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Research Article

Oral Lichen Planus and Aloe Vera

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Abstract

Objective: The aim of this review was to gather the available evidence regarding aloe vera treatment with oral lichen plans patients.

This systematic review was conducts to answer the question: "When treating oral lichen planus patients, is aloe Vera an effective treatment versus other treatments?".

Materials and Methods: A systematic review of the literature was done following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statements. An electronic research was carried out using different electronic databases, PubMed and Cochrane databases.

Results: The searches in both databases (PubMed and Cochrane) resulted in 6 articles, one duplicated article was found and only four of them were eligible.

Manual research of the reference list yielded no additional papers.

Therefore, four articles were identified as eligible for inclusion in this review, according to its inclusion and exclusion criteria. All the four studies were randomized clinical trials (RCT).

Conclusion: The results of the four RCTs showed an effective treatment to manage OLP patients, although corticosteroids are the gold standard, the treatment with AV shows encouraging results without adverse effects.

Keywords: *Aloe Vera; Oral Lichen Planus; Lichen Planus; Treatment; Management*

Abbreviations

AV: Aloe Vera; OLP: Oral Lichen Planus; RCT: Randomized Clinical Trial; VAS: Visual Analogue Scale

Introduction

Oral lichen planus (OLP) is a chronic inflammatory disease affecting the oral mucosa [1], its diagnosis is made by clinical and histological examinations, although sometimes the reticular pattern and the symmetric and bilateral lesions, make it possible to make a diagnosis based only on the clinical examination [2].

Several treatments have been proposed [3,4], but corticosteroids are still the most used treatment form, even though their side effects, such as *Candida albicans* infection [3,5].

Aloe Vera (AV) is a plant which contains many components, including vitamins A, C and E, amino acids, salicylic acid and enzymes, which give its medical effects [6].

AV promotes wound healing, moisturizes and protects skin from UV radiation, it's been shown that AV has both analgesic and anti-inflammatory properties, since it inhibits cyclooxygenase pathway and reduces the production of prostaglandins and bradykinins [7,8].

It also has properties on the immune system, it inhibits histamine and leukotrienes and activates the production of nitric oxide and cytokines [8,9].

Since AV has proven to have all this properties this systematic review was conducted to answer the following PICO question: When treating oral lichen planus patients, is aloe Vera an effective treatment versus other treatments?

Materials and Methods

This review was conducted according the PRISMA statement [10]. A systematic review of scientific literature concerning effectiveness of aloe Vera on oral lichen planus was carried.

An electronic research was carried in both Pubmed and Cochrane databases.

The databases were searched for studies conducted in the period up to and including December 2019.

Search terms: Pubmed - ("Lichen Planus, Oral"[Mesh]) AND "Aloe"[Mesh]; Cochrane - Oral Lichen Planus AND Aloe Vera

Eligibility criteria: were English and Spanish papers. Studies that were randomized control trials, single and double blind trials, cross-sectional and case control studies, and conducted in humans. Observational studies, case reports and studies on animals were excluded.

Results

The searches in both databases (PubMed and Cochrane) resulted in 6 articles, one duplicated article was found and only four of them were eligible.

Manual research of the reference list yielded no additional papers.

Therefore, four articles were identified as eligible for inclusion in this review, according to its inclusion and exclusion criteria. All the four studies were randomized clinical trials (RCT).

A total of 204 patients were evaluated. 64 patients by Salazar-Sanchez., *et al*. [11], 40 patients by Reddy RL., *et al*. [12], 54 patients by Choonhakarn C., *et al*. [13] and 46 patients by Mansourian A., *et al* [14]. The number of participants was from 40 to 64 patients, although Salazar-Sanchez., *et al*. [11] started with 64 participants at baseline and ended by 55 patients.

The age was not reported in Reddy., *et al*. [12], Choonhakarn., *et al*. [13] only mentioned the mean age, which was 52 years old, and the age range of Salazar-Sanchez., *et al*. [10] was from 32 to 84 years old and Mansourian., *et al*. [14] age range was from 33 to 75 years old.

Regarding the type of OLP, Choonhakarn., *et al*. [13], Salazar-Sanchez [11] and Reddy., *et al*. [12], treated erosive and atrophic OLP, nevertheless Mansourian., *et al*. [14] evaluated erosive, atrophic and reticular OLP.

