



Republic of Iraq  
Ministry of Higher Education  
and Scientific Research  
University of Baghdad  
College of Dentistry



**EVALUATION OF ANTI-PLAQUE, ANTI-  
BACTERIAL AND ANTI-INFLAMMATORY  
EFFECT OF ALOE VERA TOOTHPASTE:  
A RANDOMIZED CROSSOVER CLINICAL TRIAL**

A Thesis

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University of Baghdad, in Partial Fulfillment of the Requirement  
for the Degree of Master of Science in Periodontics

By

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## **ABSTRACT**

### **Background:**

Phytotherapy is the use of herbal species in conjunction with medicinal properties for the treatment of a variety of diseases. Gingivitis and periodontitis are diseases that involve the role of both the bacteria and the host immune response. Throughout the long term, various studies have shown the value of herbal products in the treatment of periodontal diseases. Certain plants such as aloe vera contains various minerals and vitamins and has got various properties such as immunomodulatory, antiviral and anti-inflammatory in nature. It is utilized in dentistry for its supportive effect in many disorders like lichen planus, aphthous stomatitis, oral submucous fibrosis, pulpotomy of primary teeth, prevention of dry sockets, obturation of primary teeth, disinfection of irrigation units, bleeding and painful gingiva, disinfection of gutta percha cones, burning mouth syndrome and in radiated head and neck cancer patients.

### **Aim:**

The aim of study is to evaluate the anti-plaque, anti-inflammatory and anti-bacterial effect of Aloe vera toothpaste.

### **Materials and methods:**

Twenty-two adult patients (male and female) were diagnosed with generalized dental biofilm induced gingivitis with intact periodontium were selected randomly to use Aloe vera toothpaste and Colgate total toothpaste, for 7 days for each type, and wash out period 7 days between them. A week before trial, all participants received motivation, oral hygiene instruction, scaling and polishing.

Clinical periodontal evaluation is undertaken which include plaque index assessed using a modification of the Quigley-Hein index, and bleeding

assessment by modified sulcus bleeding index, in addition to saliva sample collection to estimate the early colonizer load of (*S. sanguinis* and *S. mutant*), and GCF sample collection to estimate the (IL<sub>1</sub> $\beta$ ) level. Both clinical periodontal parameters, saliva and immunological marker collected at baseline visit after 24h refrain from oral hygiene measure and after 7 days' tooth paste usage. Enzyme-linked immunosorbent assays (ELISA) were used for the assay of each cytokine concentration and qpcr were utilized for *S. sanguinis* and *S. mutant* count.

### **Results:**

When compared to Colgate dentifrice, aloe vera toothpaste showed substantial improvements in plaque and gingival scores and as significant reductions in IL-1 and microbiologic count.

### **Conclusion:**

Dentifrice including aloe vera can be a functional natural component for plaque control specialists and plaque and gingival status.

### **Trial registration:**

This study was registered in ClinicalTrials.gov as NCT04662385 in December10,2020.



جمهورية العراق  
وزارة التعليم العالي والبحث العلمي  
جامعة بغداد  
كلية طب الأسنان



## تقييم التأثير المضاد للترسبات والمضاد للبكتيريا والمضاد للالتهابات لمعجون أسنان الصباريات نوع الألوفيرا : تجربة سريرية عشوائية متقاطعة

رسالة مقدمة إلى مجلس كلية طب الأسنان في جامعة بغداد كجزء من  
متطلبات نيل شهادة الماجستير في أمراض و جراحة ما حول الفم و الاسنان

قدمت من قبل  
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دكتوراه أمراض و جراحة ما حول الفم و الأسنان