International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Medicinally Important Climbers in Mantha Region of Jalna District, (M. S.) India

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Abstract: ***Ethno botanical study was carried out along with the ethnic groups in the Mantha region of Jalna district in Maharashtra. Five highly medicinal creepers from Mantha region were considered for the study. The information collected from the traditional healers was used to compare with the already accessible literature on the ethnobotany of India. It was found that, these creepers are used in cough, fever, pains, diarrhea, dysentery, skin diseases, poison bites, wounds, swellings, asthma, broken bones, antiulcer, antimicrobial, piles and rheumatism. All creepers were studied with their botanical name, family name, vernacular name, common name, taxonomic description, chemical constituents and medicinal uses.***

Keywords: Ethnobotany, creepers, Mantha region, diseases.

1. Introduction

According to the World Health Organization 80% of the world population relies chiefly on traditional medicines involving the use of plant extracts or their active constituents. India with its mega - biodiversity and knowledge of rich ancient traditional systems of medicine (Ayurveda, Siddha, Unani, Amchi and local health traditions) provide a strong base for the utilization of a large number of plants in general healthcare and alleviation of common ailments of the people (Reddy and Reddy 2015). To maintain human health and improve quality of human life, plants have played vital role for thousands of years and contributed valuable components in medicine, seasonings, beverages, cosmetics and dyes. Distinguished character of herbal medicine is that, it assures involvement of natural substances that can promote health and alleviate illness. In recent years, large numbers of plants are being investigated for their immense medicinal potential (Arulmozhi and Sathiya, 2007). In the present research work, authors focused on some important characters of some native medicinal plants which are needed to be conserved and cultivated, so that, it can help natives to earn their livelihood to some extent. This study will be helpful to pharmacologist, phytochemist and researcher of this field.

2. Materials and Methods

Frequent field visits were arranged in the study areas during the period from pre - monsoon of 2020 to post - monsoon of 2021 to collect the ethno - medicinal data on uses of the wild ethno - flora by the local inhabitants. The plant specimens were collected by knowing their vernacular names through the help of knowledgeable informants as per guidelines (Rasik, et. al., 1996). The plant specimens were botanically identified using published floras (Naik, 1998). The information was confirmed and documented through the local healers, villagers and tribals of the locality through verbal and informal interviews. Literature was also referred to study medicinal uses of collected creepers.

3. Results and Discussion

1) Botanical name: *Abrus precatorius* L.
Family: Leguminosae
Vernacular names: Gunja
Common name: Crabs eye, Indian bead
Taxonomic description: *Abrus precatorius* is a slender, perennial climber that twines around trees, shrubs, and hedges. Leaves are glabrous with long internodes. It has a slender branch and a cylindrical wrinkled stem. Leaves alternate compound paripinnate with stipules. Each leaf has a midrib from 5 to 10 cm long which have 20 to 24 or more leaflets of about 1.2 to 1.8 cm long, oblong and obtuse. It is blunt at both ends, glabrous on top and slightly hairy below. Flowers are small and pale violet in colour with a short stalk, arranged in clusters. The ovary has a marginal placentation. Pods (fruits) are flat, oblong and truncate - shaped with a sharp deflexed beak is about 3 to 4.5 cm long, 1.2 cm wide, and silky - textured. The pod curls back when opened to reveal pendulous seeds. Each pod contains from 3 to 5 oval - shaped seeds, about 0.6 cm. They are usually bright scarlet in colour with a smooth, glossy texture, and a black patch on top.

