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RESEARCH ARTICLE

TRADITIONAL FOLK MEDICINES: IN TREATMENT OF GASTROINTESTINAL DISEASES AT KULDIHA WILDLIFE SANCTUARY, ODISHA, INDIA

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ABSTRACT

Kuldiha Wildlife Sanctuary is situated in Balasore district, Odisha. There are scanty ethnomedicinal works carried in Kuldiha. '*Santhal*' community is the major tribal population in the area. Gastrointestinal problem is a very common ailment in tribal societies. This gastrointestinal problem includes constipation, diarrhea, dysentery, dyspepsia, indigestion, stomach pain, flatulence, intestinal worm and jaundice. A total of 53 species of 47 genera 29 families were identified to be useful in treating gastrointestinal disorders. In majority of the species (27%) the medicines were obtained from the leaf. 61% are obtained from fruits, barks, roots and sometimes the whole plant is uprooted and used in the preparation of the drugs.

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INTRODUCTION

Presently in India the native people are exploiting a variety of herbals for effective curing of various ailments. The plant parts used, preparation and administration of drugs vary from one place to other (Rao & Negi, 1980). Up to 70% of the rural population still depends on plant resources in their vicinity for healthcare and other necessities of life. Lack of primary healthcare centers and transportation facilities, prohibitive cost of treatments, side effects of several allopathic drugs have led to increased emphasis on the use of plant materials as a source of medicines for a wide variety of human ailments (Kamboj, 2000). The knowledge of herbal medicines is gradually perishing, although some of the traditional herbal men are still practicing the art of herbal healing effectively (Singh, 1999). Urbanization and development activities have resulted in the decline of interest in traditional culture as well as natural vegetation in India (Rajkumar & Shivanna, 2010). Forest degradation process adversely affected the resource of medicinal plants. The rural poor, whose dependence on these products is very heavy, are the worst sufferers. The problems are surrounded by market demand driven harvesting without any concern for representation and conservation (Upadhyay & Singh, 2005).

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Unfortunately, much of the ancient knowledge and many valuable plants are being lost at an alarming rate. Many more valuable plants are under the verge of extinction. It is estimated that 10% of all plant species are currently endangered in India (Ignacimuthu *et al.,* 2008). Consequently, there is an urgent need to record and preserve this ancient knowledge before it is completely lost. The present study deals with the medicinal plants of Kuldiha Wildlife Sanctuary which are used to cure various gastrointestinal problems of rural people in the area. The study area spreads across 272.75 square kilometers; being situated in Balasore district, Odisha. The forest of the region covers the Nato hills and the Sukhupata hills merging with the Similipal National Park. It was found that the sanctuary is dominated by 'Sal' and represents mixed dry deciduous forest. There are scanty ethnomedicinal works carried in Kuldiha. '*Santhal*' community is the major tribal population in the area. Although ethnobotanical studies have been done in Odisha, the medicinal plants available in this remote area have not been explored thoroughly. The sanctuary has a tribal population of about 1000 but there has been a lacuna in documenting the traditional uses of plants therein. A single study by Pattanaik & Reddy (2008) investigated plant material used for medicinal purposes within communities located in the study area and documented 49 plant species used ethnomedicinally. Ethnobotanical uses of plants can further be explored in detail for sustainable utilization as well as economic upliftment of the tribal society.

METHODOLOGY

Field survey and Data Collection

This study investigated plant material used for medicinal purposes within communities located in the KWLS of Balasore district, Odisha. Efforts were made to collect plants during flowering and fruiting for confirming plant identification. Plants were identified with the help of published regional floras (Haines, 1921-25; Saxsena & Brahmam, 1996). Voucher specimens of the collected medicinal plants have been deposited in the herbarium of the Central Botanical Laboratory, Botanical Survey of India. Extensive surveys were done during the period of 2014 to 2016 to document the use of medicinal plants by local communities within the study area. KWLS belt supports a population of 1018. After consulting with local people, 13 traditional healers were identified. Prior informed consent was obtained from the respondents before interviewing them. Semi-structured interviews were conducted with individuals and groups, such as herbal practitioners and the elderly persons, known to possess knowledge about medicinal plants (Martin, 1995). All interviews were performed in the local Oriya language.

