



**RESEARCH ARTICLE**

**ETHNOMEDICINAL AND ECOLOGICAL STUDIES ON FABACEAE OF RUNJ FOREST  
PANNA (MP), INDIA**

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**ABSTRACT**

Ranipura, Vishramganj and Aaramganj are situated in Runj forest of Panna district, Madhya Pradesh. It is natural forest harboring many wild varieties of plant species which have immense medicinal properties. Prompt with wealth of plants used as ethno medicine by local healers. More importance to Fabaceae, because of its rich medicinal properties and therefore, we collected and identified them. The plants are *Abrus precatorius*, *Acacia arabica*, *Acacia catechu*, *Acacia leucophloea*, *Albizia procera*, *Bauhenia variegata*, *Bauhinia vahlii*, *Bauhinia racemosa*, *Butea monosperma*, *Cassia aungustifolia*, *Cassia tora*, *Crotalaria juncea*, *Dalbergia latifolia*, *Dalbergia sissoo*, *Glycine max*, *Indigofera prostrata*, *Mimosa pudica*, *Phaseolus vulgaris*, *Tephrosia purpurea* and *Trigonella foenum-graecum*. During the study we mainly focused on documentation of traditional knowledge of local peoples about uses of native medicinal fabaceous plants as ethno-medicines. The methods followed for documentation of indigenous knowledge was based on questionnaire regular interviews and interaction with local communities. Outcome of the study suggest that local healers use these plants for various ailments such as Cough, dysentery, pyretic, snake bites, bronchitis, vomiting, ulcers, diarrhea, fevers, skin diseases, problems of pregnancy, stomach-ache etc.

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**INTRODUCTION**

Madhya Pradesh is endeavored with lots of natural blessings in terms of ecological, climatic and soil well-off for plant growth possess diverse types of climatic conditions and various tracts of valleys. These factors are favorable for the wealth of therapeutic plants. The majority of the common medicinal plants are originated in the forests. The use of medicinal herbs is still a convention, sustained by tribal communities. The herbal raw drugs required for the preparation of medicines were collected from nearby forests. They possess huge information of the treatment. The technique of treatment is conventional and drugs are used in crude form only. From beginning to end times immemorial this information is transmitted orally from generation to generation. But due to deforestation and social changes, the folk culture and tradition has faced solemn threat which may lead to defeat of conventional practices in close to future. A number of the younger generations are also gradually migrating to town and cities. As a result the traditional wisdom is falling rapidly day by day, so the evaluation of traditional knowledge, the conservation of plants and systematic documentation has vast significance and become a critical ingredient.

Some Ethnobotanical work in India was done in botanical survey of India. The scope, importance and methodology of this field have been outlined by various workers such as Jain, 1965; Mitra and Jain, 1991; Kumar, 2000; Maheshwari and Singh, 1984. The Ethnobotanical studies were carried out in different parts of India by various workers as Shivani and Kumar, 2000; Shivani and Kumar, 2002; Gupta and Kumar,

2000a, 2002b; Mishra and Kumar, 2001a, 2001b and Khanna and Kumar, 2001. The application of herbal medicines has been studied by Seema and Kumar, 2004, 2005; Sharma and Kumar, 2006; Singh *et al.*, 2010; Sharma and Kumar 2011; Sharma *et al.*, 2011; Gwalwanshi *et al.*, 2014. The members of family Papilionaceae are herbs, shrubs or trees found in all climates but mostly between and near the tropics and are more abundant in the old than in the New World. The family includes the greatest number of Legumes, comprising 400 genera with about 7000 species. It is an extremely important family and its members yield nutritious food, fiber, shelter, valuable medicines and also virulent poisons<sup>20, 21, 22</sup>. The members exhibit most varied properties, some are amylaceous, other oleaginous, many yield resins, balsams and dyes, a few are astringent, acrid and bitter, narcotic and poisonous, emetic and purging, tonic and restorative. The seeds are often anti periodic and the root anthelmintic.

