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Folklore Herbal Remedies Used in Dental Care in Northern India and Their Pharmacological Potential

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ABSTRACT

Objective: The aim of the work was to carry out an ethnopharmacological survey of plants used by trado-medical practitioners (TMPs) and villagers in interior parts of northern India for various diseases of teeth and in dental care.

Methods: A survey was conducted about medicinal plants used by these traditional healers in different regions of northern India specially Himachal Pradesh (Shimla, Dharamshala, Kangra, Mandi, Kullu, Manali), Rajasthan (Churu, SriGanganagar, Hanumangarh), Punjab (Sangrur, Ludhiana, Bhatinda, Patiala, Ferozepur, Faridkot), Haryana (Hissar, Jind, Panchkula) and Uttar Pradesh (Agra, Meerut, Moradabad, Mathura) for the treatment of various dental problems. This manuscript is a compilation of herbs being used in folklore medicine by villagers in interior parts of northern India for various diseases of teeth and in dental care. The authors have also tried to collate the pharmacological potentials of these medicinal plants.

Results: Results obtained showed that usage of herbs in dental disorders was maximum in Himachal Pardesh with almost 45 different plants being used by the local people for different disorders. The awareness of usage of plants for dental disorders was very less in Punjab and Haryana. In contrast out of the number of plants given below, a maximum number of 65 plants were present in Punjab and Haryana states.

Conclusion: Even though the efficacy of the remedies alluded to by the respondents cannot be claimed to be exact, the people used more herbal medicine than orthodox. This survey provides a template for dental scientists for further screening and research on these plants and formulates new drugs for dental disorders.

Keywords- Oral hygiene, Mouthwashes, Dentifrices, Herbal remedies.

INTRODUCTION

The oral cavity contains various important organs and since the oral cavity plays various roles with the various parts inside it, it becomes important to take the best care of it using the effective materials and methods making the best use of the resources that are available for oral hygiene[1,2].

The major teeth problems associated with adults are: Plaque, Tartar, Tooth decay, Gingivitis, Periodontal disease (Periodontitis)[3]. Periodontal diseases affect the tissues surrounding the teeth. Gingivitis, the mildest form of periodontal disease, is generally caused by insufficient oral hygiene. Inadequate oral hygiene can lead to plaque buildup. A variety of triggering factors like bacterial infection can lead to gingivitis. Salivary secretion has an additive effect to these causative factors in causing gingivitis[4]. Plaque-induced gingivitis is one of the most frequent periodontal diseases, affecting more than 90% of the population, regardless of age, sex or race. However, the inability of the normal adult population to perform adequate tooth brushing has led to the search for chemotherapeutic agents in order to improve plaque control[5]. Tooth brushing with toothpaste is the most widely practiced form of oral hygiene in most countries[6]. Twice daily brushing has significantly declined dental caries. Dental plaque is a bio-film on the tooth surface that plays an important role in the development of caries and periodontal diseases[7]. While the mechanical removal of plaque on caries per se is equivocal, the maintenance of an effective plaque control program is the cornerstone of any attempt to prevent and control periodontal diseases[8]. A wide range of chemicals, mainly antimicrobial agents, have been added to toothpastes in order to produce a direct inhibitory effect on plaque formation[6,9]. These chemicals, mainly Triclosan and chlorhexidine, have been used as mouth rinses or added to dentifrices to avoid plaque formation and development of gingivitis[5,10-12]. As some of these substances may have undesirable side effects, such as tooth staining and taste alteration, phytotherapeutic agents with antimicrobial and anti-inflammatory properties have been investigated[13-15].

Ethno-medico-botany is one of the tools that deal with the direct relationship of plants and men to prevent and cure ailments[16]. There is a long and venerable history of the use of plants to improve dental health and promote oral hygiene[17]. There are many natural ways and herbs to treat dental disease like inflammation and infection some of which even help in prevention. A Saudi Arabian study compared the effect of miswak or tooth brushing on plaque removal and dental health reflecting a better efficacy through miswak[18].

It is worthwhile to find out plant based good alternatives for better dental care. It is important to know about folklore claims being used by different vaids, hakims, traditional healers and local practitioners. The purpose of this communication is to put all the herbs being used as folklore medicine by people in remote areas at a single platform so as to enable the dental scientists to explore and formulate new drugs for dental disorders.

