3 and 4, as the last two groups show statistically non-significant difference.

Table (5): Comparison of the healing time (hours) among treatment groups.

groups	No.	Mean \pm SD
1	20	127.20 \pm 27.08 ^a
2	20	164.40 \pm 22.39 ^b
3	20	192.00 \pm 23.35 ^c
4	20	196.80 \pm 24.12 ^c
		$P < 0.05$

Table (6) ANOVA test and Duncan Post Hoc test, shows no significant difference in the size of ulcer between group 1 and 2 and between group 2, 3, and 4 after 48 hours of treatment.

On the other hand, there is a significant difference between group 1 and group 3 and

4. After 120 hour there is statistically significant differences in the ulcer size among the studied groups, except between groups 3 and 4, the least size in group 1 then groups 2, 3, and 4 as displayed in the same table.

Table (6): Comparison of the lesion size (mm) among treatment groups.

groups	Zero time	48 hours	120 hours
1	5.60±1.46	3.90±1.25 ^a	1.50±1.19 ^a
2	5.70±1.41	4.35±1.26 ^{ab}	2.55±1.09 ^b
3	5.60±1.35	4.75±1.33 ^b	3.35±1.26 ^c
4	5.70±1.38	4.95±1.19 ^b	3.45±1.31 ^c
Sig.	$P > 0.05$	$P < 0.05$	$P < 0.05$

DISCUSSION

Recurrent aphthous stomatitis RAS is a commonly searched oral pathology, with unknown etiology. Thus, there are no common treatment guidelines ⁽²⁷⁾.

Corticosteroids are the main treatment strategy. Triamcinolone Acetonide, is an effective treatment for many oral inflammatory diseases including RAS ⁽²¹⁻²³⁾. Topical gel or paste that are applied over an oral ulcer forming a defense from secondary infection and mechanical irritation ⁽²⁸⁾. Drugs with adhesive bases do not wash away from the lesion ⁽²⁹⁾.

There are many researches about the use of herbs and plants extracts for the treatment of RAS, as they have astringent, antiulcer, anti-inflammatory, and antimicrobial effect. They comfort the patients and decrease ulcers duration ⁽³⁰⁻³⁴⁾.

Thuja extract contains active compounds mainly tannic acid ⁽³⁵⁾, it is an

astringent forming a protective layer over mouth sores. Astringent properties due to the reaction between tannins and tissue protein contact it, the tannin protein complex layer promote greater resistance to chemical and mechanical irritation, tannins also have antioxidant activity which promote the repair of tissues, and involved in the anti-inflammatory process ⁽³⁶⁾.

Thus, tannins from a number of medicinal plants provide antiulcer activity ^(19, 36-38), and this is in agreement with the results of this clinical trial, which showed a significant decrease in pain duration, ulcer size, and healing time of recurrent aphthous stomatitis after the use of ethanolic thuja extract.

Lokesh *et al* ⁽³⁹⁾, searched the antiulcerogenic activity of thuja ethanolic extract and the results showed a significant decrease in the intensity of gastric mucosal damages induced by ulcerogenic drug, as

thuja considered as one of the gastro protective plants, this result agreed with the result of this research.

CONCLUSION

According to the results of this research ethanolic thuja extract 2% convince to be more competent than the traditional triamcinolone acetonide therapy in lessen pain, healing time, and ulcer size of RAS, without any notable side effects. So natural medicine is promising as effective and safe alternative of synthetic drugs. Further studies are required to prove the efficiency of herbal medicine for oral ulcers.

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