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Dental Health Care through Herbal Toothbrushes sticks: a Case Study on Traditional Practices in Rajasthan

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ABSTRACT: It is important that oral hygiene be carried out on a regular basis to enable prevention of dental disease. Chewing sticks are commonly used as oral hygiene tool in various parts of the world. The choice of stick of plants depends largely on traditional preference rather than clinical effectiveness. The most common types of dental disease are gum diseases including gingivitis, tooth decay including cavities. In Rajasthan some plants are used to clean the teeth as chewing sticks. The present investigation is an addition to the knowledge of certain interesting plant species utilised by the local people of the state as toothbrush sticks for dental hygiene.

KEYWORDS: *Acacia nilotica*(L.) Willd. ex Delile, *Azadirachta indica* A. Juss., Chewing sticks, Dental hygiene, *Salvadorapersica* L.

I. INTRODUCTION

Rajasthan is lying between 23°30' and 30° 11' North latitude and 69° 29' and 78° 17' East longitude. Rajasthan is the largest state of India, is located in the north-western region of the country. It is bordered by Pakistan in the west and northwest, the states of Punjab, Uttar Pradesh and Haryana in the north and northeast. The state of Madhya Pradesh lies in the southeast and Gujrat in the southwest.

The Aravallis range divides the Rajasthan state into two parts, thus affecting the vegetation of both portions. The forests vegetations of north-east and south-east Rajasthan are dry deciduous with main arboreal species are *Anogeissus pendula*, *Butea monosperma*, *Acacia nilotica*, *Mitragynaparvifolia*, *Acacia catechu*, *Holoptelea integrifolia*, *Pongamia pinnata*, *Boswellia serrata* etc. The vegetation of desert area is dominantly dry, tropical thorn forest consisting mainly of *Prosopis cineraria*, *Tecomella undulata*, *Salvadora oleoides*, *Salvadorapersica*, *Capparis decidua*, *Acacia senegal*, *Acacia leucophloea*, *Tamarix aphylla*, *Tamarix dioica*, *Ziziphus nummularia*, *Euphorbia caducifolia* etc. In present observation systematic account and significance of toothbrush stick in Rajasthan state are enumerated.

The north-western portion of Rajasthan is generally sandy and dry. Most of this region are covered by the Thar desert which extends into adjoining portions of Pakistan. The Thar desert is thinly populated. The desert has some major districts like Jodhpur, Bikaner, Jaisalmer, Barmer, and Nagour. The climate of the Thar desert is characterised by extremes of temperatures, high wind velocity and low rainfall. The soils of this area are grey brown sandy soil with excessive amount of salts.

The plant parts when used as toothbrush stick manner are commonly referred as the "chewing stick". Their use still continues in the modern time. It is widely known as the chewing stick or natural tooth brush and holds great importance for oral hygiene. Oral hygiene is the practice of keeping one's mouth clean and free of disease and other problems by regular brushing of the teeth. These plants possess antiseptic, antifungal, antibacterial, anti-inflammatory, antiviral properties. There are a long history of the use of plants to improve dental health and promote oral hygiene and is still commonly practiced among many communities. It is inexpensive and easily available in rural areas. Some of the most commonly practiced species as toothbrush stick are *Acacia nilotica* (Baool), *Azadirachta indica* (Neem) and *Salvadorapersica* (Peelu or Jal). These sticks has analgesic, astringent and anti-inflammatory properties and are easily available in different parts of Rajasthan. A review of the general practices and usefulness of chewing sticks in dental hygiene is being presented.



II. RELATED WORKS

Literature survey of floristic work was studying the earlier work done by Duthie (1903-1929), Champion and Seth (1968), Lewis and Elvin-Lewis (1977), Bhandari (1978), Akhtar and Ajmal (1981), Chawla (1983), Joshi (1989), Lewis (1990), Gerrit (1993), Almas and Al-Lafi (1995), Hardie and Ahmad (1995), Tripathi (2002), Wagner and Redford-Badwal (2008), Bairwa, Gupta, Gupta and Srivastava (2012), Ghelot (2013), Zafar (2013) and Sharma (2020).

III. METHODOLOGY

The use of chewing sticks has been documented since ancient times. It has different names in different societies for instance; Neem, Babool and Peelu or Jal. in Rajasthan. The conventional mode of toothbrush stick is used to clean teeth and gums. So keeping all beneficial therapeutic properties of these plant species in view, this review was focused to highlight the available literature of its role in maintaining the oral hygiene and ultimately the potential and safely use as dental remedy. Present observation is based on literature study and field visit of area.

