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# ROLE OF A NATURAL TOOTHPASTE OF HOLISTIC ORAL HEALTH (MISWAK)

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## I NTRODUCTION

Different oral hygiene methods have been used to overcome widely endemic diseases such as dental caries and oral infections. Due to Increasing awareness and expected evolving population; tlae use of safe, effective and economical products have expanded drastically. Both chemical and mechanical ways are beMig used in achieving good oralliygiene. ' However; mechanical cleaning using the toothbrush plays tlae most vital role. The advancement of the modern tooth brushes can be traced back to chewing sticks used by the Babylonians (the Greek and Romans) 7000 years ago. ' The use of miswak becomes very popular in

## STA 'IST CAL ANALYSIS

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### Research Methods

Tiiis research method is qualitative through literatum rind field studies (Dnrmnlnksnna, 2020b). While tire mstiiods applied nre taklirij and syarali lindith (Soetari, 2015). The interpmtalion in this study used an approach witii chemical analysis (lstijabatun, 2008).

In general, there are two stages of research on haditii, namely takhrij and syamli. Taklirij is the prncess of extracting a hadith from a hadith book to examine its validity, while syarah is nn explanation of the liaditii text with a ceilain analysis (Soetari. 2015). The field of chemistry itself, as a means of interpretation in this research, is a bmnch of natuml science that studies the composition, structure, properties, and changes of matter and that it. (lstifabatun. 2008).

## TYPES OF CHEWING STICKS

There are more than 180 plant species that can be used as a natural toothbrush. These species differ from each other on the basis of appearance, scent, texture and taste. Some of the most commonly practiced species are S. pri•sica (Peelu), *Azndii•ncli tn i iirlicn* (Neem), *Olen cii royncn* (Za i toon), *Acncin nt nbicn* (Kikar), *Gli cositiis ¿›ciitnyll I/lln {Dms), Cnyyni is nyliylln* (Khiran). '* Most of these sticks are easily available in different parts of Pakistan, Midd le East and African countries. Arak (S. *ycrsicn)* is the most commonly used miswak in Saudi Arabia while litmus and orange tree are common in West Africa.[7] S. *yci Rica* obtained from Arak tree is the most popular having spongy characteristics and stem that can easily be crushed between teeth. The stick is widely accepted by people around the world due to its pleasant flavor, texture and its effectiveness in maintaining oral hygiene." ""

## HOW TO USE MISWAK EFFECTIVELY?

Miswak has its own unique aspects that must be adapted prior to use for the best results. The functional end of a thin bark piece is striped off followed by chewing. Chewing of miswak separates fibers and giving it a brush like appearance that helps to cleaning the teeth easily. The recommended length for a stick is about 15 cm so that it can easily be grasped along with ease to car ry around, whereas, the diameter is preferred to be <1 cm. "

There are two methods documented to hold the miswak. One is the thee finger grip technique and the other is five finger grip technique [Figure 2a].

## THERAPEUTIC EFFECTS OF MISWAK ON ORAL AND GENERAL HEALTH

### Chemistry of miswak

Different evidences and rcsearc1iei•s have suggested that miswak contains wore than 10 natural occurring constituents essential for maintaining good oral and general health [Table 1]. S. *yer sicn* (miswak) has a number of numerous oral heal th beiiefi ts. Upon chewing, it releases antibacterial extracts and iin proves primary and secondary denta1development.[°°

Table 2 demonstrates different tlaerapeutic effects ofmiswak on the oral cavity. I ts antimicrobial action lowers the proportion of oral caiididiasis in patientswith renal transplant. The antiplasmodial content innsiswak is used to treat nialaria and the seed oil isused for the treatmei3t 0f JOÍnts and skin diseases.[""]Use of miswak is also found to regulate peristalticmovements, lowers hig li-density lipoprotein cliolesterol and improves appetite."-^

## TOOTHPASTE AND MOUTHWASH

The utmost and primary method of plaque removal and to maintain good oral hygiene is to remove plaque mechanically using brushing and flossing. "“ A variety of S. */›ersir-n* toothpastes arc readily availablein the market, i.e., Dentacare Miswak (Saudi Arabia)