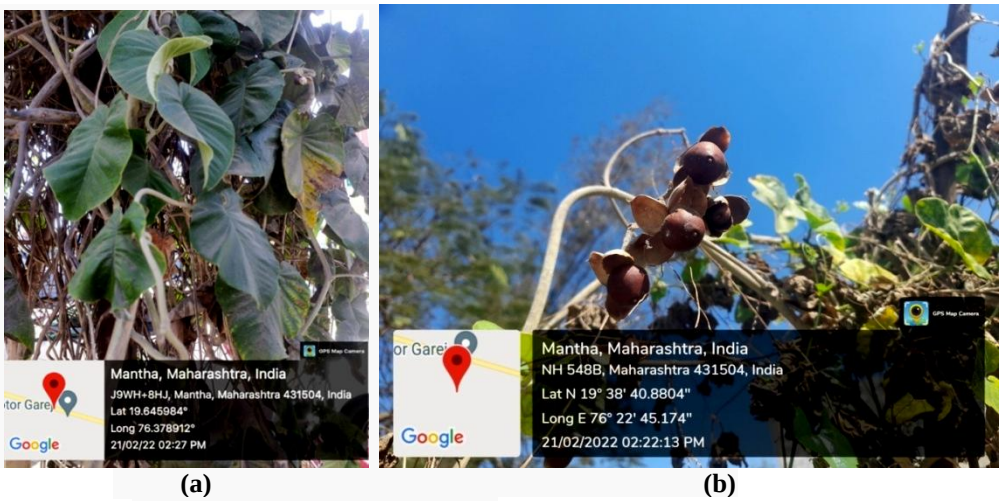
(a) **(b)**

Figure 1: a) Flower, pod and b) Seeds of *Abrus precatorius* L.

Chemical constituents:
The leaves contain sweet tasting compounds such as abrusoside and glycyrrhizin, which are sweeter than sucrose and have lower caloric value (Chaudhari, et. al., 2012) Abrusoside A - D, which contains abrusogenin as aglycone, which has sweetness potencies 30 - 100 times greater than that of sucrose (Bhatia, et. al., 2013). A number of triterpenes were isolated from A. precatorius L., abrusoside A - E and abrusogenin (Ragasa, et. al., 2013). Root contains Abrol, Abrasine, Precasine, Precol etc. Seed contain Abrine, Abrin A, B, C, I, II, III, Abrus agglutinin, Saponin, Flavonoids, Abrectorin, Precatorin, Lectin, campestanol etc. (Bhakta and Das, 2020)

Medicinal uses: The leaves are ground with lime and applied on acne sores, boils, and abscesses. Decoction of leaves are taken orally for cough and flu (Nadkarni, et. al., 1954 and Chopra, et. al., 1956). The roots of *Abrus precatorius* herb are useful for the treatment of jaundice and bile haemoglobinuric. Root paste is administered for the curation abdominal pains, recovery from tumors and also for inhibiting abortion. Grinded roots powder of *Abrus precatorius* are taken with pure clarified butter thrice a day for four days to cure cough (Rain - tree, 2004; Kirtikar, et. al., 1956). Root can be used as a remedy from snake bite by chewing (Watt and Breyer - Brandwijk, 1962). Seeds are useful in diarrhoea, dysentery and possess antidiabetic (Monago and Alumanah, 2005), antitumor and proapoptotic effect (Bhutia et al., 2008), antibacterial, anthelmintic activity (Asolkar et al., 2000; Adelowotan et al., 2008).

2) Botanical name: *Argyreia nervosa* (Burm. f.) Bojer
Family: Convolvulaceae
Vernacular name: Samudrashok
Common name: Elephant Creeper, Vidhara.
Taxonomic description: A woody perennial vine with a maximum length of 9 – 15 m long. Stems woody at base, densely white pubescent when young, glabrescent. Leaves are cordate, measuring 15 – 25 cm long and 13 – 20 cm wide. Upper side of leaves is green and glabrous (smooth and hairless), while the lower side is silver and tomentose like young stems. Flowers in cymes on long, white, tomentose peduncles, the bracts ovate - lanceolate, subtending. Sepals ovate to broadly ovate, 1.5 - 2 cm long, white - tomentose. Corolla with lavender limb and darker throat, 6 - 7 cm long, pubescent outside, at least on the tube and the interplicae. Fruit indehiscent, baccate, dry, subglobose, 1 - 1.5 cm long. Yellow - brown, dry round fruit (2 cm wide) classified as a capsule. Each fruit holds 4 - 6 seeds. Seeds dark to light brown and glabrous.



