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Fabaceous medicinal plants used in tribal medicine in the Eastern Ghats of Peninsular India -A review

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ABSTRACT

Tribal communities in the Eastern Ghats of peninsular India are considered to be forest inhabitant living in harmony with their surrounding environment. Their close association with nature has enabled tribal people to observe the rich flora and fauna around them and updating themselves with the knowledge on the tribal flora and fauna. Over the years, they have mastered the art of living with nature solely depending on the natural resources available. As part of this, they have customized the usage of plants as medicines. This has led to the development of sound knowledge on the use of plants as herbal remedies for various ailments and has become the tradition of the tribal communities. In view of the growing health consciousness among people, the demand for medicinal herbs is ever increasing due to herbal medicines are cheaper and safe in communities since the side effects reported with herbal medicines are bare minimum compared to the modern allopathic drugs. Overall, the findings on diversity of the medicinal plant species in the forests of the Eastern Ghats of peninsular India indicate great diversity and richness of species. Among the botanical families supplying of raw materials of medicinal plants, Fabaceae is the most predominant family consisting of 60 plant species and their plant parts are widely used in tribal medicine to cure various commonly occurring diseases in the tribal areas of the region. Most of these medications are administered orally while some are applied externally to get a hold from the human ailments.

Key words: *Tribal medicine, Fabaceae, Medicinal plants, Eastern Ghats, Peninsular India*

Man has been utilizing different plant species since the time immemorial for welfare. The plants used for curing different diseases in human have been described in ancient literatures like Rig-Veda, Charaka samhita, etc. The utilization of plants by the primitive man and the tribal has been studied under the new branch of science known as "Ethnobotany". Medicinal plants are nature's gift to mankind and are the rich heritage of India. India is well known as an "Emporium of medicinal plants". India is endeavored with many natural blessings in terms of ecological, climatic and soil rich for plant growth possess different types of climatic conditions and various tracts of tropical and temperate plains, hills and valleys. These factors are favorable for the wealth of medicinal plants. India with rich vegeta-

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tion of about 45,000 plants of which 15,000 - 20,000 proved to have medicinal values and is considered as one of the 12 mega-biodiversity countries of the world (Ramakrishna and Ranjalkar, 2020). Prior to the development of modern medicine, the traditional systems of medicine that have evolved over the centuries within different tribal communities, are still maintained as a sound traditional knowledge base in folk medicines (Mukherjee and Wahil, 2006). Traditionally, this treasure of knowledge has been passed on orally to their subsequent generations without any written document (Samy and Ignacimuthu, 2000) and it is still retained by different indigenous tribal communitiess allover world. The herbal raw drugs required for the preparation of medicines and are collecting from nearby forests by the tribal people. The method of treatment is traditional and drugs are used in crude form only. About 70% of the rural folk depend on medicinal plants for their health care. The folk medicine system of India uses about 5,000 plant species with about 25,000 formulations for treating a variety of ailments, whereas tribal medicine involves the use of over 8,000 wild plants with about 1,75,000 specific preparations/applications. Knowledge on the Medicinal plants provides a new way for modern drugs development (Brahman, 2000). It is estimated that around 80 % of peoples from the world utilize the plants as a source of medicine for different diseases (Kamboj, 2000).

The Eastern Ghats of India is a broken chain of hills and elevated plateaus, running about 1750 km between Mahanadi and Vaigai rivers and almost parallel to the east coast of India covering four states *viz*., Odisha, Andhra Pradesh, Telangana, Tamil Nadu and Karnataka (Naidu and Kumar, 2015). Tropical forests are the most complex of all the terrestrial ecosystems and generate a variety of natural resources help to sustain the livelihood of local communities (Kumar and Bhatt, 2006). The eastern ghat forest region is known for its rich biodiversity, luxuriant forests, ecologically important habitat and harbour for many herbaceous traditional medicinal plants that are used by native tribes to cure various disorders/ailments (Rao *et al*., 2000 and Padal *et al.*, 2012). The history of indigenous knowledge is as old as the human race and has always been very important for the people who generate it. The predominant tribal communities inhabiting in the eastern ghat forest region of peninsular India *viz*., khond, jatapu, nukh dora, konda dora, bagata, valmiki, konda kammara, gadabas, yerukulas, goudus, mali, kotia, porja, kisan, kolha, bhuiyans, savaras, santal, kolha, bhathudi, kharia, mankidias, gondo, ho, chenchu, erukala, lambada, kuravas, irulas, sugali, jenukuruba, adiyan, vasava, halpati, irular, irulgia, kuruba, thenukuruba, sholaga etc. all these tribal communities are well versed with the herbal plants and widely used the herbal products in tribal medicine (Kar *et al*., 2013, Padal *et al*., 2013, Ramakrishna *et al*., 2014; Arulappan *et al*., 2015; Reddy, 2015; Naik *et al*., 2017; Rashmita and Behera, 2018 and Sannyasi *et al.*, 2020).