IV. EXPERIMENTAL RESULTS

Acacia nilotica(L.) Willd. ex Delile, *Azadirachta indica* A. Juss. and *Salvadora persica* L. are widely used to provide chewing sticks in the Rajasthan. Present work has documented these plants being used in oral health care as chewing sticks (dantun) by the rural population of Rajasthan. Systematic enumeration, traditional practices, and significance as toothbrush sticks of these plants of area are described in this communication.

1. *Acacia nilotica*(L.) Willd. ex Delile

Common name: Babool

Family: Mimosaceae

Systematic enumeration: Medium sized tree, short trunk and spreading crown, bark rough, fissured, brown to dark grey, stipular spines in pairs, long, white and straight. Leaves bi-pinnate, pinnae 2-11 pairs, leaflets 7-24 pairs, oblong-linear, obtuse. Flowers bright yellow, fruit pods whitish or grey, necklace like. Seeds black-brown, compressed and sub orbicular or oval.

Flowering and Fruiting: August to April.

Locality: Growing throughout the drier regions of India. Most common in open scrub forests and wastelands in whole Rajasthan. Common also in desert area with sandy and alkaline soil.

Significance in dental hygiene: *Acacia nilotica*(L.) Willd. ex Delile uses in oral and dental hygiene, being an astringent agent, its twigs have been used as natural toothbrushes. *Acacia nilotica*(L.) Willd. ex Delile acts as an antiplaque and anti-gingivitis agent for the teeth. This property can be beneficial in the prevention of cavity formation and also provide relief from toothache and bleeding from the gums and swelling.

2. *Azadirachta indica* A. Juss.

Common name: Neem

Family: Meliaceae

Systematic enumeration: An evergreen tall tree, bark furrowed, Leaves alternate, pinnate, leaflets 7-17, falcate, ovate-lanceolate. Flowers in long panicles, axillary, white or pale yellow, slightly sweet scented, pentamerous, fruit drupes smooth, ovoid-oblong, greenish-yellow to yellow. Seeds hard and ellipsoid.

Flowering and Fruiting: December to May.

Locality: Common near the habitations, open areas and wastelands.

Significance in dental hygiene: People in area have been using twigs of the *Azadirachta indica* A. Juss. tree as toothbrushes for many years and have maintained excellent dental health. Toothbrush stick of *Azadirachta indica* A. Juss. is often recommended for relieving toothaches, eliminate bad breath, prevent cavities and improve dental hygiene.

3. *Salvadora persica* L.

Common name: Kharajal, Pilu

Family: Salvadoraceae

Systematic enumeration: Evergreen large shrubs or trees, short trunk, soft whitish wood, bark is of old stems rugose, branches are numerous, drooping, glabrous, terete, finely striate, shining, and almost white. Leaves are smooth greenfleshy, glaucous, ovate-elliptic to lanceolate, often mucronate at the apex, the base is usually acute, less commonly rounded. Flowers are dull yellow in colour, pedicellate, in axillary and terminal compound lax panicles,



numerous in the upper axils, bracts beneath the pedicels, ovate and very caducous. Calyx glabrous, cleft half-way down, lobes rounded. Corolla is very thin, 3 mm long, deeply cleft, persistent, oblong, obtuse, and much reflexed. Stamens exerted, owing to the corolla lobes being reflexed. Fruit drupe is 3 mm in diameter, globose, smooth and becomes red when ripe.

Flowering and fruiting: December to June.

Significance in dental hygiene: The traditional use of *Salvadorapersica* L. as antimicrobial toothbrush stick for oral hygiene and to treat gum inflammation, is an old practice. A chewing stick Meswak is prepared from its stems and roots. However the commonly available Meswak in markets is a root preparation. The Meswak has higher antibacterial activity against oral bacteria.

V. CONCLUSION

The present investigation is an addition to the knowledge of certain interesting plant species utilised by the local people of the state as toothbrush sticks for dental hygiene. Oral hygiene is important for the well-being of whole body. The use of toothbrush sticks for the oral and dental hygiene is well documented. Chewing sticks of *Acacia nilotica* (L.) Willd. ex Delile, *Azadirachta indica* A. Juss. and *Salvadorapersica* L. have been used for centuries for tooth cleaning. It has potential medicinal and research activities. Chewing sticks are used for not only oral hygiene but for religious and social reasons. The use of natural toothbrush can be made more beneficial by proper technique and regular use particularly in rural areas. It is hoped that the present study would help about the general dental health through the toothbrush plant sticks in area.

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