(a) **(b)**

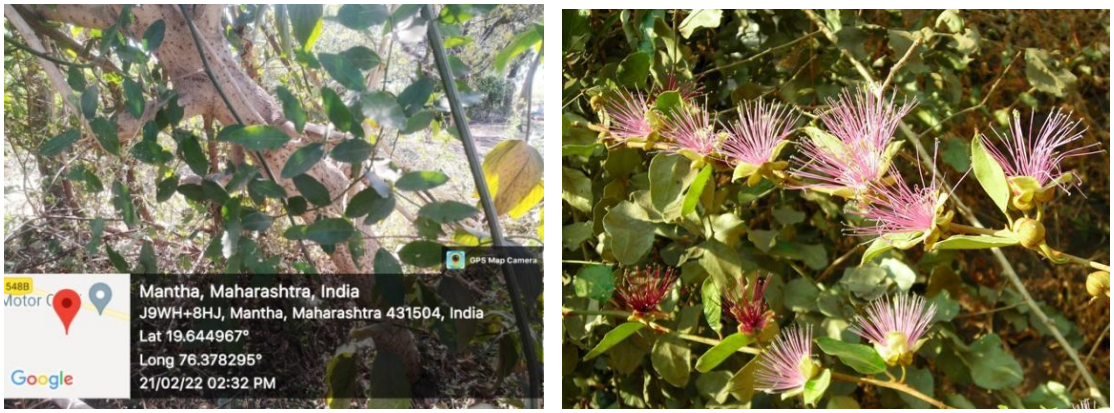
Figure 2: a) Habit and b) Fruit of *Argyreia nervosa* (Burm. f.) Bojer

Chemical constituents: Vidhara contain alkaloids (mainly ergoline), flavonoids, lipids, triterpenoids, saponin and steroids. The seeds mainly consisted of various fatty oils such as palmitic glycosides, stearic, oleic, linoleic and

linolenic acid. It also contains some amount of free amino acid like glycine, leucine, phenylalanine, glutamic and αaminobutyric acid (Husain, et. al., 192). Principally roots contain the Tetradecanyl palmitate, stigma steryl p - hydroxy cinnamate, hexadecanyl phydroxy cinnamate, quercetin and caffeic acid. Recently 6 - methoxy coumarin - 7 - O - α - D - glucopyranoside (coumarin glucoside) also isolated by the researchers (Joseph, et al., 2011). The phytochemical investigation revealed the presence of kaempferol, quercetin, kaempferol 3 - O - L - rhamnopyranoside, 7, 8, 3′, 4′, 5′ - penta hydroxyl flavone and 5 - O - β - D - glucopyranoside in A. speciosa leaves (Paulke, et. al., 2013).

Medicinal uses: Vidhara is a medicinal plant with Tonic, rejuvenative, anti - aging, spermatogenic, and aphrodisiac properties. The medicated ghee prepared by boiling roots of Vidhara in Desi Ghee has excellent aphrodisiac properties and improves fertility. The leaves of the plant prevent or relieve inflammation. The application of under surface of leaves helps in quicker healing of boils. The leaves have antibacterial, antifungal properties and applied on fungal infections and wounds. **Cut, Wounds and Swelling:** Take few leaves, warm them and tie at affected area with help of cloth. **Gangrene:** Vidhara is very effective in Gangrene. To treat it wash the Gangrene affected area with juice of vidhara leaves. Soak cotton in leaves juice and place on wounds. Take warm leaves, cow ghee in small amount and with help of cloth tie at affected area for 10 - 12 hrs. After that change and again do the same. Do it for a few days. **Bed Sore:** Take leaves, grind to extract juice and apply at affected areas. **Ulcer, colitis, Internal bleeding and bleeding due to any reason:** Take 2 - 3 leaves of vidhara. Clean properly and grind to extract juice. Mix this in lukewarm cup of water. Add misri or sugar candy if not diabetic and drink regularly. **Dog bite:** Take 5 gm root powder with old Gur / jaggery twice a day for one week. **Tumor:** The upper surface of leaves is warmed, simmered with butter and tied locally on tumor. The tumor (cyst) will burst and healing will start. If leaves are tied from its lower surface than tumor will be suppressed inside the body (Anupama, 2012).

3) Botanical name: *Capparis zeylanica* L.
Family: Capparacea
Vernacular name: Waghati, Vyaghranakhi, Govindi.
Common name: Ceylon caper, Indian caper.
Taxonomic description: It is large evergreen climber of 2 - 5m length. Many climbing and drooping branches are seen on thick stem. Leaves 7 - 9 x 5 - 6 cm, ovate, apex mucronate, base truncate, pubescent; petiole to 1 cm, densely pubescent, stipular spines small, in pairs, recurved. Flowers in supra axillary rows, 3 - 4 cm across, white, buds densely pubescent; pedicels 2 - 4 cm, pubescent; stamens numerous, long exserted, white, turns to brown, gynandrophore as long as or longer than filaments; ovary 2.5 mm, ellipsoid. Fruit is globular to ellipsoid berry, up to 5 cm × 4 cm, on 5 cm - long gynophore; skin woody - coriaceous, red when ripe, many seeds.