Though it is believed that after the advent of synthetic drug, the plant drugs lost their significance for some time. Currently the Government of India, realizing the value of the country's enormous wealth of medicinal plants, has embarked on a mission mode of documenting the traditional knowledge about the plants. The World Health Organization has also recognized the importance of traditional medicine and has created strategies, guidelines and standards for botanical medicines. Over the past decade, there has been a resurgence of interest in the investigation of natural materials as a source of potential drugs (Mishra *et al*, 2003; Arulappan *et al*., 2015). Allopathic drugs have brought a revolution throughout the World but the plant based medicines have its own unique status. Nearly 80% of the World population depends upon traditional system of medicine for their health care (WHO, 1993; Ishtiaq *et al*., 2006; Mishra *et al*., 2012). India has centuries old heritage of medicinal plants and herbal medicines for curing human illness & promotion of health in tribal & rural areas (Kar *et al*., 2013).

Majority of the commonly used plant parts as medicine in the eastern ghat region of peninsular India such as leaves, root, stem, bark, flower, fruit, seed and gum. The plants are mostly used in the form of paste, decoction, plant parts extract and seed oil (Sandhyasri and Reddi, 2011; Naidu *et al*., 2012; Seema *et al*., 2012; Padal *et al*., 2014). Tribal people still depend on medicinal plants for the treatment of asthma, abscess, anthelmintic, astringent, cough and cold, fever, paralysis, piles, diarrhea, worm, heart disease, eczema, whooping cough, ulcers, snakebite, ring worm, diuretic, breast pain, bronchitis, dysentery, gonorrhea, leprosy, burning sensation, kidney disease, blood pressure, malaria, syphilis, cholera, opthalmia, psoriasis, sciatica and many types of diseases (Rawat and Choudhury, 1998; Basha *et al*., 2011; Sandhyasri and Reddi, 2011;

Sahoo, 2014; Padal *et al*., 2015).

The present review emphasizes with detailed botanical aspects and documented the diversity of fabaceous medicinal plant resources available and their uses in tribal medicine by the tribal people in the eastern ghat region of peninsular India.

The Fabaceae or Leguminosae commonly known as the legume, pea, or bean family, are a large and economically important family of flowering plants. It includes trees, shrubs and herbaceous plants perennials or annuals, which are easily recognized by their fruits (legume) and their compound, stipulated leaves. The group is widely distributed and is the third-largest land plant family in terms of number of species, behind only the Orchidaceae and Asteraceae, with 730 genera and over 19,400 species (Judd *et al*., 2002; Rahman and Parvin, 2014). The details of predominant Fabaceae medicinal plants used by the tribal people in the Eastern Ghats of peninsular India are presented in table1.

Fabaceae is the dominating family from which 21 species have been identified for their use in tribal medicine followed by Asteraceae (20 species) and Verbenaceae (9 species) in the eastern ghat forest region of Vizianagaram district, Andhra Pradesh (Naidu *et al.,* 2012; Parijatham *et al*., 2016). Ratnam and Raju (2005) reported that fabaceious plants (*Bauhinia racemosa, Cassia auriculata Cassia montana, Pongamia pinnata,* and *Tephrosia purpurea*) used in folk medicine to cure common women ailments by Adivasis in the Eastern Ghats of Andhra Pradesh. The roots of *Abrus precatorius* are used for joint pains by the tribals of West Godavari whereas, the root powder is used as an antidote for snake bites in Vizianagaram districts of Andhra Pradesh as reported by Kalpana (2008) and Lakshmi (2002). The tribal people use most of these medicinal plants to cure their day to day health problems like diarrhea, dyspepsia, general fevers, skin diseases, menstrual problems, joint pains, wounds, and snake bites (Padal and Vijaykumar, 2013). Naik *et al*. (2017) reported that the phytotherapeutic practices of sugali tribe resemble with other tribes in the Andhra Pradesh state as well as in other states of India and also described about Fabaceae is the dominant family with 12 species used in tribal medicine.