**MATERIALS AND METHODS**

Field trips were carried out in whole areas of Panna district (M.P.) in different seasons of 2012-2013. Panna district is located in North-Eastern part of Madhya Pradesh. The district extends from altitude 23° 45' 35" to 25° 10' North and longitude 79° 45' to 80° 40' East (Kumar, 2005). Panna is bounded by Banda district of Uttar Pradesh in North, Satna in East, Jabalpur in South, and Damoh and Chhatarpur in West. The whole district lies on Vindhya plateau with an average height of 350 meters (Richhariya, 2010; Vyas, *et al.*, 2012; Gwalwanshi, *et al.*, 2014). The information regarding the ethno-medicinal uses of plant was collected from natives

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through personal interviews and discussion etc. The indigenous knowledge include local name of the plant sample, part used, and administration. After the interview, the specimens placed before them for identification of local name and their ethno-medicinal uses. The identification of the scientific names of the plants was made with the help of flora of different authors (Khanna, *et al.*, 2001; Richhariya, 2010; Verma, 1993; Mudgal, 1997; Jain, and Rao, 1976; Dushing, and Patil, 2010)<sup>11, 23, 27, 28, 29, 30</sup>. The plant samples have been housed in the herbarium of the Department of Botany, Dr. Hari Singh Gour University, Sagar (M.P.).

Ethno-medicinal inventory was developed consisting of family, followed by their botanical name, local name, habit, life form, part used, mode of preparation and ethno-medicinal uses.

## RESULTS

In the present study twenty medicinal plants are used for the treatment of various diseases belonging to Fabaceae family. The utility lies through their roots, leaves, fruits, seeds and even whole plants. These are taken orally or applied locally in the form of infusion, decoction, paste or powder (Table 1). The information generated from the present study regarding the medicinal plants used by natives of this region needs a thorough phyto investigation to promote scientific cultivation which will protect and conserve wild flora of this hilly area.

The traditional healers were using these plants to treat the various ailment and diseases like Ulcer, skin infection, leucoderma, rheumatic pain, dysentery diarrhoea, leprosy, wounds, anaemia, diabetes, inflammations and intermittent fever, an antipyretic, an antidote for snake bites, bronchitis, dental caries, and problems of pregnancy, stomach-ache, Pyorrhoea, arthritis, blood pressure, ringworm, boils and pimples, asthma, cough & cold, dyspepsia, gonorrhoea, vomiting, eye tonic, Jaundice, Piles and fistula, kidney problem, menstrual problem.

The various life form classes (Raunkaier, 1934) as phanerophytes (nano, micro, meso, mega, epi) are represented by 13 species while chamaephytes account for 4 species and therophytes are represented by 3 species of the total number of species. Phanerophytes are dominating in all the parts (Figure 1).

The plant species shown in Table: 1 was identified and specimens were collected for herbarium. Various plant species were found growing at different elevated zone from the MSL (Mean Sea Level). It is also clean from the data shown in Table: 2 that number of plant species varies at different height. It is also deduced that frequency and diversity of forest plants also varied.