Regarding the intervention, Salazar-Sanchez., *et al*. [11] and Reddy., *et al*. [12] applied an AV gel three times daily, Choonhakarn., *et al*. [13] used an AV gel twice daily and finally Mansourian., *et al*. [14] used an AV mouthwash four times daily, during 2 minutes and he informed patients to avoid eating or drinking for 20 minutes after the application. This is the only RCT that reports the duration of the appliance and the instructions post-application.

Two studies [12,14] used triamcinolone acetonide as control, the two remaining [11,13] used placebo gel as control.

The four RCTs used visual analogue scale in order to describe the intensity of burning sensation. Salazar-Sanchez., *et al*. [11] showed a reduction in pain in patients treated with AV versus placebo patients, although results were not statistically significant. Reddy., *et al*. [12] and Mansourian., *et al*. [14] showed no statistical difference in visual analogue scale (VAS) between aloe Vera treated patients and triamcinolone acetonide, although there was a reduction in burning sensation.

Choonhakarn., *et al*. [13] reported 9 patients (33%) with a complete remission when treating them with AV, good response in 17 patients (63%). Mansourian., *et al*. [14] was the only one that measured the size of the lesion, proving that the size decreased after 2 months, although there was no significant differences between control groups.

Discussion

Aloe Vera has been used as an alternative therapy in some diseases and has been promoted for its healing and nutritional benefits [15,16].

Author (Year)	Design	Sample	Intervention	Type of AV application	Follow-up	Results
Salazar -Sánchez N., *et al*. (2010) [11]	Randomized double-blinded clinical trial	64 patients	Aloe Vera (32 patients) vs placebo (32 patients), at a dose of 0.4 ml (70% concentration)	AV gel (3 times /day)	6 and 12 weeks	No statistically significant differences were recorded between both groups
Reddy RL., *et al*. (2012) [12]	Randomized double-blinded clinical trial	40 patients (23 males and 17 females)	Group A patients received aloe vera gel, while group B patients received triamcinolone acetonide.	AV gel (3 times/day)	8 weeks	Aloe vera gel was more effective than triamcinolone acetonide
Choonhakarn C., *et al*. (2008) [13]	Randomized, double-blinded, placebo -controlled trial	54 patients (34 women and 20 men)	27 patients were treated with Aloe Vera gel and 27 patients were placebo-treated	AV gel (2 times/day)	8 weeks	Aloe Vera gel is statistically significantly more effective than placebo
Mansourian A., *et al*. (2011) [14]	Randomized double-blinded clinical trial	46 patients	Group A received AV mouthwash, Group B received TA	AV mouth-wash (4 times/day)	8, 12 days 2 months	AV mouthwash is an effective substitute for TA in the treatment of OLP