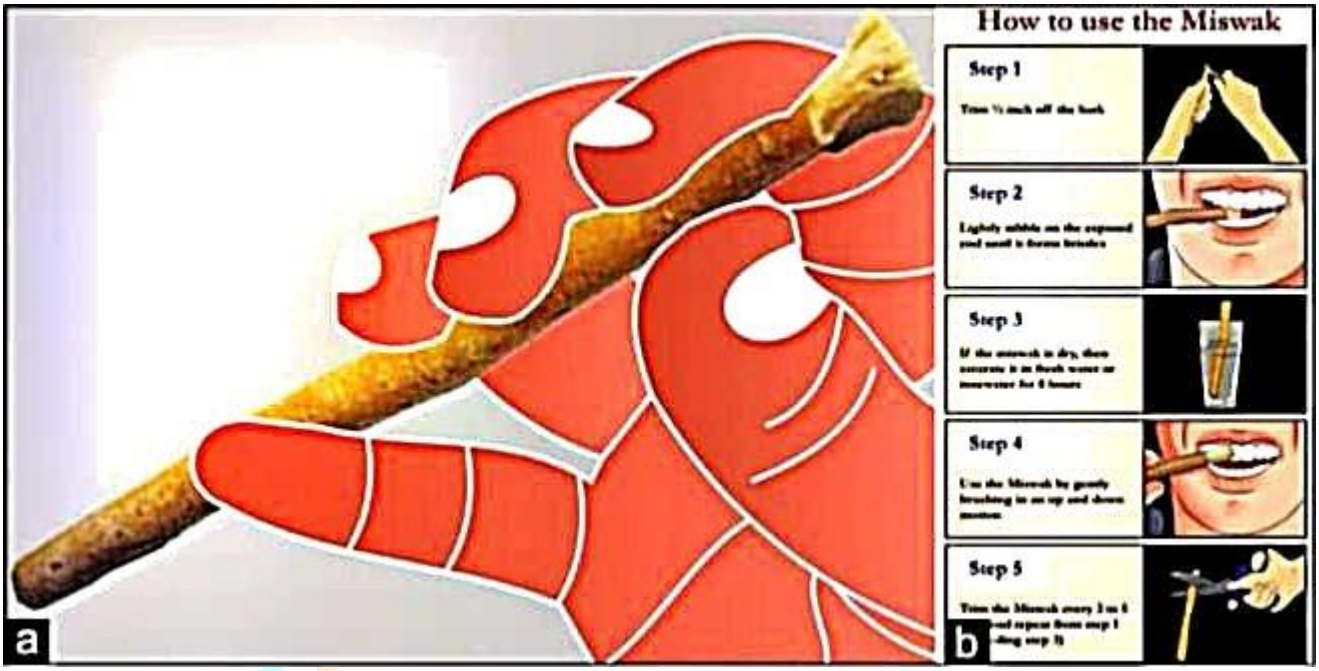


Figure 2: Manipulation of inis x'ak for oral hygiene maintenance, (a) Palin grid fnr Izr›Icting, (h) schematic grusei1tatir›i1 of various s\eds frir using inis vak

ANTIPLAQUE EFFECTS

The main cause of gingivitis and Dther periodontal conditions is the accumulation of bacterial plaque; hence it is of great importance to avoid plaque accumulation and maintaining good oral hygiene. Miswak is practiced by rubbing it on the surface of the teeth and thus is an effective mechanical tool for reducing the level of daily plaque accumul£¥tiDn.^

Table 1: Chemical analysis of various components of miswak *Salvadora persicaj*

| Chemical substance | Reference |
|---|---|
| B-sitosterol and m-anisic acid | [22] |
| Chlorides, salvadora and gypsum; organic such as pyrrolidine, pyrrDle, and piperidine derivatives | [23] |
| Flavonoids, including kaempferol, quercetin,quercetin rutin, and a quercetin glucoside | [24] |
| Glycosides, such as salvadoside and salvadoraside | [25] |
| Sodium bicarbonate | [26] |
| Resin large amounts of salts containing chlorine | [27] |
| Trimethylamine, an alkaloid, chlorides, high amounts of fluoride, silica, sulfur, Vitamin C | [28] |