The tribes like chenchu, Erukala and lambada in various districts of Telangana state are widely used *Caesalpinia bounduce* in folk medicine to cure hydrocel (Ramakrishna *et al*., 2014; Reddy, 2015). Ramakrishna and Ranjalkar (2020) reported 31 species of ethanomedicinal fabaceous plants and observed that the decoction of flowers of *Butea monosperma* is used as blood purifier, seeds are used as anthelmintic agent and gum is used as tonic by ladies after delivery by the tribals of Adilabad district, Telangana.

Medicinal plants used to treat diabetic conditions are of considerable interest and a number of plants have been reported show varying degrees of hypoglycemic and anti-hyperglycemic activity (Ignacimuthu *et al.,* 2006). Samy *et al*. (2008) studied about the fabacious medicinal plants used in tribal medicine and reported that *Abrus precatorius* L. and, *Mimosa pudica* L. are used as a traditional healers against snake bite in southern Tamilnadu. Sankaranarayanan *et al*. (2010) reported the medicinal plants of Villupuram district, Tamilnadu used in folk medicine such as *Indigofera aspalathoides* (root) for chronic eczema, acute tumour, psoriasis, toothache and abscess, *Phyllanthus niruri* (leaf) for digestive, simulative, carminative and aphrodisiac and *Cassia auriculata* (leaf) for muscle pain, body pain and gastric problems. The local tribal population (*Kuravas* and *Irulas)* of hillocks of Gingee hills of Eastern Ghats, Villupuram District, Tamilnadu had a good knowledge of ethnomedicinal plants as they were using 163 plants from 62 families including fabaceae to cure 39 ailments of humans and animals (Thirumalai *et al*., 2010; Arulappan *et al*., 2015).

Pooja and Vidyasagar (2015) studied about the ethnomedicinal properties of Fabaceae plants and reported that *Abrus precatorius*, *Albizzia lebbeck*, *Butea monosperma*, *Cassia tora*, *Dalbergia sissoo*, *Saraca asoca* are used to cure tonsils, snake bite, stomach worms, malaria, fever, white discharge, ring worms, etc., by Rajgond tribes of Karnataka. Sannyasi *et al.,* 2020 observed the seeds, leaves of *Senna occidentalis, Clitoria ternatea* and Mimosa pudica used in tribal medicine to cure cold, cough, swellings and stones in kidneys.

Tirkey (2006) conducted a study on ethnomedicinal plants of fabaceace exploited by local tribals of Chhattisgarh and recorded some fabaceious plants used in tribal medicine *viz*., *Abrus precatorius* for skin disease and poor eye-sight, *Clitoria ternatea* as diuretic, *Crotalaria medicaginea* to cure white discharge, *Desmodium gangeticum* for goitre, etc. Kar *et al*., 2013 studied about the plants used in tribal medicine and observed that among 57 families recorded, the families like., Fabaceae, Rubiaceae and Rutaceae are having more than five

Table 1. Most commonly used Fabaceae medicinal plants used by the tribal people in the Eastern Ghats of peninsular India

