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ORIGINAL ARTICLE

Ethnobotanical Reports about Few Important Diseases from Akole Tehasil of Ahmednagar District (MS) India

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ABSTRACT

Present paper reports some of the ethnobotanical claims from Akole tehasil of Ahmednagar District. It is located in Western Ghats of Maharashtra State with high floristic diversity. The communities like Mahadev Koli, Thakar, Ramoshi, Bhils inhabiting in study area were interviewed during the study. During the ethnobotanical exploration (2006-2008), observations on the four important ailments like jaundice, asthma, mouth ulcer and teeth disorders among the tribal communities were recorded. Due to strong belief in traditional system of medicine, people still prefer to use herbal medicines prescribed by local healers. A total of 71 species of angiosperms belonging to 40 families have been reported from the study area to cure these diseases. Botanical names along with family name, herbarium number, local name, mode of administration with dosage for above mentioned diseases are included in the paper.

Key Words: Ethnomedicine, tribal communities, Akole tehasil

INTRODUCTION

From immemorial times, man has been dependent upon nature for survival. This dependency led the aboriginal people living in harmony with nature to evolve a unique system of knowledge about plant wealth by trial and error methods [1]. Traditionally, this treasure of knowledge passed orally from generation to generation without any written document [2, 3], and is still retained by various indigenous people of the world.

The world health organization estimates that about 80% of the world's population relies mainly on herbal medicine for primary health care [4, 5]. People in countries like Ghana, Mali, Nigeria and Zambia of Africa; India and China of Asia and various Latin American countries mostly use traditional medicine for primary health care needs [6]. In China, traditional medicine is largely based on around 5000 plants, whereas about 1600 species are employed as medicine by the natives of north-west Amazonia [7]. Ethnobotanical studies have brought to light numerous plants having significant medicinal properties which were earlier unknown to scientific world [8-12]. Today many drugs that are in markets have come to us from folk use and use of indigenous communities [13].

The history of herbal medicine of India is very old, perhaps the oldest use of plants have been documented in ancient Hindu Scriptures like Rigveda (4500-1600BC), Charak Samhita (1000-800BC), Sushrut Samhita (800-700 BC) and others. Though, about 2000 plant species are reported to be used for medicinal purposes in Indian subcontinent, but 500 species are commonly employed in different indigenous systems of medicine prevailing in the country [14]. Indian subcontinent is being inhabited by over 53.8 million tribal people in 5000 forest dominated villages of tribal community and comprising 15% of the total geographical area of Indian landmasses, representing one of the greatest emporia of ethno-botanical wealth [15].

The Western Ghats of Maharashtra covers an area of 52,000 km² [16]. Ahmednagar district is one of the ten districts of Western Ghats region. This district covers an area of 17,035 km² and lies between 73°9' to 75°5' E and 18°2' to 19°9' N. The area under study, hamlets/villages of Akole tehasil which is one of the 14th tehasil of Ahmednagar district and run parallel to the western coast, called Sahyadris.

Forest type is of sub-tropical hill forest and the vegetation is stunted and typical evergreen patches are seen. The vegetation is represented by deciduous species in the foot hill, gradually changes to mixed and semi-evergreen upwards [17]. The work done on this area as a part of floristic study [18, 19]. Some of the ethnobotanical work on the Mahadeokali tribe of Western ghats was carried out [20-25]. There have been also a few reports on ethnobotanical survey on the district [26-28]. The tribal population in the tehsil of this district is relatively large. Therefore, the scope for ethnomedicine or ethnobotany is generally higher. Thus, the present study aims at documenting plants and plant parts used exclusively for the management of Jaundice, asthma, oral ulcer and toothache.

MATERIALS AND METHODS

Description of the study area

The study area is concentrated around the forest areas of Akole tehsil located in Ahmednagar district of Maharashtra state is included in Western Ghats (Fig. 1). Its an area of about 800m in height above the mean sea level and situated at 19°15'N-74°20'E. It has many striking hill ranges such as Kalsubai (1646 m), Harishchandragad (1424 m), Ratangad (1297 m), Kulang (1470 m), Ajoba dongar (1375 m) and many other peaks. The maximum temperature of this tehsil is about 35° - 41°C and minimum of 4° - 15°C. The average rainfall is 508.9 mm; some of the areas like Ghatgar and Bhadardara of Akole receiving highest rain i.e. 2000-3000 mm of rain every year. There are includes 150508 hector land, having agriculture land 98712 and remaining 41698 hectors land is under forest. The total population of all the 191 villages is 191 2 71 719 [29]