## ANTIMICROBIAL ACTIVITY

Miswak has becn endowed with the property of ceasinggrowth potential of bacteria causing periodontal disease and dental caries. The antimicrobial effects of miswak is more pronounced against *Eiilcrococciis fnccnlis, Idol ›liyrcnmiins giiiginnli., Acliiiol›ncilliis,* Haeiiic ›liifiis *iiifliiciizn,* S. iiiiitaiis and limited against *Lnctohncilliis!*'!* Furthermore, extracts obtained from the root of miswak have better antimicrobial property compared to miswak from other parts of the tree.'[7] The incidence of caries is notably low in miswak users owing to the presence of a strong antimicrobial thiocyanate agent, accompanied by other chemicals such as sodium cl€oride, potassium chloride, saponin,tanins. '*[5]° The extracts of miswak showed significant reduction in the growth of cariogenic bacteria. *[3] The miswak soaked in 0.1-0.5% NaF solutions help to reduce the cariogenic bacterial count and dental decay. '[2 5]° Fluoride is well known for antimicrobial activates in the oral cavity. ^**

## *SALVADORA PERSICA* AS A POTENTIALFOOD BIO PRESERVATIVE

In recent years, customers have developed extra awareness regarding processed foods. Sy nthetic preservatives in canned and processed foods may lead to hazardous health effects. '[7] Since the roots of S. *yci sicn* contain antimicrobial, antifungal and antioxidant properties, it can be used as a potential food preservative with no side effects. A recent study by Zaid rf aL concluded that adding aq neons extract of S. *prislca* as a naturca1 food preservative in clficken burgers improved the shelf life. The aqueous extract showed the strDn gest il2hibitory effects agaîrist *(Streytococciis iiiitis, Sti'8[JI060Cciis snlinni iii.,*

*S. miitniis, Stnyltylococciis niii sus, Bnc¡llHs siibtilis,*

*I?scii‹toiiioiins* new *‹igiiiosn, Esclici'icliin c l¡, Snliiioiielln hJpliiiiiiiriiim,* alid C. afbicnJis) after 48 la. Based on these results S. ¿irrsira can be recommended as a safe and economical natural food and pharmaceutical preservative [l] however further research is needed on this aspect.

## ANTIFUNGAL EFFECTS

Recent studies have endorsed the fact that *S.* persira has antifungal properties. [r] ecently, Alili cf *nl.* compared antifungal property of solid miswak with grounded miswak particles against different strains of

*Cnndidn.* It was concluded that solid miswak exlfibited strong antifungal property wlJe pulverized iniswak presented no antifungal property.' " Similarly, an in *oittO* study by Naeini ci of. explored that alcohnlic extracts Df S. pcrsicfl showed ontifungal properties against all strains of *Cnndidn* except *Hndidn* porn *S)J0S1S nnd Cml 4!dn lcriisei.* '[0 62] Furthermore, the hexane components in the rDDtS Df miswak was found robust against *Hiididn* alhicuxs and E. *fnecnlis.[*

## CONCLUSIONS

Evidence suggests that S. *yersicn* is a miraculous stick for oral health care along with being a cost-effective solution to improve and maintain good dental care. In certain developing countries where use of toothbrush is still considered expensive, miswak is an ideal alternative oral hygiene tool. Its recommendation is also dependable with the notion of the primary healthcare approaches that focus on prevention, conwnunity participation, and the use Df appropriate technology. Due to its enormous medicinal and therapeutic properties, it is highly commended in oral care but being technique sensitive its method of use and handling must first be adapted for best results. It is permitted to use toothbrush in combination with miswak for superior oral hygiene and more possibilities should be explored to use miswak extracts in moutliwash and roof canal irritants.