

**Ministry of higher education
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**Comparison between the effects of Aloe-vera and
chlorhexidine mouthwashes on the expression of
gingival fibroblast growth factor-2 and the clinical
periodontal parameters in patients with
inflammatory gingival enlargement**

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Abstract

Background

Plaque-induced gingivitis is one of the most common periodontal diseases. Chlorhexidine mouth wash is considered as standard control of the anti-plaque agents, but many side effects discourages long periods of its usage. Aloe vera has anti-plaque, anti-inflammatory actions and exhibits its wound-healing effects. Fibroblast growth factors (FGFs) are a family of growth factors involved in angiogenesis, wound healing, and embryonic development. FGF-2, which also known as (basic FGF) acts on various cell types as it promotes proliferation of fibroblasts and osteoblasts, and enhances angiogenesis.

Aims of the study:

To Estimate and compare between the effects of Aloe-vera and chlorhexidine mouthwashes as adjunct to scaling and polishing on immunohistochemical expression of FGF2 and the clinical periodontal parameters (plaque index (PLI), gingival index (GI), and bleeding on probing (BOP)), Correlate the clinical periodontal parameters (PLI, GI, BOP) with immunohistochemical expression of FGF2 and between the expressions of matrix FGF2 and angiogenesis.

Material and methods:

A total of 44 subjects (12 males, 32 females) with inflammatory gingival overgrowth / age range (15-30) years. , at first visit, they received baseline of data collection include: plaque index (PLI), gingival index (GI), and bleeding on probing(BOP) and underwent the initial phase of periodontal treatment including oral hygiene instructions, scaling and polishing ,then the patients were randomly allocated in one of three groups: Study group I (Aloe-vera group): 15 patients instructed to use aloe-vera mouth wash (100% pure Aloe-vera juice) twice daily for seven days, Study group II: (CHX group) 15 patients instructed

to use chlorhexidine mouthwash (0.2%) twice daily for seven days, and Control group: 14 patients instructed not to use any adjunctive therapy.

Gingival tissue then excised by gingivectomy at the second visits (after 7 days), washed by normal saline, and fixed with 10% formalin for histological evaluation and immunohistochemical analysis of fibroblast growth factor-2.

Results:

Intra group comparison showed highly significant differences between 1st and 2nd visits in all groups for plaque index and bleeding on probing with the largest effects were found in CHX followed by Aloe-vera while the lowest changes were found in control group. Gingival index showed highly significant change in study groups (CHX and Aloe-vera groups) with the larger effects was in CHX group and no significant changes were found in control group.

Inter group comparison at second visits revealed that Aloe-vera showed significant differences in the expression of FGF2 and highly significant differences in angiogenesis when compared to control group, while between CHX and control groups, there were no significant differences in the expression of FGF2 and significant differences in angiogenesis, with no significant differences between CHX and Aloe-vera in immunohistochemical findings.

There were negative correlations between immunohistochemical findings (matrix FGF2 and angiogenesis) and clinical periodontal parameters (PLI, GI, and BOP) while there was a positive correlation between matrix FGF2 and angiogenesis.

Conclusions

This study showed that Aloe-vera has potential actions similar to chlorhexidine in reducing plaque accumulation and gingival inflammation and it may act as a good alternative to CHX which has many side effects. Moreover, as compared to CHX, Aloe-vera is cost-effective so in the population with low socio-economic status, Aloe-vera can be used instead of CHX. Also Aloe-vera

has a potential wound healing as it was significantly affecting the immunohistochemical expression of FGF2 and angiogenesis.