MATERIAL AND METHODS

There is a scarcity of dental practitioners all over the country particularly in the rural and remote areas. A number of plants are used in the tribal medicine for the treatment of various dental ailments. So a folklore survey was taken up to identify the plants of medicinal importance available in mainly four states of northern India.

A Field survey was conducted in cultivation lands during 2010-2014 in and around district head quarters and discussion with the agriculturists, local medical practitioners, vaids, hakims and traditional healers were held for use of herbs in various

disorders. Information regarding these plants was recorded. The information procured was validated by comparing the information given by two or three people. The medicinal uses of these plants were recorded from the folk lore claims and the standard literature of the Indian systems of medicine. An effort has been made to highlight the traditional use of the part of the plant used so as to enable the scientists in this field to get the information of the herbs actively used in the dental disease treatment and general care at a single platform.

The medicinal uses of these plants used in the Indian system of medicine are enumerated as in Table 1.

RESULT AND DISCUSSION

The folklore survey was done in various districts in Himachal Pradesh (Shimla, Dharamshala, Kangra, Mandi, Kullu, Manali,) Rajasthan (Churu, SriGanganagar, Hanumangarh), Punjab (Sangrur, Ludhiana, Bhatinda, Patiala, Ferozepur, Faridkot), Haryana (Hissar, Jind, Panchkula) and in Uttar Pradesh (Agra, Meerut, Moradabad, Mathura). It was observed that usage of herbs in dental disorders was maximum in Himachal Pardesh with almost 45 different plants being used by the local people for different disorders. The awareness of usage of plants for dental disorders was very less in Punjab and Haryana whereas it was maximum in Himachal Pardesh. In contrast out of the number of plants given below, a maximum number of 65 plants were present in Punjab and Haryana states. The list of the plants with Botanical name, family, common name, medicinal uses of dental importance (Ayurveda and Siddha) and useful parts is mentioned in the alphabetical order of the botanical name of the plants. The list of plants used in various dental problems are listed in table 1.

CONCLUSION

Plants contain phytochemical such as alkaloids, tannins, essential oils and flavonoids which have pronounced antimicrobial activity. From the survey it becomes evident there are a number of plants which have got active constituents for anti-inflammatory activity, astringent activity, antimicrobial activity and analgesic property. This underlies the use of these plants since to improve oral hygiene and prevent tooth decay, gum disease and periodontitis. The miswak or chewing stick is an underestimated tool for dental hygiene which is only beginning to be explored in controlled clinical studies. So this survey may help the researchers to explore these medicinal plants for further clinical research.

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Conflict of interest

NIL.

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Table 1. List of plant used in various dental problems

Sr. No	Plant name (Common name)	Family	Uses	Part used
1.	*Abuta grandifolia* (Mart.) Sandwith (Abota)	Menispermaceae	Toothache	Leaves, bark, Stems & roots
2.	*Acacia modesta* Wall. (India phulai)	Mimosaceae	To clean teeth	Twig & Stem
3.	*Acacia nilotica* (L.) Delile (Egyptian Acacia)	Mimosoideae	Swollen gum (gingivitis)	Bark
4.	*Acalypha indica* L. (Indian copperleaf)	Euphorbiaceae	Toothache	Whole plant
5.	*Achyranthes aspera* L. (Devil's horsewhip)	Amaranthaceae	Toothache	Leaves and roots
6.	*Adansonia digitata* L. (Baobab)	Bombacaceae	Toothache	Bark
7.	*Alchornea cordifolia* Müll.Arg (Lporuru)	Euphorbiaceae	Toothache	Whole plant
8.	*Allium sativum* L. (Ajo)	Liliaceae	Toothache	Bulb
9.	*Aloe ferox* Mill. (Aloe)	Liliaceae	Toothache	Leaves
10.	*Aloe vera* (L.) Burm.f. (Indian Aloe)	Asphodelaceae	Gingivitis & plaque	Whole plant
11.	*Anacardiun occidentlae* L. (Acajuba occidentalis)	Anacardiaceae	Toothache, Sore gum	Whole plant
12.	*Annona senegalensis* Pers. (Wild custard apple)	Annonaceae	Toothache	Bark
13.	*Argemone maxicana* Linn. (Mexican poppy)	Papaverceae	Toothache and carriage	Seeds
14.	*Aristolochia Guentheri* O.C. Schmidt (Zaragosa)	Aristolacaceae	Toothache	Stem
15.	*Azadiarchta indica* A.Juss. (Neem)	Meliaceae	Toothache	Whole plant
16.	*Baptisia australis* (L.)R. Br. (Blue Wild Indigo)	Fabaceae	Toothache	Root
17.	*Blighia sapida* K.D.Koenig (Akee)	Sapindaceae	Mouth ulcer	Whole plant
18.	*Borassus flabillifer* Linn. (Panai)	Arecaceae	Toothache	Root, Young Rachis
19.	*Bridelia ferruginea* Benth. (Kizni)	Euphorbiaceae	Mouth rashes	Whole plant
20.	*Brugmansia aurea* Lagerheim (Floripondio)	Solanaceae	Toothache	Flowers
21.	*Cajanus cajan* (linn.) Millsp. (Thuvarai)	Fabaceae	Gingivitis	Leaves, stem, seeds
22.	*Calotropis gigantea* (L) R.Br. (Akon)	Asclepidaceae	Toothache	Roots
23.	*Capparis spinosa* L. (Caper bush)	Capparaceae	Toothache	Root bark

