

## ALOE VERA IN ORAL DISEASES - A REVIEW

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Received: 30 Oct 2013 Revised and Accepted: 21 Dec 2013

## ABSTRACT

Aloe vera (*Aloe barbadensis*) commonly called as "babosa". "Curacao aloe" is a succulent plant belonging to the *Liliacea* family. It has been used initially in wound healing and was found to be beneficial as radiation protectors, immune stimulant, chemopreventive etc. It is used in many systemic diseases because of its multiple therapeutic properties such as antioxidant, anti-helminthic, anti-inflammatory, anti-viral, lipolytic, laxative, anti-arthritic and also as a uterine stimulant. There are few clinical trials where Aloe vera is been used in the treatment of oral diseases such as oral lichen planus, recurrent aphthous stomatitis, oral pemphigus, herpetic stomatitis, radiation induced mucositis. The present review article aims in evaluation of these clinical trials to assess the efficacy of Aloe vera as a therapeutic in oral diseases and to emphasize the need for future clinical trials using Aloe vera in potentially malignant disorders of the oral mucosa.

**Keywords:** Aloe vera, oral diseases, oral lichen planus, oral submucous fibrosis, aphthous stomatitis

## INTRODUCTION

## Background of aloe vera

Aloe vera – the term Aloe being derived from the Arabic word "alloe" meaning shiny and bitter while Vera from the Latin word meaning true[1]. Its history dates back to 1500BC. It was reported that Alexander the Great conquered the island of Socotra in the Red Sea, which was said to have abundant Aloe fields in order to help his troops from healing of battle wounds. The Egyptians called Aloe Vera as "the plant of immortality" [2]. Its modern use was recognized first in radiation burns by Dr.C.E.Collins in 1934[3]. Currently, Aloe Vera is used in various oral diseases like gingivitis, denture sore mouth [4], Shingles and Herpetic stomatitis [5], oral lichen planus[6], minor recurrent aphthous ulcer[7], leukoplakia, oral submucous fibrosis[8]. They are available in different forms like gel, ointment and also as drinks, capsules etc. The extraoral adverse effects reported are very few such as burning on topical application, contact dermatitis, and mild itching [9].

## Search strategy

The following electronic databases were searched namely PubMed(MeSH), Wiley online library, Cochrane Library using key words ( aloe vera and oral diseases, aloe vera and lichen planus, aloe vera and oral submucous fibrosis, aloe vera and aphthous stomatitis, aloe vera and leukoplakia). The total number of articles obtained are 27 (Wiley online library -5, PubMed -17, Cochrane Library- 1, Hand search – 4). The current review article aims in evaluating the efficacy of Aloe vera only in oral diseases hence the following inclusion and exclusion criteria was devised to select the appropriate clinical trials.

**Inclusion criteria:** Human clinical trials where Aloe vera is used in treatment of oral lesions alone.

**Exclusion criteria:** *In-vitro* studies and review articles are not included

## RESULTS

This review article includes 7 trials where topical Aloe vera is used in treatment of oral lesions such as alveolar osteitis, oral lichen planus, oral submucous fibrosis, minor recurrent aphthous ulcers and radiation induced mucositis. The results of these trials are tabulated as follows: (Table 1)

## DISCUSSION

Aloe vera being used in various diseases is said to have certain active components like saponins, lignin, salicylic acid, anthraquinones and amino acids [13] in which anthraquinones have the strong anti-bacterial, anti-viral and anti-neoplastic properties[14]. Though Aloe vera in literature has been reported to have significant medicinal value started from 1500 BC, clinical trials of Aloe vera on oral diseases were published since 2002 though its effects in extra-oral applications were studied early from 1985. The clinical trial conducted in 2002 for alveolar osteitis was the earliest to be done for the maximum number of patients of about 1,194 in total while the other trials included only a few study groups. Recent clinical trials of Aloe vera on oral diseases give very few side-effects with nausea as the main. Aloe vera showed the most beneficial effect in oral lichen planus but no significant benefit in radiation induced mucositis.

## Author's suggestion

Aloe vera has been proved to have multiple and few unique properties with very less side-effects and hence can be definitely tried in many oral and extra-oral diseases. The current review article reveals that there are very few clinical trials in use of Aloe vera exclusively in oral diseases in spite of significant medicinal value. This review suggests the future demand for more human clinical trials utilizing the unique properties of Aloe vera such as potent antioxidant, immune stimulant in potentially malignant disorders like leukoplakia, erosive lichen planus and oral submucous fibrosis.