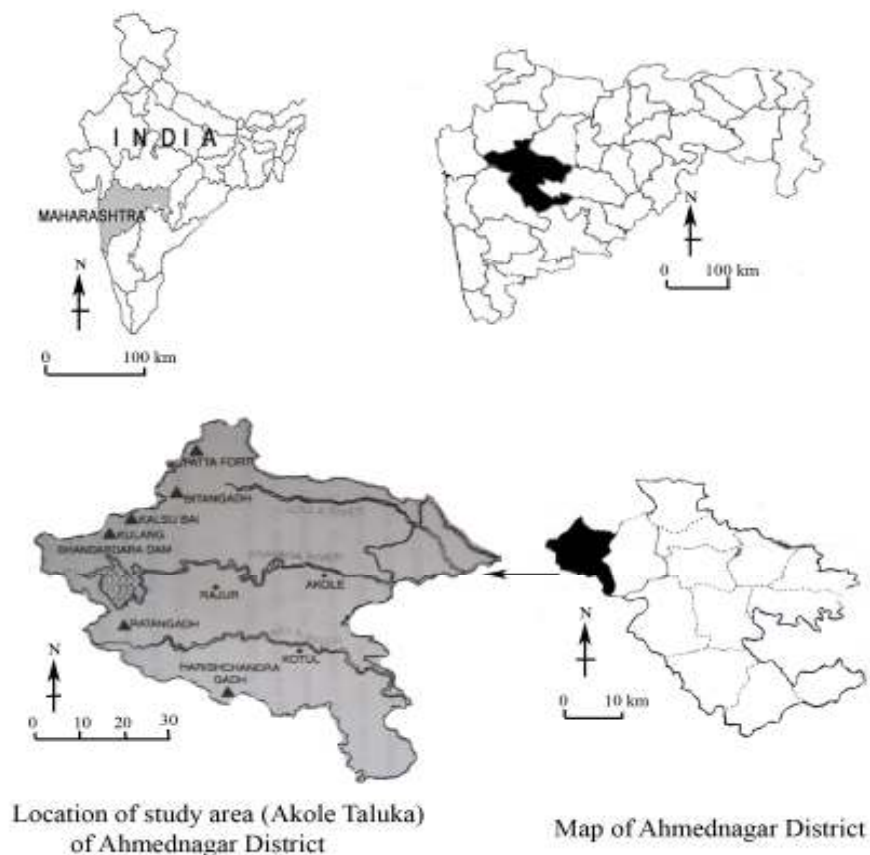


Fig. 1. Location of study area

Tribal Peoples

The country possesses a total of 427 tribal communities [30]. About 47 tribes are found in Maharashtra state, out of which the Thakars, Mahadevkoli, Bhills and Ramoshies are hilly tribal group of Akole tehasil [19]. Most of them celebrate Hindu festivals. They wear langoti i.e. a short waist cloth or a dhoti, bandi or a kopri and a pheta on the head. Women wear lugdi/saree and bodice. They speak dialects of the Marathi language and live in villages called Vadis. Their houses are built up of baked earth and tiled roofs; huts made of mud walls or Karvi (*Carvia callosa*) sticks and plastered with clay and cow-dung. Their huts are without windows and their major occupation is agriculture. Rice, black sesame and Finger millet are some of the crops they cultivate. Tribal's food is mainly cooked rice, pulses, curry and Nagali (*Elucine coracana*) or bajra bhakari (*Pennisetum typhoides*). They also eat meat of certain animals like Rabbits, Crabs, and Wild pigs. Some of them drink liquor made from the flowers of *Madhuka longifolia*.

Survey methodology

The fieldwork was conducted in several villages around Akole tehasil of Ahmednagar district during 2006 to 2008. The frequent visits were undertaken in villages like, Ghatghar, Murshet, Bari, Ratanwadi, Panjare, Udadavane etc. A total of 14 villages were visited during the study. During the stay, their daily activities were closely observed and interpersonal contacts were established by participating in several of their social and religious ceremonies such as marriages, rituals and curing sessions. 26 informants (24 males and 2 females) were recognized as herbalist healers, by many other villagers so they were selected as informants, between the ages of 37 to 75 in the study area. Among these 14 were from Mahadev koli and 8 from Thakar tribe.

Interviews with tribal practitioners

Ethnobotanical data was collected according to the methodology [31]. The data (local name, mode of preparation, medicinal uses) was collected through questionnaire, interviews and discussions among the tribal practitioners in their local language. The questionnaire, such as part of the plant used, medicinal uses, detailed information about mode of preparation (i.e., decoction, paste, powder and juice), and form of usage either fresh or dried and mixtures of other plants used as ingredients. Most of the time, the field visits with the traditional healers were made to observe and collect medicinal plant species reported. Interviews were designed to concentrate on few important diseases like jaundice asthma, oral ulcer, toothache and. Information related to these specific diseases and plants used by tribal community to cure these diseases were collected.

