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Indigenous traditional knowledge on folk medicinal plants

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Abstract
Traditional systems of medicine continue to be broadly practiced on many accounts. Population rise, inadequate supply of medicines, the prohibitive cost of treatments, side effects of many synthetic drugs and development of resistance to presently used medicines for infectious diseases have led to increased emphasis on the use of different parts of plant materials as a source of various medicines.
About four billion people, (80% of the world population) presently use herbal medicine for primary healthcare, the World Health Organization has estimated. In our study, about 40 species of folk medicinal plant belonging to Apiaceae family was most frequently represented with four species followed by Asteraceae and Poaceae (three species each), Fabaceae, Rutaceae, Zingiberaceae, Moraceae, Lamiaceae and Myrtaceae (two species each), remaining 18 families had single species. These folk medicinal plants were found to be used for the treatment of different disorders by the rural people.

Keywords: Indigenous knowledge, medicinal plant, stem, bark, flower, leaf

Introduction
The traditional system of medicine is a wise practice of indigenous knowledge system, which has saved the lives of the people in a different region. According to World Health Organization WHO, 80% of the world population living in developing countries rely almost exclusively on traditional medicine (Bhandary and Chandrashekhar, 2002; Chandra *et al.*, 2007) [1, 2]. People of the area depend on traditional medicinal plants for the treatment in primary healthcare. As and when the number of traditional healers dwindles, there is a danger of losing their traditional knowledge (Ghatapanadi *et al.*, 2011) [3]. The rural communities mostly depend on plant diversity for the fulfilment of their basic needs and conserve other natural resources. They gather useful plant resources from various habitats and use them using indigenous knowledge and practices. The vast pool of information on indigenous knowledge and practices and technologies is rapidly being eroded as a result of fast urbanization, excessive exploitation of resources, unscientific land-use, change of lifestyles and behaviour (Joshi and Joshi, 2005) [4]. Deforestation leads to the disappearance of many precious yet unknown medicinal plants and consequently reduces the knowledge associated with those plants. Indigenous people and local communities have long applied traditional uses of medicinal plants.
These traditional knowledge and practices are disappearing, mainly due to unplanned land-use change and overexploitation of the species. Some species are under serious threat indicating the urgent need for documentation of useful plants with their uses and indigenous practices (Joshi *et al.*, 2011) [5]. The plants have long been used for medicinal purposes. The used method of medicinal plants varies according to the nature of the disease. Fresh leaves, roots, fruits, bark, stems and sometimes whole plant are reported to be used for the treatment of various ailments. Since knowledge of the use of various medicinal plants is mostly confined to local healers (Negi *et al.*, 2011) [6]. Most of the decoctions were made just by crushing the plant parts with the help of pestle and mortar, but some were made by heating or boiling plant parts in water. The paste of some plant parts (bark, leaves, etc.) was also used directly on the wound or the infected part of the body. This study is an attempt to document the indigenous knowledge about medicinal properties of plants commonly used by rural people and local ayurvedic medicinal practitioners.

Materials and Method
The present study was carried out in Mokama block of Patna District of Bihar State, India. During the survey, information regarding the plants used for treating various diseases was collected from local herbal healers by way of questionnaires and repeated interviews. Altogether 45 respondents, including local ayurvedic medicinal practitioners (Vaidyas), elders and women of the village were discussed for the medicinal uses of the plants and it was

checked and examined with various people having traditional medicinal knowledge. Most of the informants were between the age of 45 and 80 years. Data on local names of the identified folk medicinal plants, parts, used the method of application and doses were recorded.

Results and Discussion

The village dwellers of Mokama block used their rich indigenous traditional knowledge about the use of medicinal plants and passed orally from generation to generation. Intensive field survey and interactions with local herb healers, women and senior persons who practice their rich native knowledge for curing diseases help to generate valuable information about traditional medicinal plants and their use. A total of 40 plants belonging to 27 families, traditionally used by the villagers of the study area for curing of some diseases, were identified, documented and represented in Table 1.

