

Enumerations on Medicinal plants used in Dental care and Oral health by Indigenous and Ethnic societies of District Banswara (South Rajasthan), India

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Abstract

District Banswara is located in the extreme south part of Rajasthan. The district having an area of about 5037 square km which is situated between 23°11' and 23°56' north latitude and 73°58" and 74°49" east longitudes. It has a highly varied physiography, from plateau lands to hilly tracts.

A study was conducted to document and enumerate the ethno-medicinal practices used for oral health and hygiene by the tribal and rural people of South Rajasthan (with special reference to District-Banswara). During the survey work tools like questionnaire, personal interview or discussions with traditional healers, local inhabitants, Ayurveda practitioners and botanists were used to gather the information on the use of medicinal plants in oral care. The study identified 13 species of plant belonging to 12 genera and 11 families generally used by the people of the study area to maintain oral health or hygiene or as remedy to care and prevent dental diseases. The study also suggests that the traditional knowledge of oral health may be integrated with modern dental care and practices. Due to lack of involvement and ignorance of new generation, this traditional knowledge of valuable ethno-medicinal practices is gradually becoming out of practice in rural population. So measures should be taken to document them and to increase the awareness especially in the new generation. The study will also be useful for the pharmacologists to isolate the active ingredient of studied plants and incorporate this in allopathic drugs in the modern oral care practices.

Dental care and hygiene of oral cavity is an integral part of health and when it is neglected, it results in different types of oral problems such as dental caries or periodontal

diseases. Oral disorders significantly affected person by causing pain and discomfort and thereby affecting quality of life. Dental calamities are threats to the oral health and it influences individuals, society and increases personal expense of their treatment. Dental diseases are mainly caused by bacterial infections, food habits and ignorance in life style¹⁸. In India, medicinal plants are used from thousands of years as traditional medicine to maintain oral health and hygiene. Most of the plant parts used in their crude forms is alkaline in nature having high antibacterial or antimicrobial activity. The common traditional practice is the use of plant parts specially tender twigs or chewing sticks of *Azadirachta indica*, *Acacia nilotica* instead of plastic-bristle brushes to massage the gums and clean the teeth. Different other parts of plants such as leaves and fibres are also used for periodontal

diseases, cleaning teeth, preventing or treating dental caries or mucosal diseases^{1,4,6-18}.

Banswara district of South Rajasthan has a total land area of 5037 square km situated between 23°11" and 23°56" north latitude and 73°58" and 74°49" east longitudes with varied physiographic, from plateau lands to hilly tracts. The district has 92.90% rural population with 76.38% belonging to tribal community². It receives good rainfall between June and September (Annual Average 1500 mm). It is an excellent treasure of medicinal plants (Fig. 1). The main purpose of the study was to explore and enumerate indigenous knowledge in various dental care and oral health remedies used traditionally by the people of Banswara district.