Voucher specimen of each medicinal plants species were collected during the field visits. The collected species were then dried and preserved following the technique [32]. The specimens were identified using fresh as well as herbarium materials with help of Floras [18, 19, 33-35], to ascertain the nomenclature. Specimens were deposited in herbarium of P.G. Department of Botany Sangamner College Sangamner.

RESULTS AND DISCUSSIONS

The time tested use of plants for various ailments, practiced generation after generation is a true testimony for the efficacy of drugs [36]. The study recorded a total of 71 species belonging to 40 families, of these 28 herbs, 10 shrubs, 28 trees and 5 species are climbers (Fig. 2). There are 9 species which have multiple uses towards four common diseases. For each species botanical name, family, herbarium number, local name, parts used methods of preparation and administration was discussed in detail (Table 1- 4). The study was concentrated on four important diseases like jaundice, asthma, oral ulcer and toothache. Out of 40 families 6 families were belongs to monocotyledon and remaining 35 families were dicotyledons. In dicot, the dominant families were Euphorbiaceae (6 species), Lamiaceae (5 species) followed by Papilionaceae and Caesalpinaceae (3 species) each; whereas in monocots, Liliaceae (3 species) and Menispermaceae (2 species) were recorded. The plant parts used were roots, leaves, fruits, barks, seeds and sometime whole plants (Fig. 3) against jaundice, asthma, toothache and mouth ulcer. The frequently used parts were root followed by leaves. The method of preparation fall into categories like plant parts applied as paste, juice extracted from the fresh plant parts, decoction and external and internal consumption were involved in the treatment of all four diseases.

In the course of this survey, some 23 taxa of medicinal plants were collected and identified (Table No.1) in the treatment of jaundice. Among the 23 species used against jaundice 7 were herbs, 3 shrubs

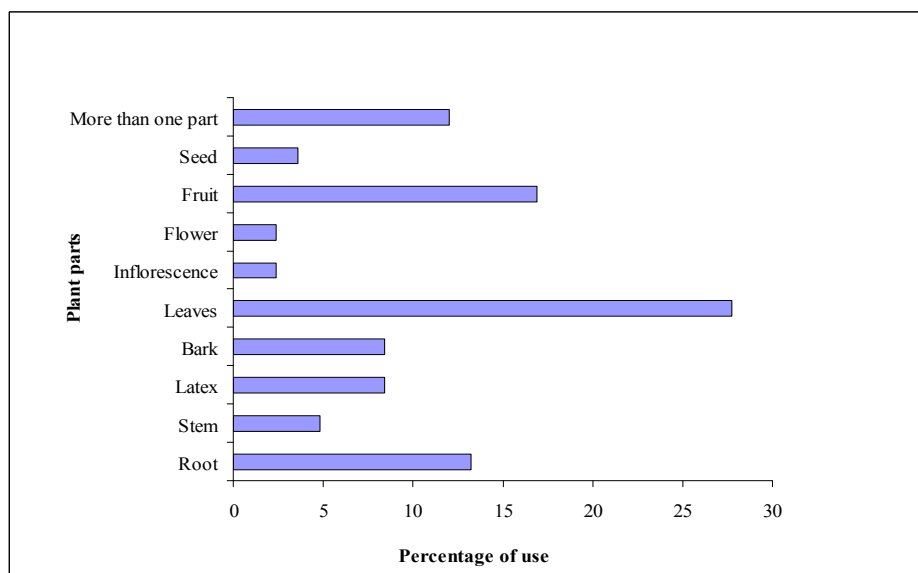


Fig.2 Plant parts used

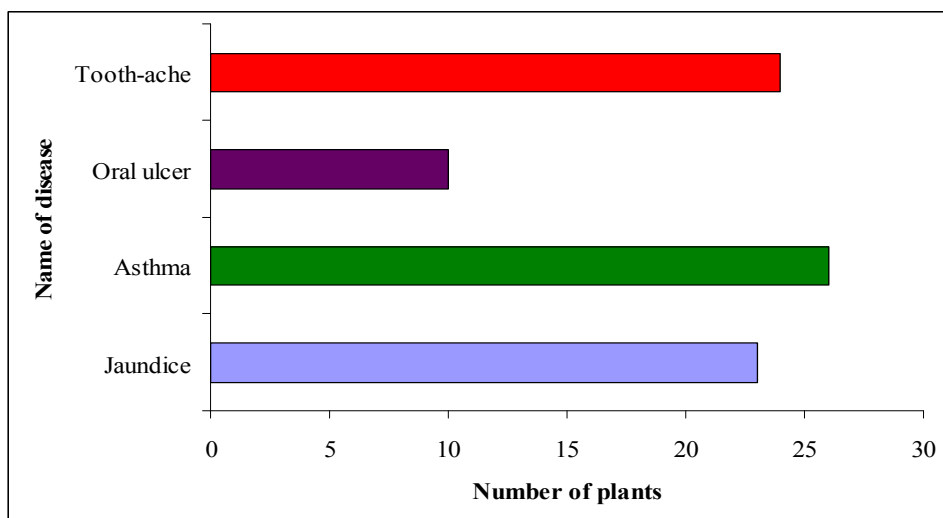


Fig 3: Various plants used in different diseases

2, climbers and 11 trees. The plant parts used ranged from root leaves stem bark, fruits, rhizome, and seed; in some cases whole plants were used. The medicines were prepared in the form of decoction, juice, powder and water extracts.