Botanical name Fabaceae	Useful part	Uses in tribal medicine
1. *Abrus precatorius* Linn	Leaf, Seed, Root	Cough, Leucoderma, Snake bite, Hair growth, Swellings, Con traceptive, Skin diseases, Poor eyesight, Urine stimulant and Purgative, Scabies (Lakshmi, 2002; Tirkey, 2006; Kalpana, 2008; Samy *et al*., 2008; Padal *et al*., 2013; Ramakrishna and Ranjalkar, 2020)
2. *Acacia catechu* (L. f.) Willd.	Leaf, Stem, Bark	Astringent, Cough, Anthelmintic, Antidysenteric, Antipyretic, Cures Itching, Inflammations, Sore Throat, Bronchitis, Indigestion, Ulcers, Boils, Leucoderma, Psoriasis, Leprosy And Elephantiasis, Toothache, Headache, Diarrhoea, Digestive, Skin disease, (Lachure, 2012; Rahman and Parvin 2014)
3. *Acacia nilotica* (L.) Willd.	Leaf, pods, Flower	Astringent, Antipyretic, Leucoderma, Gonorrhea, Strangury, Diarrhea, Cystitis, Vaginities, Dysentery, Ophthalmia, Cough and Insanity (Rahman and Parvin 2014)
4. *Albizia lebbek* (L.) *Benth*	Leaf, Seed , Bark	Jaundice, burning skin and scabies. Inflammation (Pooja and Vidyasagar 2015)
5. *Albizia procera* (Roxb.)	Leaf, Bark	Insecticidal, ulcer, worms and scabies (Rahman and Parvin, 2014)
6. *Alysicarpus hamosus* Hedge	Leaf	Earache, Eye sight, Wounds (Tirkey, 2006; Ramakrishna and Ranjalkar, 2020)
7. *Bauhinia purpurea* Linn.	Stem, Bark	Improve Memory Power, Mouth ulcers (Pooja and Vidyasagar, 2015; Ramakrishna and Ranjalkar, 2020)
8. *Bauhinia vahilli* Wight and Arn.	Pods	Irregular menstruation flow (Seema *et al*., 2012)
9. *Bauhina racemosa* Lam.	Stem, Bark, Leaf	Improve Memory power, Desentery, Mouth ulceration (Ramakrishna and Ranjalkar, 2020)
10. *Bauhinia variegate* Linn.	Leaf, Seed, Stem, Bark	Diarrhoea, Skin diseases, Diabetes, Inflammations, Piles, Worm, Sustain Pregnancy (Mishra *et al*., 2003; Pullaiah, 2006; Patel, 2012)
11. *Butea monosperma* (Lam.) Taub.	Bark, Leaf, Flower, Seed, Gum, Seed, Flower	Leucorrhoea, Fever, Asthma, Arthritis, Diabetes, Contraceptive, Backache, Bleeding In Urinary Canal (Madhu and Suvartha, 2009; Padal *et al*., 2013; Ramakrishna and Ranjalkar, 2020)
12. *Butea superba* Roxb.	Flowers	Snake Bite (Pooja and Vidyasagar, 2015)
13. *Caesalpinia crista Linn.*	Leaf, Seed	Leprosy, Abdominal pain, Malaria, Uterine Stimulant (Kalpana, 2008; Patel, 2012)
14. *Caesalpinia pulcherrima Linn.*	Leaf, Flower, Seed	Asthma, Bronchitis, Malaria (Ratnam and Raju, 2005)
15. *Cassia absus* Linn.	Leaf, seed	Asthma, Skin diseases, Control hiccups (Basha *et al*., 2011)
16. *Cassia alata* Linn.	Leaf, Stem	Hepatitis, Skin diseases, Inflammation(Padal and Vijaykumar, 2013; Naik *et al*., 2017)
17. *Cassia angustifolia* Vahl.	Leaf, Fruit	Constipation, Skin and liver diseases (Ramakrishna *et al*., 2014)
18. *Cassia auriculata* Linn.	Seed, Flower	Diabetes, White discharge (Ramakrishna and Ranjalkar, 2020)
19. *Cassia fistula* Linn.	Leaf, rootSeed, Bark	Asthma, Ringworm, Antiviral, Leprosy (Patel, 2012; Ramakrishna and Ranjalkar, 2020)
20. *Cassia occidentalis*	Leaf, Root, Seeds, Stem, Bark	Chicken pox, Joint pains Bronchitis, Cough, Asthma, Wounds, Fever, Antidote, Skin disease, Allergy Ringworm (Sannyasi *et al*., 2020; Ramakrishna and Ranjalkar, 2020)
21.*Cassia tora* Linn.	Leaf	Goiter, Mouth ulcers, Wounds (Pooja and Vidyasagar,2015; Ramakrishna and Ranjalkar, 2020)
22. *Clitoria ternatea* L.	Bark, leaf, Flower, Roots, Seeds	Eye Disease, Anemia, Menstrual Disorders, Earaches, Cough, Tonsilitis, Leucoderma, Relief from headache, Piles, Psoriasis (Sannyasi *et al*., 2020; Ramakrishna and Ranjalkar, 2020)
23. *Crotalaria umbellate* Wight Ex Wight &Arn.	Roots	Body pains, Rheumatism (Prusti and Panda, 2005; Patel, 2012)