24.	*Cassia occidentalis* L. (Fedegoso)	Leguminosae	Toothache	Leaves
25.	*Cinnamomum camphora* L. (Camphor tree)	Lauraceae	Toothache, Gum swelling	Leaves and branches
26.	*Curcuma longa* Linn. (Turmeric)	Zingaberaceae	Toothache, Gingivitis	Rhizomes
27.	*Cleome chelidonii* Linn.f. (Perunaikaduku)	Cleomaceae	Gingivitis	Whole plant
28.	*Clitoria ternatea* L. (Butterfly pea)	Fabeaceae	Toothache	Roots
29.	*Cocos nucifera* Linn. (Coconut palm)	Arecaceae	Toothache	Fruits
30.	*Cornus florida* L. (Dogwood tree)	Cornaceae	To clean teeth	Stem
31.	*Croton Menthodorus* Benth. (Chala)	Euphorbiaceae	Toothache	Seeds, leaves
32.	*Datura stramonium* Linn. (Dhatura)	Solanaceae	Toothache	Roots
33.	*Dialium guineense* Wild. (Velvet tamarind)	Leguminosae	Toothache	Root
34.	*Ekebergia senegalensis* A Juss. (Cape ash)	Meliaceae	Toothache	Leaves
35.	*Eruca sativa* Miller (Rocket)	Cruciferae	Toothache	Leaves
36.	*Erythrina lysistemon* Hutch. (Coral tree)	Fabaceae	Toothache	Bark
37.	*Eucalyptus globulus* Labill. (Blue Gum)	Myrtaceae	Gum bleeding	Whole plant
38.	*Euclea divinorum* Hiern (Magic gwarra)	Ebenaceae	Toothache	Bark, Leaves
39.	*Euclea natalensis* A.DC. (Large-leaved guarri)	Ebenaceae	Toothache	Leaves
40.	*Eucleapseudebenus* E. Meyer ex A.DC. (Black ebony)	Ebenaceae	To clean teeth	Root
41.	*Fagonia cretica* L. (Cretan prickly clover)	Zygophyllaceae	Toothache	Whole plant
42.	*Ferula assafoetida* Linn. (Heeng)	Apeaceae	Dental carries	Gum resin
43.	*Ficus insipid* Willd. (Oje)	Moraceae	Toothache	Latex
44.	*Ficus bengalensis* L. (Indian fig)	Moraceae	Toothache	Plant juice
45.	*Flacourtia flavescens* Wild. (Niger plum)	Flacourtiaceae	Toothache	Root
46.	*Garcinia cola* Heckel. (Bitter kola)	Guttiferae	To clean teeth	Root