In our study we have compared our ethnobotanical data with the data present in Indian literature. *Aegel marmelos*, *Azadirachta indica*, *Costus speciosus*, *Emblca officinalis*, *Ficus racemosa*, *Ficus religiosa*, *Hemidesmus indicus*, *Holarrhena pubescence*, *Luffa acutangula* var. *amara*, *Mangifera indica* *Plumbago zeylanica*, *Ricinus communis*, *Rubia cordifolia*, *Sphaeranthus indicus*, *Terminalia chebula*, *Tinospora cordifolia*, *Urginea indica*, and *Zizypus jujube* are found to be new in the literature of Indian medicinal plants. The use of *Argemone mexicana* [37-39, 27], *Azadirachta indica* [40], *Boerrhavia diffusa* [37, 41, 42], *Costus speciosus* [43], *Eclipta prostrata* [44, 45], *Emblca officinalis* [37, 46], *Phyllanthus fraternus* [27], *Ricinus communis* [47], *Rubia cordifolia* [48], *Tinospora cordifolia* [49] and *Woodfordia fruticosa* [37] were known already. As we know jaundice one of the major hazards among the people of world. It is caused by an obstruction of the bile ducts which normally discharge bile salts and pigment into the intestine. The obstruction of the bile ducts could be due to gallstones or inflammation of the liver, which is known as hepatitis, since it is caused

by a virus. Other causes of jaundice are haemolytic anaemia and certain diseases affecting the liver such as typhoid, malaria, yellow fever, and tuberculosis. *Costus speciosus*, *Hemidesmus indicus*, *Hygrophila schulli*, *Plumbago zeylanica*, *Sphaeranthus indicus* and *Urginea indica* are used as leading species as remedies against jaundice.

The information on the use of plants in management of asthma (Table No. 2), there were 26 species used against asthma. Of these 26 species 14 trees, 12 shrubs, 12 herbs and 04 species were climbers. The doses are given in the form of juice, decoction, infusion, paste and water extract. Different parts of the medicinal plants were used as medicine by the traditional healers. Among the different parts used, the leaves were the most frequently used, followed by bark, root, fruit, flower, seed, rhizome and whole plants. Moreover, the recipes are prepared using different ingredients of non-plant origin such as water, salt, honey milk etc.

In the present study our data is compared with the available data of Indian literature. The use of *Achyranthes aspera* [50, 51], *Adhatoda vasica*, [37, 51-53, 45], *Calotropis gigantea* [37], *Euphorbia hirta* [37], *Ocimum americanum* [54, 46], *Solanum virginianum*, *Terminalia bellerica* [55], *Tribulus terrestris* [39] and *Withania somnifera* [43] were known already for asthma.

Acacia nilotica, *Acacia chundra*, *Aegle marmelos*, *Aloe vera*, *Azadirachta indica*, *Cassia fistula*, *Cocculus hirsutus*, *Cochlospermum religiosum*, *Emblica officinalis*, *Gloriosa superba*, *Murraya paniculata*, *Ocimum tenuiflorum*, *Plumeria alba*, *Portulaca oleracea*, *Psidium guajava*, *Tamarix ericoides* and *Zingiber officinale* are found to be new in the literature of Indian medicinal plants.

Respiratory problems are the most encountered illness and they may be hardly any person who has not suffered from respiratory in his lifetime. As it is caused by a variety of microorganisms.

Among the 10 species used against mouth ulcer 2 were herbs, 2 shrubs 5 tree and 1 species was climber (Table 3). Oral ulcer is the appearance of an open sore inside the mouth caused by a break in the mucous membrane or the epithelium on the lips or surrounding the mouth. Above all the species are new to the literature of Indian medicinal plants.

Of the 24 species used to cure toothache; 12 trees, 5 shrubs, 6 herbs and 1 species was climber used in the treatment of toothache. Most parts used are branches or twigs of trees. The doses are given in the form of decoction, infusion, paste and water extract. A decoction is obtained by boiling the plants or plant parts in water. A paste is made by crushing small parts of a plant with water and making this into a soft mass. An infusion is prepared by soaking the cleaned different plant or plant parts in water for a few hours or days; afterwards it is filtered and used.