(a) **(b)**

Figure 3: a) Habit and b) Flowering of *Capparis zeylanica* L.

Chemical constituents: The plant *Capparis zeylanica* is reported to have alkaloids, triterpenes, flavanoids, steroidal substances and saponins. Phytochemical screening of the leaf extracts showed the presence of alkaloids, flavonoids, saponin glycosides, terpenoids, tannins, proteins and carbohydrates (Sharaf, 1997; Satyanarayan et al., 2008). The roots of *Capparis zeylanica* contain alkaloid, phytosterol, acids and mucilage. Fatty acids like ricinolenic acid, malvalic acid, sterculic acid, linoeic acid were also obtained (Mahmood et al., 1991; Haque et al., 2004).

Medicinal uses: In folk medicine, leaves used as cataplasm for boils, swelling and hemorrhoids. Decoction of root - bark used for vomiting and for improving the appetite. Leaves also used to improve the appetite. The leaves are employed as a counter - irritant, and are made into a poultice for treating boils, swellings and haemorrhoids. They are also used to reduce perspiration and to improve the appetite. It is used for diabetes, against Fungal infections, Chest congestion, Intestinal worms, Skin disorders, when applied directly, improving blood flow near the skin's surface, when applied directly, dry skin, when applied directly. It is used traditionally as stomachic, sedative, antihydrotic and also in cholera, hemiplegia, neuralgia and rheumatism (Duke, 2000). In northern India, the leaves are used as a rubefacient (Lewis, 1977) counter irritant and as a cataplasm in boils, swellings and piles (Biswas, 1973). The leaf juice has been used by the folklore in the treatment of diarrhea. Hence the methanolic extract of *C. zeylanica* leaf extract was investigated for its antidiarrheal activity to substantiate folklore claim. *Capparis* species have been reported to have anthelminthic, antimicrobial and anti - inflammatory activities (Mali, et. al., 2004, and Chaudhary, et. al., 2004). Leaves are widely used as counter - irritant, febrifuge and as

a cataplasm in swellings, boils and piles (Chopra, 1969). The various species of genus *Capparis* are useful in the treatment of cough, asthma, inflammation, fevers, and also useful as poultice in gout (Kirtikar and Basu, 1987).

4) Botanical name: *Cissus quadrangularis* L.
Family: Vitaceae
Vernacular name: Kandvel, Hadjod.
Common name: Veldt grape, devil's backbone.
Taxonomic description: Rambling, succulent, glabrous, deciduous shrubs; stem 4 - angular, winged or ridged at angles, constricted at nodes; tendril simple. Leaves simple, entire or 3 - lobed, 2 - 5 x 2 - 5 cm, ovate - suborbicular, base truncate, margin distantly spinulose - crenate, apex obtuse, thick - coriaceous; petiole 0.5 to 1 cm long. Flowers in leaf - opposed, peduncled, umbellate cymes. Calyx - tube obscurely 4 - lobed, 2 mm long, reddish. Petals 2.5 mm long, ovate, acute, greenish - yellow, recurved. Stamens 4; anthers yellow. Ovary 1mm long, 2 - celled; ovules 2 per cell. Berry 7 mm across, subglobose. Seeds are black, smooth.

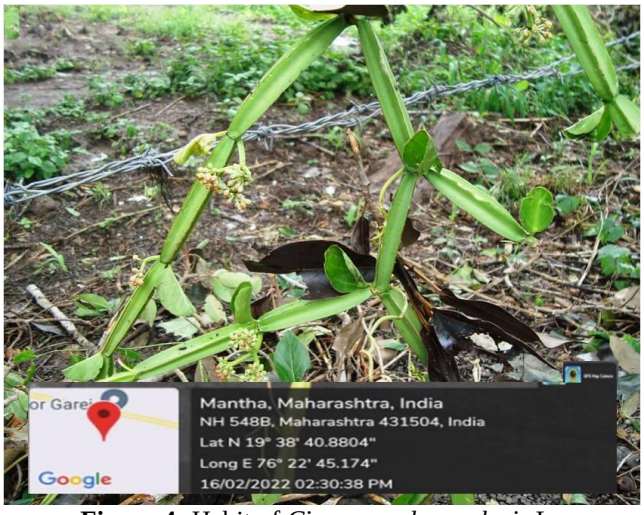


Figure 4: Habit of *Cissus quadrangularis* L.