Table 1. *Continued ...*

Botanical name Fabaceae	Useful part	Uses in tribal medicine
24. *Crotolaria retusa* L.	Leaves, Seed and Whole plant	Skin diseases, Scabies, Cold and Fever (Prusti and Panda, 2005; Rashmita and Behera, 2018)
25. *Crotalaria medicaginea* Lam.	Leaf paste	White discharge (Tirkey, 2006)
26. *Crotalaria orixiensis* Willd.	Root	Tuberculosis (Tirkey, 2006)
27. *Crotalaria Pallida* Dryd.	Seeds	Narcotic (Kapur, 1991; Padal *et al*., 2013)
28. *Dalbergia sissoo* Roxb.	Wood, Leaf Bark	Abscess, Astringent, Haemorrhages, Epistaxis, Menorrhagia, Bleeding Piles, Acute Stage Of Gonorrhea. Wounds, Ring Worms, White Discharge, Leprosy, Jaundice, Skin Disease, Gonorrhoea, Dysentry, Itching, Urinary Infection and Blood dysentry (Tirkey, 2006, Patel, 2012; Pooja and Vidyasagar, 2015)
29. *Dalbergia lanceolaria Subsp. Lanceolaria* L.F.	Stem Bark	*Diarrhoea* (Padal *et al*., 2015)
30. *Dalbergia lanceolaria Subsp. Paniculata* (Roxb.) Thoth.	Stem Bark	Rheumatoid Arthritis, Osteo-arthritis, Hair fall and dandruff (Ramakrishna and Ranjalkar, 2020)
31. *Dalbergia latifolia Roxb.*	Bark	*Diarrhoea*, Indigestion, Leprosy (Pooja and Vidyasagar, 2015)
32. *Derris indica* (Lam.) Bennet	Root	Snake Bite (Tirkey, 2006)
33. *Desmodium gangeticum* (L.) DC.	Root, Stem bark	Alterative, Tonic, Anthelmintic, Aphrodisiac, Astringent Bowels, Typhoid, Fever, Piles, Asthma, Bronchitis, Dysentery, Diarrhea, Biliousness, Cough, Chronic Affections Of The Chest and Lungs, Whooping Cough, Sinusitis and Rhumatism, Goiter Remedy (Tirkey, 2006; Rahman and Parvin, 2014; Padal *et al*., 2015)
34. *Desmodium heterocarpon* (Linn.)	Root	Backache (Tirkey, 2006)
35. *Desmodium latifolium* (Linn.)	Stem bark	Cure painful testicles (Tirkey, 2006)
36. *Desmodium Pulchellum* (Linn.) Benth.	Leaves	Giddiness, Wounds (Padal *et al*., 2013; Padal *et al*., 2015)
37. *Desmodium triflorum* (L.) DC	Leaf, Root	Blindness, Eye Diseases, Sores, Colic, Whitlow, Spleen Com plaints, Stomach Trouble, Diarrhea, Menorrhagia, Breast Pain, Galactagogue, Laxative, Diuretic, Dysentery, Wounds, Abscesses, Cough, Carminative, Asthma, and Bilious Complaints. (Patel, 2012; Padal *et al*., 2014; Rahman and Parvin, 2014)
38. *Erythrina variegata L.*	Leaf, bark, root	Fertility, Rheumatic Pains, Toothache, Backache, Acidity, Earache, Scabies, Fever and Menstrual disease (Dwivedi and Pandey 1992; Padal *et al*., 2013; Rahman and Parvin, 2014)
39. *Flemingia congesta* Roxb.	Root	Epilepsy (Tirkey, 2006)
40. *Flemingia macrophylla* (Willd.)	Stem, Root, Oil	Arthritis and Fever (Jain, 1991; Tirkey, 2006)
41. *Flemingia strobilifera*	Root	Facial paralysis (Tirkey, 2006)
42. *Flemingia wightiana*	Root, Leaf	Weakness, Jaundice (Jain, 1991; Tirkey, 2006)
43. *Glycyrrhiza glabra* (Retz.) Dc.	Root, Stem	Allergy, Cough, Viral fever, Stomach ulcers (Padal *et al*., 2013)
44. *Indigofera linnaei*	Leaf, Root	Asthma (Dwivedi, 2003)
45. *Indigofera tinctoria* Linn.	Leaf, Plant	Boils, Bronchitis, Epilepsy, Piles, Kidney Stones (Kumar and Sikarwar, 2002; Sankaranarayanan *et al*., 2010; Padal *et al*., 2013)
46. *Melilotus indica* (L.) All.	Root	Control bleeding through nose and mouth (Kala, 2005)
47. *Millettia racemosa* (Roxb.) Benth.	Stem bark, Root, Seed	Fits, Paralysis, Rheumatism, Weakness (Rahman and Parvin, 2014)
48. *Mimosa pudica* L.	Root, Whole plant	Fever, snake-bite, Allergy, Asthma, Ulcer and Bleeding (Brahman, 2000; Sandhyasri and Reddi, 2011; Patel, 2012)
49. *Mucuna pruriens* (Linn.) Dc.	Seed, Root	Oedema, Paralysis, Leprosy (Kumar,1999; Tirkey, 2006)
50. *Physalis minima* Linn.	Whole plant	Burning, Cough, Inflammation, Ulcer (Patel, 2012)