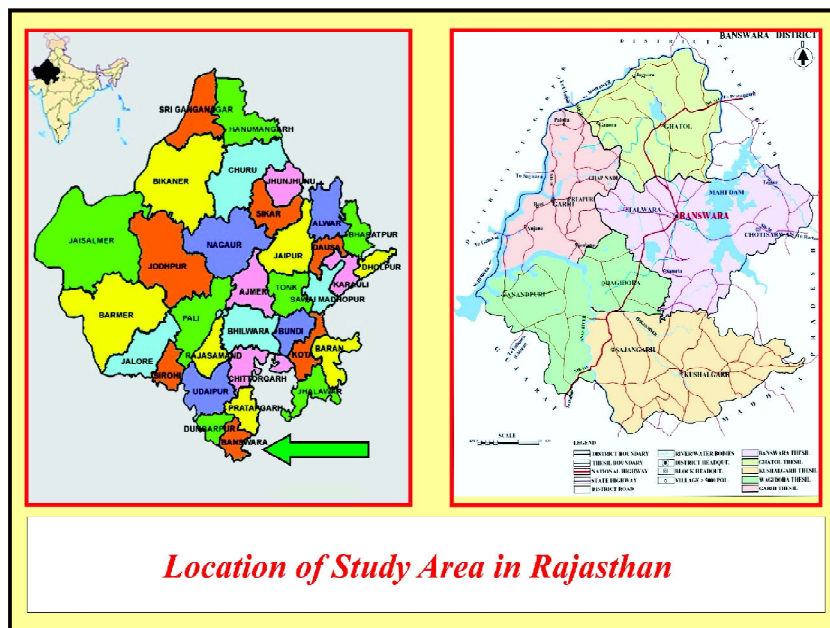


Fig. 1. (<https://www.mapsofindia.com/maps/rajasthan/districts/banswara.htm>)

Table-1: Plants used by indigenous and ethnic society district Banswara as remedy for various oral health-related problems

S. No	Taxon	Family	Local Name	Plant Part used	Mode of Use
1	<i>Azadirachta indica</i> A.Juss. (Fig.1 G)	Meliaceae	Limdo	Leaves, twig or branches,	Twig of tender branch is used as tooth brush for removing the remaining food particles, stinking smell of mouth as mouth wash.
2	<i>Acacia arabica</i> Willd. (Fig.1 A)	Mimosaceae	Babool	Twig, Tender, leaves, Bark	Twig of tender branch is used as tooth brush, decoction of the tender leaves used in Sore-throat, mouth ulcers and in mouth wash; burnt bark of the plant with other components used as crude form of tooth powder
3	<i>Acacia catechu</i> Willd. (Fig.1 B)	Mimosaceae	Khair	Bark Seeds	A small piece of bark is placed in the cavity of aching tooth, used for wounds in mouth or to remove the redness of inner parts of cheeks, Seeds chewed with beetle in mouth ulcers.
4	<i>Carica papaya</i> L. (Fig.1 H)	Caricaceae	Kaakdi	Juice/pulp of leaves	Juice/ pulp applied on affected area of tongue or cheeks
5	<i>Cassia tora</i> L.	Caesalpiniaceae	Puadi	Leaves	Decoction of leaves is used for gargle in tooth problems of children and used in throat congestion
6	<i>Ficus bengalensis</i> L.	Moraceae	Vadlo	Twig	Tender twigs used as tooth brush
7	<i>Jatropha curcas</i> L. (Fig.1 E)	Euphorbiaceae	Ratanjot	Fresh stem	Fresh branch or twig is used as tooth brush
8	<i>Lawsonia inermis</i> L. (Fig.1 F)	Lythraceae	Mehndi	Leaves	Decoction of leaves is used as gargle in ulcers of mouth
9	<i>Mangifera indica</i> L. (Fig.1 C)	Anacardiaceae	Kery	Leaves	Tender leaves are chewed for sensitivity of teeth, swollen gums
10	<i>Psidium guajava</i> L. (Fig.1 I)	Myritaceae	Jaamphal	Leaves	Decoction of leaves are applied locally in mouth ulcers and spongy gums
11	<i>Tamarindus indica</i> L. (Fig.1 D)	Caesalpiaceae	Gorakh-mali	Fruit	Gargle of tamarind fruit water is used in sore throats
12	<i>Tectona grandis</i> L.	Verbenaceae	Hagdo	Wood	A piece of wood applied into aching tooth
13	<i>Terminalia chebula</i> Retz.	Combretaceae	Baheda	Fruits	Fruit pulp mixing with ghee applied on mouth ulcers

For the study an ethno medicinal survey was conducted in between 2014–16 to collect and document the information on the medicinal plants which were used by local people for oral health. About 76 local people, 2 traditional healers, 8 folk practitioners, 2 botanists and few elderly people were interviewed

for this purpose of study the medicinal plants used in oral health and care as tooth and gum disorders. The ethno-medicinal investigation was done systematically by a specific questionnaire (Table-2) and interview which were carried out in local language for the study. One questionnaire was used to collect the



Fig. 2 A. *Acacia arabica* B. *Acacia catechu* C. *Mangifera indica* D. *Tamarindus indica* E. *Jatropha curcas* F. *Lawsonia inermis* G. *Azadirachta indica* H. *Carica papaya* I. *Psidium guajava*

information about the use of a plant species plant parts as leaf, stem, root, flower, fruits, seeds etc. The information was collected to identify the type of use such as routine teeth cleaning, tooth decay, gum diseases, oral mucosal diseases etc. The preparations of herbal formulations, their mode of action and their administration were also recorded. The

documents collected arranged alphabetically of their scientific names, family, local name, parts used, medicinal use, mode of preparation and administration in oral cavity (Table-1).