TABLE 1

| YEAR                             | FORM OF ALOE VERA  | DOSAGE AND DIRECTION OF USE                            | PATIENTS   | ORAL DISEASE      | RESULTS   | ADVERSE EFFECTS             |
|----------------------------------|--|--|--|-------------------|---|-----------------------------|
| Poor et al 2002- Randomized [10] | SaliCept patch - freeze-dried plectet containing Acemannan Hydrogel from inner gel of Aloe | 2 SaliCept patches placed immediately after extraction | 1194 patients 607- SaliCept (Aloe vera) patch 587- Clindamycin | Alveolar osteitis | Occurrence of alveolar osteitis 7 days post-surgical:<br>1) SaliCept group- 1.1% (P<0.001)<br>2) Gel foam- 8% | No adverse effects reported |

|   | vera.        |   | soaked gel foam  |   |   |                               |
|---|--------------|---|--|---|---|-------------------------------|
| Su et al, 2004- Randomized double-blind [11].                 | Gel          | 94.5% gel- Applied 4 times daily for the full duration of radiation treatment and 6 weeks post-treatment  | 58 head and neck cancer patients.  | Radiation-induced mucositis                         | No significant difference in the parameters of Aloe vera gel and placebo gel  | No adverse effects reported   |
| Choonhakarn et al, 2008- Randomized double-blind [5]          | Gel          | 70% aloe mucilage in hydrophilic gel base - Applied 2 times daily to affected area for 8 weeks  | 54 patients (Female-34 Male-20)  | Oral Lichen planus (erosive and ulcerative lesions) | 7%- complete remission<br>Good response: 81% - Aloe vera gel (P<0.001)<br>4% - Placebo gel  | No adverse effects            |
| Babae et al, 2012 - Randomized double-blind [7]               | Gel          | 2% oral gel Apply 3 times a day for 10 days(singular lesions in buccal mucosa and mucosal zone of lips)   | 40 patients (15-35 years)<br>20- Aloe vera gel (Male-10 Female-10)<br>20- Placebo gel (Male-12 Female-8)   | Minor recurrent aphthous stomatitis                 | Duration of complete wound healing, pain score, wound size, inflammation zone diameter significantly lower than control group (P≤0.05)  | No adverse effects reported   |
| Sudarshan et al, 2012- Randomized parallel single-blind [8]   | Gel          | 5mg gel- Applied 3 times daily for 3 months   | 20 [19- Male 1-Female] (17-40 years)<br>Group A-10 - Aloe vera gel<br>Group B-10. Antioxidant capsules 2 times daily for 3 months                                | Oral Submucous Fibrosis                             | Significant reduction in: Burning sensation- P=0.008<br>Improvement in mouth opening- P=0.02<br>Cheek flexibility- P=0.01 of Group A in comparison with Group B   | 3 patients- Nausea in Group A |
| El-Soudany K et al, 2013- Self-controlled single-blinded [12] | Ointment     | Aloe vera High Molecular weight fractions-0.1% by weight. 3 times daily on affected side. Reviewed after 4 and 8 weeks  | 20 patients (At least 18 years)<br>15-Male<br>5-Female (Bilateral lesions)<br>Placebo gel on affected left side. Aloe vera gel on affected right side            | Oral Lichen planus                                  | 75%-complete remission<br>10%-partial remission<br>5%-no response<br>5%-patient dropped out   | No adverse effects reported   |
| Virdi et al, 2013- Randomized, single-blind [1]               | Gel- Curagel | After Scaling and Root Planing- Aloe vera gel with syringe inserted to base of the pocket. Reapplied after 1 <sup>st</sup> and 2 <sup>nd</sup> week at the entrance of the pocket | 20 patients (35 to 65 years)<br>11-Male<br>9-Female<br>One side of jaw-scaling and Root Planing only.<br>Contralateral side of jaw- Additional aloe vera therapy | Chronic periodontitis                               | AFTER 6 WEEKS OF ADDITIONAL ALOE VERA THERAPY:<br>1. Probing depth: from 5.975±1.392 to 2.488±0.582<br>2. Gingival index: from 2.50±0.353 to 0.55±0.305 (P<0.0001).<br>3. Plaque index : from 3.926±0.687 to 1.325±0.379 (P>0.1771)<br>AFTER 6 WEEKS OF ONLY SCALING AND ROOT PLANING:<br>1.Probing depth: From 5.887±1.620 to 4.213±1.283<br>2.Gingival index: From 2.58±0.251 to 1.375±0.343<br>3.Plaque index: From 3.835±0.609 to 1.475±0.307 | No adverse effects found      |

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