

# Anti-plaque efficacy of *Siwak* as a mechanical tooth stick

## Research Article

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## Abstract

**Introduction:** Dental plaque removal is an important goal in oral hygiene program. The public interest in herbal medicine and natural products has grown in the past few years. *Siwak* (*Salvadora persica* (kharjal)) is an ancient tooth stick that has preventive and therapeutic effects on oral cavity. The aim of the present study is to evaluate the effect of siwak chewing sticks on plaque accumulation on tooth surface. **Materials and Methods:** In this randomized clinical trial study 80 volunteer was selected randomly for complete the study chart. They were enrolled in the study for being in the one of the four study groups: active siwak, inactive siwak, usual tooth brush and no-oral hygiene. The participants wanted to use their instruction for 6 days. Base line (PI-1) and 3-day (PI-2) and 6-day (PI-3) plaque indexes was recorded by Sillness and Loe method. Data evaluation was done using SPSS-22 and Kruskal Wallis Test, Chi-Square Tests. **Results:** There was a significant reduction of the plaque index in PI-3 ( $p=0.029$ ). But in the others, there was no significant difference in the change of plaque index between groups ( $p>0.05$ ). **Conclusion:** It is concluded that siwak were able to reduce dental plaque as a mechanical tooth brush and if it uses in active form (fresh plant), the reduction of plaque accumulation is more prominent and effective.

**Key Words:** *Siwak*, *Salvadora persica*, *Tooth brush*, *Chewing stick*, *Dental plaque*.

## Introduction

*Salvadora persica* is a traditional tooth brush, used as chewing stick and oriented from "ARAK" tree which is growing in many countries such as Iran, Iraq, India, Egypt, Africa,....(1-5) The history of its use for oral hygiene came from ancient civilization (6-8). Developing Islamic culture cause the oral and dental care to be more prominent in Muslim countries (2,9-11). Prophet Mohammad (peace be upon him) have been focused on dental care as a daily sunnah and recommended the *salvadora persica* as an oral cleaning tool (9,11-13). *Salvadora persica* (SP) named with several words such as Miswak, Siwak, Koyoji, Qisa, Qesam (3,7,9).

Availability, to be economical, Easy to use and Historical background made siwak as an acceptable and appropriate tool for brushing the teeth (4,8,9,14).

Nowadays, increasing the oral disease and global need to preventive and less aggressive treatment plans, lead to return the people to much more safe and conservative methods (4,6,9,15,16).

SP contains several components that each other have essential effect on body and oral health; Sulfur in SP have bactericidal effects (9,17,18), Vitamin C lead the tissues to be healed and cause gingival vessels to be reinforced (3,9,19). Silica role as an abrasive part for remove stains from the tooth surfaces (3,6,9). Tannin content inhibits the glucosyltransferase activity that lead to reduce gingival diseases and reduce plaque accumulation (3,9,19). Resin in SP form a thin layer on enamel that can prevent dental caries (1,9). High concentration of chloride interacts to form dental plaque and help to remove dental stains (3,9). SP have 1.0  $\mu\text{g/g}$  fluoride that could motivate anticariogenic activity in dental tissues (9,20,21). Mildly bitter taste of the chewing sticks could stimulate the saliva and have buffering effects (9,11).

The major and most important etiology for dental and gingival diseases is dental plaque (2). Dental plaque form on the tooth surfaces continuously and should be removed daily by good oral hygiene (10,22). Mechanical removal of the plaque is an essential goal that is a target attempt in many studies (12,20,22).

This study aimed to evaluate the effects of siwak chewing sticks on dental plaque and gingival health.

## Material and Methods

Eighty regular dental patients (40 Male and 40 female) at Dental faculty of Qazvin University of Medical Sciences were accepted to participate in the

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