In the present study the data is compared with the available data of Indian literature. The use of *Acacia nilotica* [56, 52], *Azadirachta indica* [38], *Albizia lebbeck* [37,45], *Calotropis gigantea* [55], *Cassia auriculata*, *Carica papaya* [38], *Ficus amplissima*, [37], *Ricinus communis*, *Solanum virginianum* [55], *Terminalia chebula* [37] were known already for toothache.

Abitulon indicu, *Calotropis procera*, *Clematis gouriana*, *Cocos nucifera*, *Curculigo orchoides*, *Emblica officinalis*, *Erythrina veriegata*, *Ficus bengalensis*, *Oscimum tenuiflorum*, *Psidium guajava*, *Solanum anguivi*, *Terminalia bellirica* and *Vitex negundo* are found to be new in the literature of Indian medicinal plants. The present work is mainly based on information gathered from the interview with the tribal medicinal practitioner on the plants used in the treatment of toothache and relevant plant species were collected from the study area. Most of the peoples living the villages of the study area are poor and illiterate. Also they are out of the reach of modern medicines and on other hand, the market price of most available medicines are very expensive. As a result, these medicinal plants are used by them to cure the disease. Moreover, these medicinal plants can be used in the preparation of tooth paste which to control the tooth decay.

Present study revealed various claims about the medicinal properties of plants used by the indigenous people of Akole tehasil of Ahmednagar district to cure ailments like Jaundice, asthma, oral ulcer and toothache. Revealing information on traditional therapeutic applications of 71 plants species with lesser known or new medicinal claims were recorded during the study which will be a significant ethnobotanical contribution from the remote high mountains and difficult terrains of Akole tehasil. Therapeutic applications of the plants discussed in the present article used to cure four common ailments open new vistas for the researchers to carryout in-depth phytochemical and pharmacological investigations about the plants so as to validate the efficacy of indigenous herbal medicine. Therefore, it is greatly needed to assess these plants for further studies in this regard.

Table No. 1. Plants Used for Jaundice

Botanical name	Family	Herbarium No	Part(s) used	Local name	Mode of preparation, ethnomedicinal use
<i>Aegel marmelos</i> (L.) Corr.	Rutaceae	SC333	Lf	Bel	20-30 ml of leaf extract taken orally for one time a day along with 2gm dried fruit powder for each day.
<i>Argemone mexicana</i> L.	Papavaraceae	SC320	Lx,Lf,Sd	Bilayat	Five drops of latex taken orally for each day. 2-3 gm of dried seed powder along with water taken at early morning. Juice is prepared by adding 25 gm of leaf powder along with water. 5-7 ml of this juice is given for each day.
<i>Azadirachta indica</i> A.Juss	Meliaceae	SC321	Lf	Kadulimb	Leaves crushed in water and taken orally for 3-4 days.
<i>Boerhaavi diffusa</i> Hook.	Nyctaginaceae	SC325	Rt	Punarnava	The paste of root is boiled along with soap and salt applied externally for ripening the boils. The juice of root is prepared by adding 10 gm dried root powder in 100ml of water. 5-10ml of this juice is given orally.
<i>Costus speciosus</i> (Koen.) J.	Zingiberaceae	SC356	Rh,Rt	Piway, Peva.	Decoction is prepared by adding 10 gm of rhizome along with water and a cup of this decoction taken orally early in the morning for three days. Also the root juice along with neem is given orally.
<i>Emblica officinalis</i> Gaertn.	Euphorbiaceae	SC322	Ft	Aavala	10-20 ml fruit juice is taken once a day. Moreover, the fruit powder 1-2 gm taken every day orally.
<i>Ficus recemosa</i> L.	Moraceae	SC326	Rt,Ft	Umbar	2gm of dried root bark powder taken orally for every day. Also one fruit taken at early morning.
<i>Ficus religiosa</i> L.	Moraceae	SC351	Bk	Pimpal	The decoction of bark along with 5-20 ml honey is given.
<i>Hemidesmus indicus</i> (L.) Schult.	Periplocaceae	SC334	Rt	Anantvel	Root boiled in water and half cup of this decoction given early in the morning for 2-3 days.
<i>Holarrhena pubescens</i> (Buch-Ham.) D. Wall.	Apocynaceae	SC327	Rt	Pandhara kuda.	5-10 gm young root boiled in water and this decoction given orally for 7-8 days.
<i>Hygrophila schulli</i> (Buch-Ham.)	Acanthaceae	SC340	Sd	Talimkhana	Decoction of seeds prepared with cow urine and 25 ml of this decoction is taken orally.
<i>Luffa acutangula</i> (L.) Roxb.	Cucurbitaceae	SC345	Ft	Ran-dodka, Kadu-dodka	Fruit is boiled in water and kept in nose of patient. Also, the juice prepared with 50 gm in 50 ml water. From this 10 ml given for each day.
<i>Mangifera indica</i> L.	Anacardiaceae	SC320	Bk	Amba	Lime is applied on palm and bark of plant is rubbed on palm later on, to relieve disease symptoms
<i>Phyllanthus fraternus</i> Webster	Euphorbiaceae	SC323	Lf	Bui awala	Leaves are crushed with coconut milk and this mixture is kept for 10-15 minutes. Later it is given orally three times a day. Also whole plant juice prepared and given 10-20 ml per every day.
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	SC346	Rt	Chitrak	0.5-1 gm root bark powder is given orally along with water to cure the disease. For avoiding the poisonous nature of the root bark, it is kept in lime for three to four hours.
<i>Ricinus communis</i> L.	Euphorbiaceae	SC341	Lf	Erand	The leaf juice prepared in water and cup of this juice is taken orally early in morning and at evening.
<i>Rubia cordifolia</i> L.	Rubiaceae	SC350	Rt	Manjishta	The 50-100ml decoction of root is given orally
<i>Sphaeranthus indicus</i> L.	Asteraceae	SC352	Pt	Gorakhmundi	Decoction of plant nearly 40 ml given for every day.
<i>Terminalia chebula</i>	Combretaceae	SC355	Ft	Hirda	The fruits are dried for 15-20 days. 1-2 gm of fruit powder is given orally