Table 1: List of medicinal plants used in Bihar

Sr. No.	Botanical name	Family	Local name	Uses and mode of application	Classification of plant
1	*Aegle marmelos* L.	Rutaceae	Bael	Bael juice is useful in curing of constipation and indigestion because of its laxative properties. Leaf decoction is drunk every morning on an empty stomach to cure diabetes	Tree
2	*Aloe vera* L.	Asphodelaceae	Ghritkumari	The leaf and root is used in the form of juice for cooling and soothing, to reduce body temperature. Leaf paste is used to treat cuts and wounds	Shrub
3	*Azadirachta indica*	Meliaceae	Neem	Root bark decoction is drunk to cure fever, leaf extract is applied on wounds and skin diseases, twigs are used as a tooth brush. Neem leaves are spread on the bed and room of patient suffering from chicken pox.	Tree
4	*Boerhavia diffusa* Linn.	Nyctaginaceae	Punarnava	Root decoction is taken daily for one month to expel kidney stones. Punarnava's leaves are also consumed as a vegetarian dish to reduce edema, to cure disorders like intestinal colic, kidney disorders.	Herb
5	*Bryophyllum pinnatum*	Crassulaceae	Patharchur	Used in curing dysentery (Leaf + Salt), mouth ulcers (biting of leaf), stop bleeding (20 g patharchur sap + 10 g sugar crystals), Scorpion bite, head ache, nose bleeding	Herb
6	*Caesalpinia bonducella*	Fabaceae	Kathkaregi	Fever and against gall bladder stones	Herb
7	*Calotropis gigantea* L.	Asclepiadaceae	Aak	The latex used for treating scorpion bite and snake bite	Shrub
8	*Cannabis sativa* L.	Cannabaceae	Bhaang	Leaves are used to cure piles, cuts and ulcer. Seed oil is used to cure burn and muscular pain, seed paste is taken to relieve diarrhea and dysentery	Herb
9	*Centella asiatica* L.	Apiaceae	Brahmi	Vomiting, Voice clarity, memory improvement, as anti-aging	Herb
10	*Chenopodium album* L.	Amaranthaceae	Bathua	Leaves used as vegetable with spinach to cure jaundice. Leaves boiled in water with one spoon lemon juice is used to cure of constipation	Herb
11	*Coriandrum sativum* L.	Apiaceae	Dhaniya	Leaf paste is used in skin diseases and stomach disorder	Herb
12	*Cynodon dactylon* Linn.	Poaceae	Doob ghas or Doobra or Hari Doob	Root decoction is given with honey or misri twice daily for 3 weeks to cure urolithiasis. Also for dysentery until cured	Grass
13	*Cyperus rotundus* L.	Cyperaceae	Motha or Nagarmotha	Help in digestion, reduce obesity and fat levels	Grass
14	*Daucus carota* Linn.	Apiaceae	Gajar	One glass *gajar* juice is taken regularly for a fortnight to remove stones from urinary bladder and kidney	Herb
15	*Datura metel* L.	Solanaceae	Dhatura	It helps in curing of motion sickness, nausea and dizziness. The paste of roasted leaves is applied over the area to relieve pain	Herb
16	*Eclipta prostrata* L.	Asteraceae	Bhringraj	A fresh extract from leaves used in remedy of relieving pain, swelling and inflammation. Juice of leaves with honey used in curing dysentery.	Herb
17	*Elettaria cardamomum* L. Maton	Zingiberaceae	Elaichi	Whole fruit is taken with ripen banana daily night for constipation and piles.	Herb
18	*Euphorbia hirta* L.	Euphorbiaceae	Dudh ghas or dudhi	Fresh plant extract is used to cure piles	Herb
19	*Ficus benghalensis*	Moraceae	Bargad or Banyan	Regular consumption of few latex drops of the banyan tree along with milk can help treat piles. The aerial root of banyan tree is beneficial for cleaning teeth and preventing teeth and gum disorders	Tree
20	*Ficus religiosa* L.	Moraceae	Peepal	Latex is applied on the affected parts of skin; bark is chewed to treat stomach pain.	Tree
21	*Hibiscus sabdariffa*	Malvaceae	Gudhal	Hibiscus tea includes relief from high blood pressure and high cholesterol, as well as digestive and immune system, problems.	Shrub
22	*Hordeum vulgare* L.	Poaceae	Jau	Leaf juice is useful in cataract	Grass
23	*Limonia acidissima* L.	Rutaceae	Wood apple	Stem bark rubbed to get paste which is given orally for piles until cured	Tree
24	*Linum usitatissimum*	Linaceae	Teesi or alsi	It can improve immunity system. Helps in relieve constipation and intestinal disturbance	Herb