Chemical constituents: Prasad and Udupa (1963) and Day (2002) identified quercetin, daidzein and genistein, triterpenoids like friedelin, vitamin 'C', stilbene derivatives like quadrangularinA, resveratrol and piceatannol, iridoids like 6 - 0 - meta - methoxybenzozyl catapol, picroside and pallidol and phytosterols like βsitosterol and calcium as major constituents of the plant. The stem parts of plant contains A and β - amyrins, βsitosterol, ketosetosterol, phenols, tannins, vitamin, carotene, Calcium oxalate, 31 methyl tritiacontanoic acid, taraxeryl acetate, taraxeroliso - pentadecanoic acid, Calcium ions and phosphorus. The Aerial parts of the plant contain new asymmetric tetracyclic triterpenoid 7 - Oxo - Onocer - 8 - ene - 3 β 21 - α diol. Leaves contain Resveratrol, piceatanon, pallidol, parthenocissus and alicyclic lipids. Root powder often provides a steady source of mineral resources including potassium 67.5 mg; calcium 39.5 mg, zinc 3.0 mg, sodium 22.5 mg, Iron 7.5 mg, lead 3.5 mg, cadmium 0.25 mg, copper 0.5 mg and magnesium; 1.15 mg (Jainu and Devi, 2006; Sen, 2019).

Medicinal uses: Traditionally, the roots and stems are most useful for healing of fractured bones. In Ayurveda, the plant has been documented for the treatment of osteoarthritis, rheumatoid arthritis and osteoporosis. The stem juice of plant is used to treat scurvy, menstrual disorders, otorrhoea and epistaxis. By feeding this herb to cattle, flow of milk is induced. Stout fleshy quadrangular stem used to treat gastritis constipation, eye diseases, piles and anemia. It is also used to reduce body weight, anthelmintic, muscular pains, asthma, broken bones, antiulcer, antihemorrhoidal, antimicrobial etc. (Sen and Dash, 2012).

5) Botanical name: *Tinospora cordifolia* L.
Family: Menispermaceae
Vernacular name: Gulvel.
Common name: Giloy, Guduchi.
Taxonomic description: *T. cordifolia* is a large extensively spreading glabrous, dioecious perennial deciduous climber, grows on wide range of hedges and trees. Its stem, when fresh, have a green succulent bark covered by a thin brown bark and are studded with warty lenticels when dry, the stem shrinks and the bark separate from the wood. Branches are sending down slender pendulous fleshy roots, terete, striate, with tubercled, pale sometimes shining or glabrous bark. Leaves membranous, 7 - 9 nerved, 5 - 10 cm, roundish, cordate or heart shaped (giving name *cordifolia* to the plant) with a 2.5 - 7.0 cm petiole. The flower bloom in summer. Racemes is rather lax, 5.0 cm, elongating and often longer than leaves. The male flowers are small, yellow or green in colour, and occur in clusters in the axils of small subulate bracts. Sepals are 6, 3 outer very small, ovate - oblong, acute, the inner 3 larger, membranous, broadly elliptical, concave, yellow (Choudhary, et al., 2013). Petals are 6, equal, broadly spathulate, each loosely embracing a stamen, claw cuneate, reflexed to apex, pistillode. Female flowers usually solitary, similar to male, but sepals green, margins not reflexed, staminode short, linear. Carpels 1 - 3, widely separated on the short fleshy gynophores, dorsally convexed, and scarlet. The fruit are the size and shape of a large pea and turn from green to red when ripe in winter and mucilaginous (Kirtikar and Basu, 2005).