Retz.obs					with honey or fat.
<i>Tinospora cordifolia</i> (Willd.) Miers.	Menispermaceae	SC357	Sh	Gulvel	Decoction of stem is given orally. Leaf juice of the same taken along with curd. Fresh leaves crushed along with some amount of water and lump sugar and 20-30ml of this mixture is taken orally for each day at early morning.
<i>Urginea indica</i> (Roxb.) Kunth.	Liliaceae	SC358	Cr	Rankanda.	Syrup prepared by boiling freshly collected 10 gm of corm and given orally to relive disease symptoms.
<i>Woodfordia fruticosa</i> (L.) Kurz.	Lythraceae	SC359	Fl	Dhayati	1-3 gm of dried powder of flowers taken orally for each day.
<i>Ziziphus jujube</i> Mill.	Rhamnaceae	SC356	Sd	Bor	Decoction prepared by grinding the seeds in salt water and given orally 2 spoons thrice a day for 2 months for early recovery.

Table No. 2.Plants used for Asthma

Botanical name	Family	Herbarium No	Part (s)used	Local name	Mode of preparation, ethnomedicinal use
<i>Abrus precatorius</i> L.	Papilionaceae	SC361	Lf	Gunj	Fresh or dried leaves are eaten.
<i>Acacia chundra</i> (Roxb) Ex. Rottl.)Willd.	Mimosaceae	SC365	Wd	Khair	Pieces of wood boiled in 1-2 cup of milk and 1 teaspoon of this extract along with pinch of turmeric is taken orally.
<i>Achyranthes aspera</i> L.	Amaranthaceae	SC367	Sh,Lf	Aghada	Ashes of stem, branches mixed with cow fat are given. Also leaves along with lump sugar are taken.
<i>Adhatoda vasica</i> Nees.	Acanthaceae	SC370	Lf,Fr	Adulsa	Equal amount of crushed leaves, honey and cow fat mixed and is given. Also, decoction of fruit is given orally.
<i>Aegel marmelos</i> (L.) Corr.	Rutaceae	SC333	Lf,Ft	Bel	20-30 ml of leaf extract taken orally for one time a day Along with 2gm dried fruit powder for each day.
<i>Aloe vera</i> (L.) Burm	Liliaceae	SC324	Lf	Korpad	Pulp along with Jaggery is taken.
<i>Azadirachta indica</i> A.Juss	Meliaceae	SC321	Lf	Kadulimb	Mixture of leaves mixed with lump sugar, almond and cow fat is taken early in the morning for 10 days.
<i>Calotropis gigantea</i> (L.) Ait.	Asclepiaceae	SC369	Fl	Dev rui	Ash of flower is mixed with honey given orally for 7-8 days. Ash of flower along with honey taken orally twice a day.
<i>Cassia fistula</i> L.	Cacesalpinaceae	SC368	Sd	Bahavas	1-2 seeds are eaten to cure disease. Also the bark of the same plant is chewed.
<i>Cocculus hirsutus</i> (L.) Theob.	Menispermeaceae	SC370	Lf	Vasan vel	Fresh leaves are chewed.
<i>Cochlospermum religiosum</i> (L.) Alst. Handb.	Cochlospermeaceae	SC371	Lf,	Gogal	Infusion of leaf Juice along with fruit of cumin and leaves of caraway are taken orally.
<i>Emblica officinalis</i> Gaertn.	Euphorbiaceae	SC322	Ft	Aavala	Powdered mixture of fruits of <i>Terminalia Chebula</i> , <i>Terminalia bellirica</i> and <i>Emblica officinalis</i> along with honey are taken internally.
<i>Euphorbia hirta</i> L.	Euphorbiaceae	SC373	Lx	Dudhali	Latex is applied on liquorice stick and this stick is sucked.
<i>Gloriosa superba</i> L.	Liliaceae	SC375	Rt	Kal-lavi	One teaspoon root juice is given.
<i>Murraya paniculata</i> (L) Jack.	Rutaceae	SC376	Rt,Bk	Pandhari	In fusion of root and bark powder in milk along with turmeric are given orally.
<i>Ocimum americanum</i> L.	Lamiaceae	SC378	Inf,Lf	Ran tulas	Inflorescence is chewed at early in the morning for 2-3 days. Also,