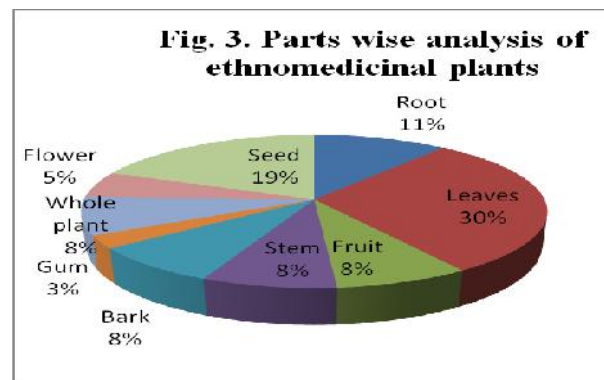
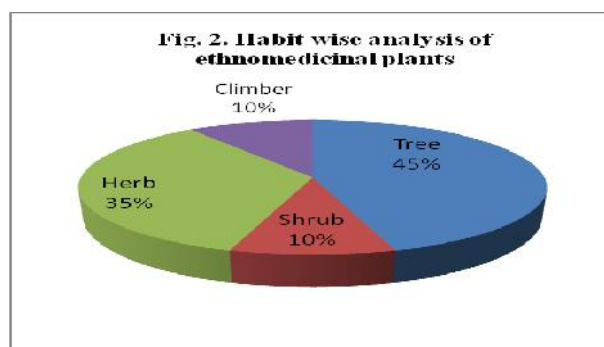
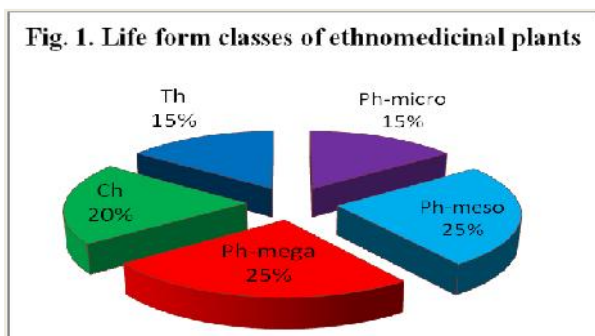
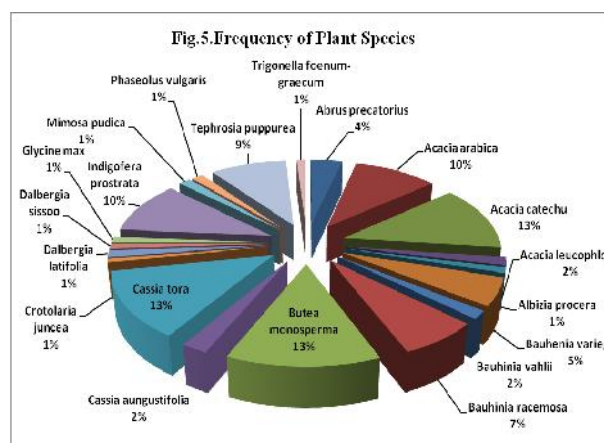


Fig. 4: Map of study site Panna.



Data depicted in table 2 indicated occurrence of plants at different height from the MSL (Mean Sea Level). It is also clearly reveal that due to over exploitation of these plants. Their status is changed. On the basis of their occurrence plants are rated as threatened (*Abrus precatorius*, *Bauhinia variegata*, *Cassia augustifolia*), vulnerable (*Bauhinia racemosa*, *Tephrosia puppurea*), Endangered (*Acacia leucophloea*, *Albizia procera*, *Bauhinia vahlii*, *Croton juncea*, *Dalbergia latifolia*, *Dalbergia sissoo*, *Mimosa pudica*)

**Table 1** Studies on the Ethnobotanical and Ethnomedicinal Uses of Plants of the Family Fabaceae of Panna District (MP), India