Table 1. *Continued ...*

Botanical name Fabaceae	Useful part	Uses in tribal medicine
51. *Pithocelobium dulce* (Roxb.) Benth	Leaf	Febrifuge and enema, Oedema, Arthritis (Rahman and Parvin, 2014)
52. *Pongamia pinnata* (L.) Pierre	Root, Seed, Stem Bark, Leaf	Skin disease, Leucoderma, Allergy, Carminative, Paralysis, Parasiticide, Bleeding, Mosquito Repellent, Ulcers (Saxena and Bhahmam, 1995; Ratnam and Raju, 2005; Madhu and Suvartha, 2009 and Patel, 2012)
53. *Pterocarpus marsupium* Roxb.	Bark, Leaf	Cough, sores and skin diseases (Sahoo, 2014; Rasmita and Behera, 2018)
54. *Pueraria tuberosa* (Roxb. Ex Willd.) Dc.	Tuber	Blood Pressure, Body Pains, Weakness (Kumar and Jain, 1998; Tirkey, 2006; Madhu and Suvartha, 2009)
55. *Saraca asoka* (Roxb.) Willd.	Bark, leaf, flower Whole Plant	Irregular menstruation, Blood-purifying, Stomachache, Haemorrhagic dysentery, Diabetes, Rheumatism (Kajita *et al*., 2001; Rahman and Parvin, 2014; Pooja and Vidyasagar, 2015)
56. *Senna sophera* L.	Leaf, root	Dyspepsia (Rahman and Parvin, 2014)
57. *Sesbania grandiflora* Pers.	Stem Bark, Seed	Diarrhoea, Diabetis, Itches, Asthma, Anti fertility agent (Samy *et al*., 2008)
58. *Tamarindus indica* Linn.	Fruit, Leaf, bark	Jaundice, Fever, Wound healing, Anti inflammatory, Burning sensation, Heart Disease, Astringent Asthma, Amenorrhea, Fever, Diarrhea (Hiremath and Taranath, 2010; Padal and Vijayakumar, 2013)
59. *Teprosia purpurea* (Linn.) Pers.	Whole plant, Root	Liver Disorder, Diarrhoea, Asthma, Ulcer, Laxative, Blood, Urinary problem, Stimulant, Intestinal worm (Ratnam and Raju, 2005; Patel, 2012)
60. *Teramnus labialis* Spr.	Root	Fever (Naik *et al*., 2017)

taxa with medicinal uses. He also reported that fabaceous plants are used to cure cholera and dysentery in Northern tribal districts of Odisha. Rasmitha and Behera (2018) studied medicinal plants of Fabaceae family and explored the treatment of diseases by tribal peoples in remote areas of Kuchinda sub-division of Sambalpur district.

Conclusion

The overall review indicated that medicinal plants in the Eastern Ghats of peninsular India are still playing a significant role in the management of various human diseases. Ethnomedicinal knowledge is important not only for its potential contribution to drug development and market values but also for health care professionals. Enhancing the sustainable use and conservation of indigenous knowledge of useful and medicinal plants may benefit and improve the living standards of poor people of the tribal region. The research on phytochemical, antimicrobial and antioxidant studies of these medicinal plants is the need of the hour to find out the active ingredients and to feed basic information to the pharmaceutical industries for further research on effective control of human ailments.

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