					leaves are eaten along with honey.
<i>Ocimum tenuiflorum</i> L.	Lamiaceae	SC377	Inf	Tulas	Inflorescence is eaten at early morning.
<i>Plumeria alba</i> L.	Apocynaceae	SC379	Bk	Chapha	Decoction of bark is given.
<i>Portulaca oleracea</i> L.	Polygalaceae	SC380	Lf	Cusaru	Mixture of 10gm leaves of <i>Portulaca oleracea</i> and <i>Portulaca quadrifida</i> , 10 gm caraway 20gm cow fat is taken orally.
<i>Psidium guajava</i> L.	Myrtaceae	SC382	Lf	Paru/ jamb	Immature dried leaves are taken. Mixture of seeds and almond along with cow ghee are given for 21 days to cure Asthma.
<i>Solanum virginianum</i> L.	Solanaceae	SC381	Wh	Bhui Ringni	A whole plant juice along with lump sugar is taken.
<i>Tamarix ericoides</i> Rottl.	Tamaricaceae	SC383	Ft	Sherni	2-3 Fruits are eaten at morning.
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	SC384	Ft	Behada	Powder mixture of fruits <i>Terminalia Chebula</i> , <i>Terminalia bellirica</i> and <i>Emblica officinalis</i> along with honey are taken.
<i>Tribulus terrestris</i> L.	Zygophyllaceae	SC387	Sh,Lf	Sarata	Paste of immature shoot along with pulp of <i>Aloe vera</i> is given orally.
<i>Withania somnifera</i> Dunal.	Solanaceae	SC386	Rt,Lf	Askand	Mixture of root and leaves of <i>Bridelia retusa</i> are taken along with honey.
<i>Zingiber officinale</i> Rose.	Zingiberaceae	SC390	Rh	Ale	Tea flavored with rhizome of plant taken usually.

Table No. 3.Plant used for Mouth ulcer

Botanical name	Family	Herbarium No	Part(s) used	Local name	Mode of preparation, ethnomedicinal use
<i>Bauhinia variegata</i> L.	Cacesalpinaceae	SC391	Rt,Bk	Apata/Kanchan	Root paste mixed with cow fat is applied externally on affected parts early in the morning for 2-3 days. Also, the dried powder of bark is applied externally to cure the same.
<i>Bridelia retusa</i> (L.) spreng.	Euphorbiaceae	SC395	Fr	Aasind	Fruits are eaten.
<i>Cajanus lineatus</i> (wight & Arn.)Vander	Papillineae	SC396	Lf	Jagali tur	Dried leaf powder along with cow fat is applied externally.
<i>Coccinia grandis</i> (L.) Voigt.hort	Cucurbitaceae	SC394	Ft	Tonduli	Ripened fruits chewed 3-4 times a day.
<i>Cochlospermum religiosum</i> (L.) Alst. Handb.	Cochlospermeaceae	SC371	Lx	Gogal	Latex is applied externally.
<i>Cynodon dactylon</i> (L.) Pers. Syn.	Poaceae	SC393	Lf	Haral/Durva	Leaf Juice of plant is applied externally on the mouth sores two times a day to relieve pain and early healing.
<i>Ficus recemosa</i> L.	Moraceae	SC398	Lf	Umbar	3-4 leaves were chewed.
<i>Jatropha curcas</i> L.	Euphorbiaceae	SC400	Lx	Parsi Erand	Latex of plant is applied externally.
	Lythraceae	SC402	Lf	Mehandi	Leaves are crushed along with water and applied externally on mouth sores.
<i>Lawsonia inermis</i> L.					
<i>Ocimum basilicum</i> L.	Lamiaceae	SC404	Lf	Sabja	3-4 leaves were chewed for 3 times a day.