| S.No. | Botanical name                          | Local name  | Habit   | Life form | Parts used                | Mode of preparation/Dosage  | Ethno-medicinal uses   |
|-------|---|-------------|---------|-----------|---------------------------|---|--|
| 1     | <i>Abrus precatorius</i> L.             | Ratti       | Climber | Ph-micro  | Root                      | Root paste is applied on skin infections. It is considered as a poisonous plant and is kept away from households. Used for treating abortion and leucoderma; seed powder is used for killing pests in some local areas.   | Ulcer, skin infection, leucoderma, rheumatic pain.   |
| 2     | <i>Acacia arabica</i> (Lam.) Willd      | Babool      | Tree    | Ph-meso   | Leaves, fruits            | Leaves are crushed and juice is applied to cure dysentery.  | Cough, dysentery   |
| 3     | <i>Acacia catechu</i> (L.) Willd. Oliv. | Khair       | Tree    | Ph-meso   | Stem                      | The stem is ground fine and a decoction is prepared. One cup decoction is taken thrice a day for one or two days.   | Diarrhoea, eruptions of the skin, leprosy, leucoderma and wounds, anaemia, diabetes, inflammations and intermittent fever.                 |
| 4     | <i>Acacia leucophloea</i> Willd.        | Reonja      | Tree    | Ph-meso   | Seed, gum, leaves         | Seed paste obtained by rubbing on a stone is taken orally to cure dysentery.  | An antipyretic, an antidote for snake bites, bronchitis, ulcers, diarrhea, dysentery, dental caries, intermittent fevers and skin diseases |
| 5     | <i>Albizia procera</i> Benth.           | Safed siris | Tree    | Ph-meso   | Bark, whole plant         | Bark powder is applied on insect bites, used in leprosy, skin disease, cough and diabetes   | Problems of pregnancy, stomach-ache, ulcers, leprosy   |
| 6     | <i>Bauhenia variegata</i> L.            | Kachnar     | Tree    | Ph-meso   | Buds                      | Dried buds are used to cure dysentery, piles, diarrhoea and worms.  | Piles, dysentery and worm infestation.   |
| 7     | <i>Bauhinia vahlii</i> W. & A.          | Mahuli      | Climber | Ph-micro  | Root, leaves              | Leaf paste applied and tied with bandage for arthritis  | Pyorrhea, arthritis  |
| 8     | <i>Bauhinia racemosa</i> Lam.           | Asto        | Tree    | Ph-mega   | Leaves, bark              | Stem bark used in dysentery, decoction of leaves used in malaria, leaves crushed with onion for diarrhea.   | Blood pressure, skin diseases, diarrhea  |
| 9     | <i>Butea monosperma</i> Lamk.           | Palas       | Tree    | Ph-mega   | Seeds, bark               | Fresh bark is crushed, tied and changed every 7 days till the fractured bone is set.  | Worm infestation and in the treatment of ringworm, boils and pimples   |
| 10    | <i>Cassia aungustifolia</i> L.          | Sena        | Shrub   | Ph-mega   | Leaves, branches, fruit   | Fruit pulp with pepper, garlic, tamarind are crushed and taken orally as a tonic  | Worm infestation and in the treatment of ringworm, boils and pimples   |
| 11    | <i>Cassia tora</i> L.                   | Powar       | Herb    | Ch        | Seed                      | Powder of the dry seeds is used in Asthma. The powder is mixed with Gud & makes small balls & used every day each ball.   | Stomachache, asthma, cough & cold  |
| 12    | <i>Crotolaria juncea</i> L.             | San         | Shrub   | Ph-micro  | Flower, whole plant       | Whole plant decoction is consumed for stomach pain by the local villagers.  | High nutritious and worm repellent.  |
| 13    | <i>Dalbergia latifolia</i> Roxb.        | Dhobin      | Tree    | Ph-mega   | Leaves, bark, roots, stem | Stem bark paste with neem oil used as an external application in the case of baldness   | Dyspepsia, diarrhoea, leprosy, obesity and worms   |
| 14    | <i>Dalbergia sissoo</i> Roxb.           | Shisam      | Tree    | Ph-mega   | Leaves, Roots, stem       | Use the infusion of leaves for gargling against throat infection. Decoction of leaves is used to cure gonorrhoea. The powder of stem bark is used to cure children suffering from pneumonia.  | Leprosy, boils, gonorrhoea, eruptions and stop vomiting  |
| 15    | <i>Glycine max</i> (L.) Merr.           | Soybean     | Herb    | Ch        | Seed                      | Paste of seeds use.   | Eye tonic  |
| 16    | <i>Indigofera prostrata</i> Willd.      | Neel        | Herb    | Th        | Seed                      | Boiled seeds are taken orally in piles and fistula. The leaf infusion in goat's milk is taken in the early Morning hours for a period of 2 weeks to treat jaundice  | Jaundice, Piles and fistula.   |
| 17    | <i>Mimosa pudica</i> L.                 | Lajwanti    | Herb    | Ch        | Leaves, seed              | Entire plant powder is administered to cure general fevers  | Jaundice, fever  |
| 18    | <i>Phaseolus vulgaris</i> L.            | Bakala      | Herb    | Ch        | Leaves, fruit             | Boil <i>Phaseolus vulgaris</i> (red kidney bean) pod to make tea and drink to treat Kidney problems.  | Skin irritation, kidney problem  |
| 19    | <i>Tephrosia puppurea</i> L.            | Surpunkha   | Herb    | Th        | Whole plant, root, leaves | Whole plant has been used to cure tumors, ulcers, leprosy, allergic and inflammatory condition such as rheumatism asthma and bronchitis. Leaves of the plant is used in dyspepsia, Root is also used in inflammation, skin disorders, asthma, bronchitis, anaemia | Skin treatment, anthelmintic, anti-pyretic, ulcers, leprosy, asthma, bronchitis, anaemia   |
| 20    | <i>Trigonella foenum-graecum</i> L.     | Methi       | Herb    | Th        | Leaves, seeds             | Seeds are boiled in water and taken as a drink. Roasted and boiled in water and taken against menstrual pain.   | Rheumatism, menstrual problem  |

