Antimicrobial, Anti-inflammatory, Analgesic Potential and Cytotoxic Activity of *Salvadora persica* : A Review

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**ABSTRACT**

*Salvadora persica* is a popular teeth cleaning stick throughout the Arabian Peninsula, as well as the wider Muslim world. Also commonly referred to as miswak. *S. persica* exhibited significant antimicrobial activity against both aerobic as well as anaerobic bacteria collected from teeth by different researchers in the various parts of world. Dental plaque is a general term used for the diverse microbial community (predominantly bacteria) found on the tooth surface, embedded in a matrix of polymers of bacterial and salivary origin. Plaque develops naturally on teeth, and forms part of the defense systems of the host by helping to prevent colonization of enamel by exogenous (and often pathogenic) microorganisms (colonization resistance). *S. persica* is found to be a multipurpose plant and possesses several agro-pharmaceutical applications. Toothbrushes prepared from the roots and small branches of *S. persica*, to be highly useful as maintainer of teeth. Plant possess anti-microbial, anti-plaque, aphrodisiac, alexiteric, analgesic, anti-inflammatory, anti-pyretic, astringent, diuretic and bitter stomachic activities. It has great medicinal use in the treatment of nose troubles, piles, scabies, leucoderma, scurvy, gonorrhea, boils and toothache, to treat hook worm, venereal diseases, for teeth cleaning, in rheumatism, cough and asthma, to lower cholesterol plasma levels, reestablishment of the components of gastric mucosa, and as a laxative.

**Keyword:** *Salvadora persica*, A review, Antimicrobial, Anti-inflammatory, analgesic, Cytotoxic.

**INTRODUCTION**

Meswak (*Salvadora persica*) is one of the most commonly used medicinal plants for oral hygiene among global Muslim community. *Salvadora persica* has antiurolithiatic properties. Used for centuries as a natural toothbrush, its fibrous branches have been promoted by the World Health Organization for oral hygiene use. Research suggests that it contains a number of medically beneficial properties including abrasives, antiseptics, astringent, detergents, enzyme inhibitors, and fluoride. Previous studies have reported that *S. persica* extracts were effective against *Streptococcus mutans* and *Streptococcus faecalis*, even using low extract concentrations. Plaque is found preferentially at protected and stagnant surfaces, and these are at the greatest risk of disease. Moreover, the attachment, growth, removal and reattachment of bacteria to the tooth surface are a continuous and dynamic process. Dental plaque, biofilms of microorganisms on tooth surface, plays an important role in the development of caries and periodontal disease.

**Antimicrobial activities**

According to both antimicrobial assays, the aqueous extract inhibited all isolated microorganisms, especially the *Streptococcus* spp., and was more efficient than the methanol extract, which was resisted by *L. acidophilus* and *P. aeruginosa*. In vitro antibacterial effect of miswak pieces without extraction has been found most pronounced on *P. gingivalis*, *A. actinomycetemcomitans*, and *H. influenzae*, less on Strep. mutans, and least on

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L. acidophilus. The antibacterial effect of suspended miswak pieces suggested the presence of volatile active antibacterial compounds.

**Cytotoxic activity**

Both persica and CHX mouthwashes were toxic to macrophage, epithelial, fibroblast, and osteoblast cells in a concentration-dependent manner.

**Tick-repellent properties**

The S. persica, Pistacia, and Juniperus phoenicea were evaluated using host-seeking nymphs of Ixodes ricinus in the laboratory for tick-repellent effects of the essential oils. Significant tick-repellent effects were observed for the oils of all three species, but the duration of action was short.

**Anti-inflammatory and analgesic potential**

The extract of stem of S. persica was reported to possess anti-inflammatory activity.

**ACE-inhibiting ability**

In vitro screening has reported that S. persica possesses high ACE-inhibiting ability.

**Anticonvulsant and sedative potential**

The extracts of S. persica extended sleeping time and decreased induction time induced by sodium pentobarbital; in addition it showed protection against pentylenetetrazol-induced convulsion by increasing the latency period and diminishing the death rate.

**Removal of smear layer and occlusion**

S. persica contains potential antimicrobial anionic components, and the capillary electrophoresis is a convenient method for their identification and quantification.

**CONCLUSION**

S. persica, is widely used in the antimicrobial, cytotoxic activity, anti-inflammatory and analgesic potential. Medicinal plant property of S. persica is due to presence of natural bioactive compounds.

**Ethical Clearance:** In our review, all these major pharmacological activity were complete analysis under the biological department of College of Science for Women in Hillah city.

**REFERENCES**


28. Kadhim MJ, Sosa AA, Hameed IH. Evaluation of