Table No. 4. Plant used for Toothache

Botanical name	Family	Herbarium No.	Part used (s)	Local name	Mode of preparation, ethnomedicinal use
<i>Abutilon indicum</i> (L.) Sweet.	Malvaceae	SC405	Lf	Mudra	Decoction of leaves is given in case of teeth pain.
<i>Acacia nilotica</i> (L.) Willd	Mimosaceae	SC407	Bk	Babhul	Bark powder is kept in molars to reduce pain.
<i>Albizia lebbek</i> (L.) Bth.	Malvaceae	SC408	Bk	Shirish	Dried bark powder is used for curing gum infections. Also a decoction of leaves is given orally as a supplementary remedy.
<i>Azadirachta indica</i> A.Juss	Meliaceae	SC321	Sh	Kadulimb	Paste of stem is used for cleaning the tooth.
<i>Calotropis procera</i> (Ait.)R.Br.	Asclepiadaceae	SC409	Lx	Safed ruee	Soaked cotton in latex along with pinch of salt is kept in teeth for relieving pain.
<i>Carica papaya</i> L.	Caricaceae	SC410	Lx	Papai	Soaked cotton in latex of plant is kept in teeth for relieving tooth ache.
<i>Cassia auriculata</i> L.	Caesalpineaceae	SC412	Sh	Tarvad	Branches used to brush teeth.
<i>Clematis gouriana</i> Rox.Ex.Doc.	Ranunculaceae	SC413	Rt	Morkhad	Roots hold in loose teeth for fixing.
<i>Cocus nucifera</i> L.	Aracaceae	SC414	Ft	Naral	Ash of coconut shell is used for cleaning the teeth.
<i>Curculigo orchoides</i> Gaertn.	Hypoxidaceae	SC415	Rt	Kali Musali	Paste of root is applied externally for healing gums
<i>Emblia officinalis</i> Gaertn.	Euphorbiaceae	SC322	Bk	Aavala	Bark powder is used for cleaning the teeth.
<i>Erythrina suberosa</i> L.	Papilionaceae	SC420	Lf	Pangara	Leaf juice along with water is used to gargle.
<i>Ficus amplissima</i> J.E.sm.	moraceae	SC421	Bk	Piper/Pimpri	Mixture of bark along with root powder of <i>Clematis gouriana</i> is kept in teeth.
<i>Ficus bengalensis</i> L.	Moraceae	SC422	Lx	Vad	Latex of plant is used for teeth cleaning to reduce dental caries.
<i>Lantana camera</i> L.	Lamiaceae	SC430	Ft	Ghaneri	Fruit kept below teeth to relieve pain Also it is rubbed over teeth to reduce pain.
<i>Lavandula bipinnata</i> O.ktze.	Lamiaceae	SC431	Lf	Deepmal	Leaf paste applied on decayed tooth to reduce pain.
<i>Ocimum tenuiflorum</i> L.	Lamiaceae	SC435	Lf	Tulas	Leaf powder along with turmeric rubbed over the teeth for relieving pain.
<i>Psidium guajava</i> L.	Myrtaceae	SC475	Lf	Paru/ jamb	Extract of leaves in water is used to mouthful spit out twice a day.
<i>Ricinus communis</i> L.	Euphorbiaceae	SC476	Lx	Erand	Soaked cotton in latex is kept in teeth for relieving pain.
<i>Solanaum anguvi</i> L.	Solanaceae	SC478	Ft	Ranvangi	Baked fruit extract with water are given orally to reduce pain and decay in teeth.
<i>Solanum virginianum</i> L.	Solanaceae	SC470	Ft	Bhui Ringni	Fruit smoke is taken twice a day to cure decayed tooth.
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	SC479	Ft	Behada	Equal quantity of fruit powder <i>Terminalia bellerica</i> , <i>Terminalia chebula</i> and <i>Emblia officinalis</i> powder are used for cleaning the teeth for thrice a day.
<i>Terminalia chebula</i> Retz.obs.	Combretaceae	SC469	Ft	Hirda	Infusion of fruit powder nearly 10gm and one cup of curd and water are mixed and used for gargle to reduce pain.
<i>Vitex negundo</i> L.	Verbanaceae	SC465	Lf	Nirgudi	Leaf decoction is taken internally.

a SC- Sangamner College.

b Part(s) used: Inf-inflorescence; Fl- flowers; Fr- fruits; Lf- leaves; Rh- rhizomes; Rt- roots; Sd- seeds; Sh- shoots; Wd- wood; Wp- whole plant.

ACKNOWLEDGMENT

The authors are grateful to Dr. K. K. Deshmukh, Principal Sangamner College, Sangamner for providing necessary facilities. Thanks are also due to the local healers and tribal people of Akole tehasil for providing information on the medicinal uses of plants.

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