25	*Mangifera indica* L.	Anacardiaceae	Mango	Extract of mango with salt is given to drink for quick relief from sunstroke	Tree
26	*Mentha longifolia* (L.)	Lamiaceae	Pudina	Leaf paste eat to cure diarrhea and vomiting	Herb
27	*Moringa oleifera*	Moringaceae	Sahjjan or Munaga	The juice from leaves stabilizes blood pressure and reduces anxiety. It increases milk production in breastfeeding women and controls anaemia	Tree
28	*Ocimum sanctum* L.	Lamiaceae	Tulsi	The leaves are used to relieve itching, toothache. Other uses are against flu, colds, coughs, fever, dysentery and jaundice	Herb
29	*Oryza sativa* L.	Poaceae	Dhaan	Grains are used to cure dysentery and jaundice	Grass
30	*Phyllanthus emblica* L.	Phyllanthaceae	Amla	Fruits are used to cure cough anemia and piles	Tree
31	*Psidium guajava* L.	Myrtaceae	Amrud or latam or safli	Few leaves ground to get extract and taken with buttermilk twice a day for a week to cure piles	Tree
32	*Sansevieria trifasciatan*	Asparagaceae	Nagdaman	Latex is used against scorpion bite and snake bite. Crush 3 leaves and 5 black pepper and drink 4-5 times. Planting of this plant near home to avoid snakes into houses	Herb
33	*Senegalia catechu*	Fabaceae	Khair	Used in curing cold, itching, cough, fever, wounds, worms	Tree
34	*Sphaeranthus indicus*	Asteraceae	Mundi	Eye disease, improves digestion, liver strengthening	Herb
35	*Swertia chirayita*	Gentianaceae	Chirayita	Help to maintain good health of liver. Whole plant is used to cure fever, leucoderma, diabetes and dyspepsia	Herb
36	*Syzygium cumini*	Myrtaceae	Jamun	Used in diabetes	Tree
37	*Tagetes erecta*	Asteraceae	Genda	Two drops of fresh leaves juice is taken to treat ear pain. Take 5-10 ml of fresh flower juice extract daily or chew orally its flower for curing bleeding piles	Herb
38	*Terminalia arjuna*	Combretaceae	Arjuna	The paste of the bark is applied over the fractures, helps to promote early healing in bone fracture	Tree
39	*Trachyspermum ammi* L.	Apiaceae	Ajwain	Ajwain with black salt used in curing stomach ache	Herb
40	*Zingiber officinale*	Zingiberaceae	Adrakh	It is best appetizer, it relieves anorexia. Useful in heart disease	Herb

Fig 1: Bael (*Aegle marmelos* L.)

Fig 2: Ghritkumari (*Alo vera* L.)

Fig 3: Neem leaves (*Azadirachta indica*)

Fig 4: Punarnava (*Boerhaavia diffusa* Linn.)

Fig 5: Patharchur (*Bryophyllum pinnatum*)

Fig 6: Aak (*Calotropis sp*)

Fig 7: Brahmi (*Centella asiatica* (L.)

Fig 8: Bathua (*Chenopodium album* L.)

Fig 9: Peepal (*Ficus religiosa* L.)

Fig 10: Pudina (*Mentha longifolia* (L.)

Fig 11: Nagdaman (*Sansevieria trifasciata*)

Fig 12: Genda (*Tagetes erecta*)

Among the documented medicinal plants the family Apiaceae was most frequently represented with a total of four species followed by Asteraceae and Poaceae family of three species each, Fabaceae, Rutaceae, Zingiberaceae, Moraceae, Lamiaceae and Myrtaceae family (two species each), remaining 18 families had single species. Mostly leaves, roots and bark of medicinal plants are used for treating various ailments. The villagers are following traditional practices for treatment and most common mode of application is decoction, juice and paste. However, the latex of *Sansevieria trifasciata*, *Calotropis gigantean* and leaf of *Bryophyllum pinnatum* were commonly used against scorpion and snake bite. *Tagetes erecta*, *Ficus benghalensis*, *Euphorbia hirta*, *Cannabis sativa*, *Limonia acidissima*, *Elettaria cardamomum*, *Phyllanthus emblica* and *Ficus religiosa* for curing of piles. Sometimes different additives like salt, sugar, black pepper and lemon juice were often used in the preparation of medicines with herbal ingredients. About 32 species of folk drug plants belonging to 32 genera and 27 families were found to be used as a remedy for gastrointestinal disorders by the rural and forest ethnic people (Siddalinga and Vidyasagar, 2013) [8]. A total of 25 medicinal plants species were utilized for various medicinal purposes for curing various diseases (Uniyal, 2003 [9]. The observation was also recorded on the frequency of curing a particular diseases and it was observed that eight species were prescribed for curing piles, five species for curing fever, four species for curing stomach disorders, three species for curing cough, three species for skin diseases, three species for cut and wounds, three species for curing diabetes. The present study revealed that herbs were the most dominant growth forms with 21 species, followed by trees with 12 species, grass with four species and shrubs with three species.

Conclusion

The present investigation reports 40 medicinal plant species used for the treatment of different disorders. The villagers have rich folk knowledge about medicinal plants and their uses. The rural people of this district are highly dependent on these medicinal plants as they are readily available, cheaper and proved to be effective. There is an utmost need to conserve these useful medicinal plants through domestication and cultivation. Intensive documentation about theses useful medicinal plants should give prior importance for the future generation; otherwise, the beneficial knowledge will disappear after the death of the local healers. However, further research on chemical constituents and clinical studies is needed.

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