Various plants used as remedy for various oral health problems are enumerated in table-1. Photographs of some of these plants are shown in Fig. 2.

Table-2. Format of a questionnaire used in the survey of plants used for oral health issues

QUESTIONNAIRE					
Name of the Survey Area (Name of Tehsil/Village in District Banswara) -----					
Date of survey -----					
Name and address of respondent -----					
Age of respondent -----					
Sex -----					
Educational qualification, if any -----					
Local name of the plant -----					
Plant part and mode of use -----					
Plant part used	Mode of Use				
	Routine teeth cleaning	Tooth pain	Gum problems	Oral injuries	Others/ remarks
Stem					
Root					
Seed					
Flower					
Leaf					
Fruit					
Other parts					
Method of use as paste/poultice/decoction/aqueous extracts/ single or combinations -----					
Mode of administration or apply -----					
Precaution during treatment -----					
Special comments, if any -----					

Dental care and hygiene are one of the most important problems of public health throughout the world. The problems of oral cavity are mostly caused by the bacterial infections. Due to the occurrence of bioactive compounds or antibacterial activities, medicinal plants can be used to prevent and cure oral ailments plaque, dental caries, sore throat, mouth ulcers and other dental problems caused by the infection of microorganisms.

Ethnomedicinal knowledge has been built-up due to untiring efforts and personal experimentation of our ancestors. It is as reported that 35 plants belonging to 26 families used to treat different oral ailments⁵. Bhil of Rajasthan widely used *Jatropha* species for routine oral hygiene practices and to treat dental caries^{4,17}.

In the present study information on 13 species belonging to 12 genera and 11 families are included that are traditionally used by the local inhabitants of district Banswara of South Rajasthan for the purpose of oral health and dental care. During the study it was found that young twigs, young branches or even young stem of various plant species such as *Azadirachta indica*, *Acacia arabica*, *Ficus bengalensis*, *Jatropha curcas*, *Mangifera indica* were extensively used as 'chewing sticks' for cleaning of teeth as tooth brush and massage of the gums which heals bleeding gums or spongy gum. The leaves rolled and chewed to make it soft and fibrous or sometime an infusion of the leaf extract with saliva are used for cleaning of mouth, dental plaque, inner part of cheek and inner part of tongue. The fibrous leaf or stem bark were also used to rub on the teeth and gum with the help of finger for cleansing and massaging the gums. The

leaves of *Cassia tora*, *Jatropha curcas*, *Lawsonia innermis*, *Mangifera indica*, and *Psidium guajava* are chewed or extract may be applied directly or decoction used in treating oral ailments. Seeds of *Acacia catechu* are eaten along with beetle leaves, cardamom, clove etc. which reduce bacterial load in oral cavity¹⁵. Similar studies has been reported throughout India especially from Karnataka⁵, Rajasthan^{4,9,10,13,16,17}. Madhya Pradesh, Arunachal Pradesh¹⁴ Kannada^{11,12} and by various ethno-botanists.

It is a very serious issue that the indigenous knowledge is likely to vanish soon, as many of these dental and oral remedies by various plant species are followed only in few rural areas or ethnic groups. New generation lacks the knowledge of such plant species of medicinal value that are used for the treatment of various oral problems and they don't have knowledge of their identification, collection, preservation and processing. This study also suggests research and development of such significant natural antibacterial compounds present in the above discussed plant species, which are safe for the host. The active principles of these plants should be incorporated into modern healthcare practices for easier and cheaper oral health treatments.

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