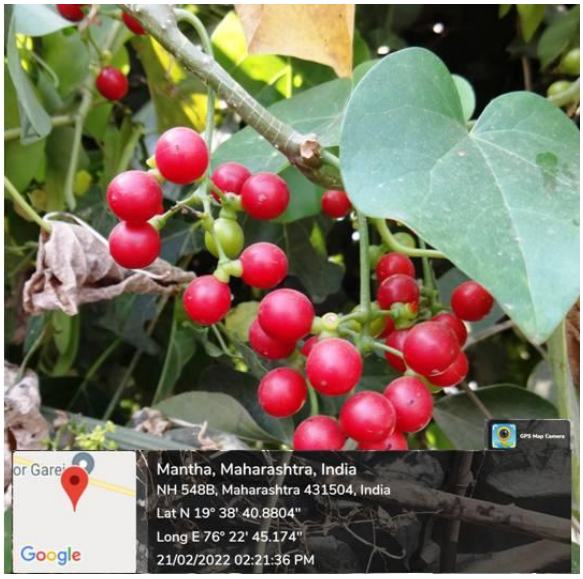


Figure 5: Habit, leaf, fruits of *Tinospora cordifolia* L.

Chemical constituents:
Alkaloids: Thirteen alkaloids of isoquinoline and aporphine skeletons, amine and amide were reported of which main alkaloids were protoberberine alkaloids berberine,

palmatine, jatrorrhizine, magnoflorine and corydine (Sharma, et al., 1995; Sarma and Khosa 1998). Terpenoids: Thirty two diterpenoids and their glycosides of clerodane and norclerodane skeleton (Kiem, et. al., 2010; Kour, et. al., 2010) one monoterpenoids (Kiem, et. al., 2010), five sesquiterpenoids (Maurya and Handa, 1998; Kour, et. al., 2010) and one triterpenoid cycloeuphordenol (Sharma, et. al., 2010) were isolated from T. cordifolia. A bicyclic diterpenoid (C21H24O7) from the whole plant was tentatively identified as tinosporin [105]. Phenolics: Four phenyl propanoids (Maurya, et. al., 1996; Sipahimalani, et. al., 1994), two flavonoids (Pushp, et. al., 2013; Sengupta, et. al., 2009), three lignans (Hanuman, et. al., 1986; Gupta, et. al., 2011) and two benzenoid derivatives (Sharma, et. al., 1995; Maurya and Handa, 1998) have been isolated from T. cordifolia. Steroids: Four steroids along with δ - sitosterol (Ahmad, et. al., 2010; Gupta, et. al., 2011; Gagan, et. al., 1997) and 2, 3, 14, 20, 22, 25 - hexahydroxyl - 5 - cholest - 7 - en - 6 - one have been reported (Dixit and Khosa, 1971). It also contains essential oil and aliphatic compounds and olysaccharides (Jahfar, 2003)

Medicinal uses:

Tinospora cordifolia is widely used medicinal plant in Ayurvedic system for its general tonic, antiperiodic, anti - spasmodic, anti - inflammatory, antipyretic, anti - arthritic, anti - lepritic, anti - allergic and anti - diabetic properties (Joshi, et. al., 2013). The plant is used to improve the immune system and the body resistance against infections. The root of this plant is known for its anti - stress and antimalarial activities. The stem is bitter, stomachic, diuretic, stimulates bile secretions, allays thirst, enriches the blood and cures jaundice. The extract of the stem is useful in skin problems. The root and stem of *Tinospora cordifolia* is prescribed in combination with other drugs as an antidote to snakebite and scorpion.33 The plant is also used in the treatment of wounds, pneumonia, asthma and cough. *Tinospora cordifolia* has anti - cancer, immune stimulating, nerve cell protecting, antidiabetic, cholesterol - lowering and liver - protective actions. *Tinospora cordifolia* is also responsible for decreasing the tissue damage caused by radiation, the side effects of some forms of chemotherapy and speeding healing of diabetic foot ulcers (Pandey, et. al., 2012).

4. Conclusion

For the management of human diseases herbal medicine may become a new era of medical system in the next few decades. Medicinal plants are proved as a source of potential herbal medicine. There is requirement of advanced research for the development and characterization of new natural drugs with better screening methods from plants and other natural sources. Phytochemical constituents in medicinal plants leads them for their wide use for treating wide range of ailments. The medicinal plants documented and scientifically screened for their validation so as to preserve the traditional uses and proceed with the conservation of these indigenous medicinal plants before the ethnobotanical knowledge is lost. As science advanced, it became possible to use AYUSH to solve the new challenges of modern healthcare system.

Acknowledgement

Authors are thankful to Principal, Swami Vivekanand Senior College, Mantha for providing necessary facilities in order to conduct research work.

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