Ph- Phanerophytes, Th- Therophytes, Ch- Chaemophytes.

**Table 2** Occurrence of medicinal plants of Fabaceae at different height in the forest

| S. No. | Botanical name                          | Occurrence of MSL (Meter) | Frequency distribution (%) | Category at Runj |
|--------|---|---------------------------|----------------------------|------------------|
| 1      | <i>Abrus precatorius</i> L.             | 210-290                   | 28                         | Threatened       |
| 2      | <i>Acacia arabica</i> (Lam.) Willd      | 230-370                   | 74                         | Common           |
| 3      | <i>Acacia catechu</i> (L.) Willd. Oliv. | 270-380                   | 93.5                       | Common           |
| 4      | <i>Acacia leucophloea</i> Willd.        | 290-360                   | 12                         | Endangered       |
| 5      | <i>Albizia procera</i> Benth.           | 230-350                   | 8                          | Endangered       |
| 6      | <i>Bauhenia variegata</i> L.            | 220-360                   | 39                         | Threatened       |
| 7      | <i>Bauhinia vahlii</i> W. & A.          | 190-300                   | 11.5                       | Endangered       |
| 8      | <i>Bauhinia racemosa</i> Lam.           | 220-310                   | 51                         | Vulnerable       |
| 9      | <i>Butea monosperma</i> Lamk.           | 230-340                   | 95.5                       | Common           |
| 10     | <i>Cassia aungustifolia</i> L.          | 250-350                   | 16.5                       | Threatened       |
| 11     | <i>Cassia tora</i> L.                   | 180-270                   | 93.5                       | Common           |
| 12     | <i>Crotalaria juncea</i> L.             | 210-260                   | 5.5                        | Endangered       |
| 13     | <i>Dalbergia latifolia</i> Roxb.        | 230-320                   | 9.5                        | Endangered       |
| 14     | <i>Dalbergia sissoo</i> Roxb.           | 240-350                   | 7.5                        | Endangered       |
| 15     | <i>Glycine max</i> (L.) Merr.           | 220-260                   | 8.5                        | Cultivated       |
| 16     | <i>Indigofera prostrata</i> Willd.      | 190-280                   | 76                         | Common           |
| 17     | <i>Mimosa pudica</i> L.                 | 200-250                   | 10.5                       | Endangered       |
| 18     | <i>Phaseolus vulgaris</i> L.            | 220-260                   | 10.5                       | Cultivated       |
| 19     | <i>Tephrosia puppurea</i> L.            | 190-280                   | 67.5                       | Vulnerable       |
| 20     | <i>Trigonella foenum-graecum</i> L.     | 220-260                   | 8                          | Cultivated       |

and Common (*Acacia arabica*, *Acacia catechu*, *Butea monosperma*, *Cassia tora*, *Indigofera prostrata*) & Cultivated (*Glycine max*, *Phaseolus vulgaris*, *Trigonella foenum-graecum*). The categorization was on the basis of frequency of occurrence (0-15 % Endangered, 16- 40 % Threatened, 41- 70 % Vulnerable and above 71% common). The wealth of the forest depends upon the richness of the plants. Among the plant family Fabaceae contribute forest through multiple properties e.g. the harbor rhizobium which fixed Nitrogen in soil which is essential element for plant growth. Fabaceous plants are good source of non-timber product. There also provided cattle feed and undoubtedly good source of medicines. The present study suggests that this fabaceous plants are used by the traditional healers in the Panna region. Some are over exploited and this over exploitation has generated at threat for disappearance of the plants from the region (Table 2).