47.	*Jasminum arborescens* Roxb. (Chameli)	Oleaceae	Mouth rashes	Leaves
48.	*Jasminum officinale* L. (Jasmine)	Oleaceae	Mouth rashes	Flower
49.	*Jatropha curcas* Linn. (Arandi)	Euphorbiaceae	Pyorrhoea	Fruit
50.	*Juglan regia* Linn. (Akhrot)	Juglandaceae	To clean teeth	Bark
51.	*Justicia adhatoda* L. (Malabar Nut)	Acanthaceae	Pyorrhoea	Leaves
52.	*Kleinia longiflora* DC (Sambokbossie)	Asteraceae	Toothache	Stem
53.	*Licopersicon esculentum* Mill. (Tamater)	Solanaceae	Mouth rashes	Fruit
54.	*Lophira alata* Banks ex C.F.Gaertn (Bongossi)	Ochnaceae	Toothache	Bark
55.	*Mangifera indica* L. (Mango)	Anacardiaceae	Sore gum	Whole plant
56.	*Micromeria biflora* Benth. (English lavender)	Labiate	Toothache	Root
57.	*Milicia excels* (Welw.) C.C. Berg (African-teak)	Moraceae	Toothache	Bark
58.	*Musanga cecropioides* R. Br. (Umbrella tree)	Cecropiaceae	Toothache	Bark
59.	*Myrothamnusuifolius* Wblw. (Resurrection bush)	Myrothamnaceae	Gum inflamation	Leaves
60.	*Nicotiana tabacum* L. (Tobaco)	Solanaceae	Toothache	Leaves
61.	*Ocimum sanctum* Linn. (Tulsi)	Lamiaceae	Mouth sores	Leaves
62.	*Olax subscorpoidea* Oliv. (Akan-Brong)	Olacaceae	Toothache	Whole plant
63.	*Olea ferruginea* Royle (Wild Olive)	Oleaceae	Toothache	Fruits
64.	*Origanum vulgare* L. (Oregano)	Labiateae	Toothache	Whole plant oil
65.	*Orthanthera albida* Schinz. (Ana tree)	Asclepiadaceae	To clean teeth	Stem
66.	*Palisota hirsute* (Thunb.) K. Schum. (Akan-Asante)	Commelinaceae	Toothache	Stem, leaves
67.	*Parinari curatellifolia* Planch.Ex Benth (Cork tree)	Chrysobalanceae	Toothache	Bark
68.	*Phylla dulcis* (Trev.) Mold (Aztec Sweet Herb)	Verbenaceae	Tooth decay	Leaves

69.	*Polyalthia suaveolens* Engl. & Diels (Annickia)	Annonaceae	Toothache	Fruits, roots and leaves
70.	*Punica granatum* Linn. (Anar)	Puniaceae	Mouth sores	Fruit covers
71.	*Ricinus communis* L. (Castor bean)	Euphorbiaceae	Toothache	Seeds
72.	*Saccharum officinarum* L. (Sugar cane)	Graminaceae	Strengthens the teeth.	Whole plant
73.	*Salvadora Persica* L. (Tooth brush tree)	Salvadoraceae	Tooth decay	Whole plant
74.	*Salvia campanulata* Wall. (Kokai)	Lamiaceae	Toothache	Whole plant
75.	*Salvia officinalis* L. (Sage)	Lamiaceae	Sore gums	Whole plant
76.	*Sanguinaria canadensis* L. (Blood root)	Papaveraceae	Tooth lose	Whole plant
77.	*Scoparia dulcis* Linn. (Sarkaraivembu)	Scrophulariaceae	Toothache	Leaves
78.	*Solanum incanum* L. (Thorn Apple)	Solanaceae	Toothache	Root
79.	*Solanum panduriforme* E.Mey. (Yellow Bitter-apple)	Solanaceae	Toothache	Roots
80.	*Spathodia campanulata* Pal. (African tulip)	Bignoniaceae	Toothache	Bark
81.	*Spilanthes americana* Hieron (Botoncillo)	Asteraceae	Toothache	Whole palnt
82.	*Syzygium aromaticum* (L.)Merr. (Clove)	Myrtaceae	Toothache	Whole plant
83.	*Vitis vinifera* L. (Grape vine)	Vitaceae	To clean teeth	Plant ash
84.	*Xanthium spinosum* L. (Amor seco)	Asteraceae	Toothache	Fruits, leaves, roots
85.	*Zanthoxylum alatum* D.C. (Timur)	Rutaceae	To clean teeth	Twigs
86.	*Zanthoxylum zanthoxyloides* (Lam.) Zeprm. (Candlewood Tree)	Rutaceae	Toothache	Whole plant
87.	*Ziziphus mauritiana* Lam. (Ber)	Rahamnaceae	Dental carries	Root