Table 1: *Collected data from the studies.*

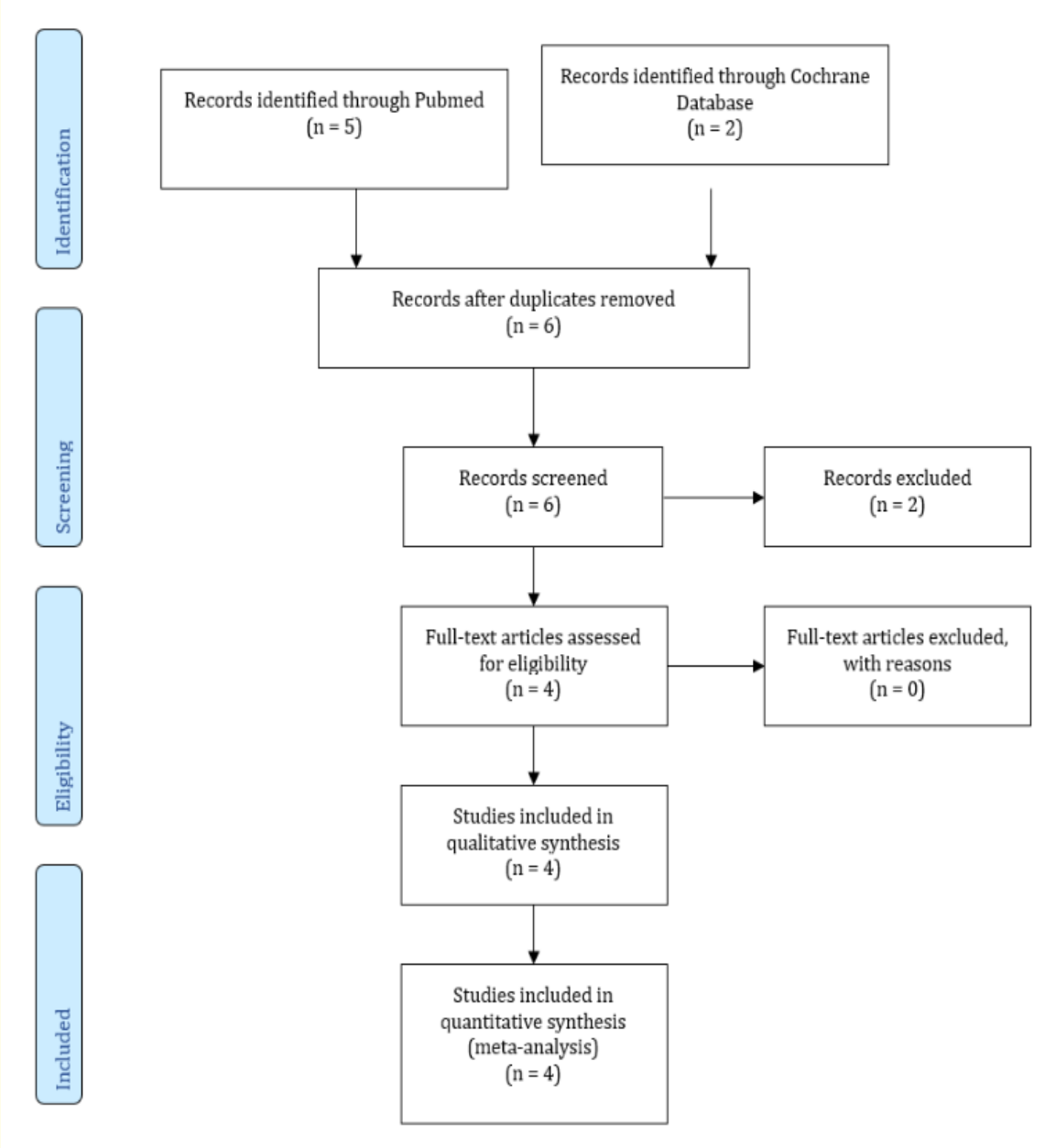

Figure 1: *PRISMA flowchart.*

Two out of four RCT's [12,14] compared the use of aloe Vera vs triamcinolone acetonide, since topical steroid is the main treatment for symptomatic oral lichen planus.

Topical steroids are widely used because of the few adverse effects and its effectiveness, even though no topical steroid has been shown to have a superior capability in comparison to other topical steroids [17]. This systematic review was conducted to evaluate if aloe Vera

was an effective treatment for oral lichen planus, the review included four RCT's. A total of 204 patients were evaluated, with heterogeneity regarding the treatment period, that variated from 6 weeks to 2 months, and the evaluation method, the visual analogue scale (VAS). The two studies that compared AV and placebo [11,13], both agreed that Aloe Vera was more effective than placebo in the pain management, although Choonhakarnet., *et al*. [13] showed statistically significance and Salazar-Sanchez., *et al*. [11] showed insignificant results. The two remaining studies [12,14], compared the triamcinolone acetonide and AV, even though there was no statistical significant differences, they both agreed that AV had a comparable effect in pain management.

Although, they both agree there was a clinical improvement, Mansourian., *et al*. [14] with no statistical significant and Reddy., *et al*. [12] with statistical significance. Eventually, they all agree that AV is a safe and effective alternative for the oral lichen planus management. The limitations of this systematic review were few RCTs and their small sample size, as well the different treatment formulation.

Conclusion

The results of the four RCTs showed an effective treatment to manage OLP patients, although corticosteroids are the gold standard, the treatment with AV shows encouraging results without adverse effects.

More RCTs with standardized formulations should be conducted.

Conflict of Interest

The authors report no conflicts of interest.

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