## DISCUSSION

Normally Traditional knowledge is known as a cumulative body of knowledge, practice and belief, evolving through adaptive processes and handed over through generations by cultural transmission (Berkes, *et al.*, 2003). Traditional medicine has worldwide acceptance and it is dependent on locally available plant species and plant-based products and capitalizes on traditional wisdom-repository of knowledge (Awasi and Demissew, 2009).

Cultural acceptability, economic affordability and efficacy against certain type of diseases as compared to modern medicines are the base of wide acceptance of traditional medicine. Thus, different local communities in countries across the world have indigenous experience in various medicinal plants where they use their perceptions and experience to categorize plants and plant parts to be used when dealing with different ailments (Mishra, and Kumar, 2000a; Omoruyi, *et al.*, 2012). Plants have played a vital role in combating many ailments in human and livestock in many indigenous communities, Traditional healers, and particularly medicinal plant herbalists, in India and other part of the globe have a detailed knowledge-base of traditional medicine (Gwalwanshi, *et al.*, 2014; Sindiga, *et al.*, 1995; Moshi, *et al.*, 2009), which is transferred orally from one generation to the

next through professional healers, knowledgeable elders and/or ordinary people (Giday, *et al.*, 2007). In India, traditional medicine has played a significant role in treating health problems in both livestock and humans (Abebe, 1986; Gebremariam and Asres, 1998; Debella, *et al.*, 2001; Addis, *et al.*, 2001). Knowledge of medicinal plants of India and of their uses provides vital contribution to human and livestock health care needs throughout the country (Belayneh, *et al.*, 2012). The plant-based human and livestock health care persists and remains as the main alternative treatment for different ailments in Bundelkhand as well as in other parts of the country, largely due to shortage of pharmaceutical products, prohibitive distance of the health service stations, unaffordable prices by small holder farmers and pastoralists for conventional drugs, emergence and re-emergence of certain diseases and appearance of drug resistant microbes and/or helminthes (Gwalwanshi, *et al.*, 2014; Bekele, *et al.*, 2012). The dependence of the plant-based health care system could partly be attributed to underdeveloped infrastructures and modern medical health care system in the general area.

Unless the plants are conserved and the ethno-medicinal knowledge is documented, there is a danger that both the valuable medicinal plants and the associated indigenous knowledge of the ethnic groups could vanish forever due to lack of documentation (Mishra, and Kumar, 2000b) and loss of valuable medicinal plants due to population pressure, agricultural expansion and deforestation (Mitra, and Jain, 1991) as well as due to drought, urbanization and acculturation (Gupta, and Kumar, 2000). Furthermore, pastoral and agro-pastoral communities of these ethnic groups have remained ethno-medicinally unexplored and there is no comprehensive account of the medicinal plant-based practices.

## CONCLUSION

This study showed that traditional medicine, mainly involving the use of medicinal plants, is playing a significant role in meeting the primary healthcare needs of the tribals and villagers of Runj. Acceptance of traditional medicine and limited access to modern healthcare facilities could be considered as the main factors for the continuation of the practice. This field survey has documented 20 plant species distributed only single family and 14 genera as having

medicinal properties against many human and livestock ailments as reported by healers from Runj, Panna.

However, we feel that the indigenous knowledge and practices of the tribes of Panna on utilization of plant resources as medicine should be reported and preserved before they get lost due to increasing integration. There are plants that are traditionally employed for specific symptoms or conditions that often accompany itching, allergy and other skin disorders. This vast array of rare medicinal plants can be used for further research only if we ensure proper conservation of these therapeutic plants.

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