Statistical Analysis of Data

Quantitative Ethnobotanical techniques have great scientific interest as they reflect aid in the conservation of biodiversity. These techniques compare the uses and cultural importance of different plant species (Byg and Balslev, 2001; Albuquerque *et al.,* 2006). The local importance of each species was measured by a use-value (UV). This technique measures how many medicinal uses for a given species an informant knows relative to the average knowledge among all informants (Phillips and Gentry, 1993; Gomez-Beloz, 2002; Albuquerque *et al.,* 2006). A high use-value indicates a relatively important species.

$$UV = \frac{\Sigma \text{ number of uses mentioned by each informant for a given species}}{\text{total number of informants}}$$

The relative frequency of citation (Rfc) for each medicine used to treat a particular ailment is the ratio of the frequency of citation by informants to that with all other medicines cited in the study (Kumar *et al.,* 2012, 2013). The high consensus for a particular medicine demonstrates the use is genuine for that cultural group. Please check the alignment of x 100 in equations

$$Rfc = \frac{\text{Frequency of citation}}{\Sigma \text{ Frequency of citation of all medicines}} \times 100$$

$$\text{Frequency of Citation} = \frac{\text{Number of informants who cited the medicine}}{\text{Total number of informants interviewed}} \times 100$$

RESULTS AND DISCUSSION

Gastrointestinal problem is a very common ailment in tribal societies, and includes constipation, diarrhea, dysentery, dyspepsia, indigestion, stomach pain, flatulence, intestinal worm and jaundice (Table 1). Tribal people are very much prone to these problems due to their unhygienic habitat, food habits, improper sanitation and inadequate availability of pure drinking water. A total of 53 species of 47 genera 29 families were identified to be useful in treating gastrointestinal disorders. Among the families mentioned in this study the Leguminosae had the highest number of species used for treatment (Fig. 1). Various parts of the plants were utilized in preparation of gastrointestinal herbal remedies in this area.

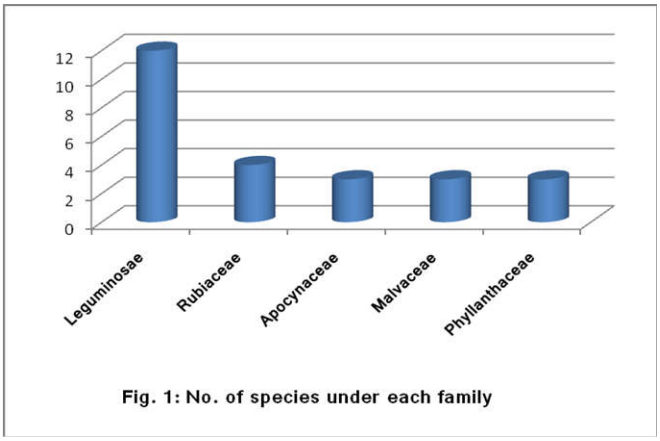
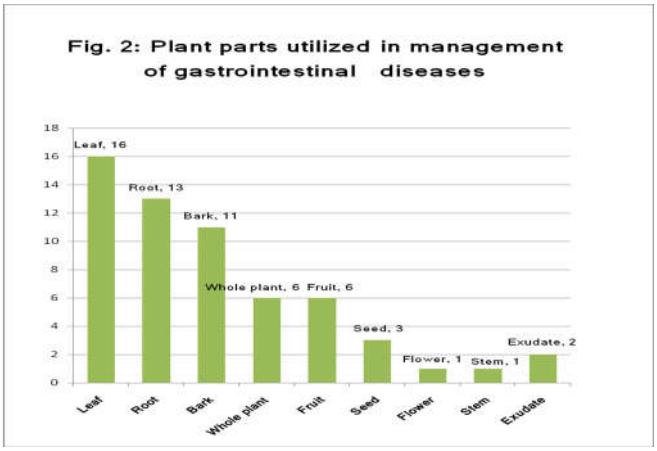


Fig. 1: No. of species under each family

In majority of the species (27%) the medicines were obtained from the leaf. Except for plants where the drugs are obtained from leaves, the use of fruits, bark or uprooting the whole plant of a given species were found to be destructive means of obtaining the herbal remedies. The parts utilized show that most of the gastrointestinal drugs (61%) are obtained from fruits, barks, roots and sometimes the whole plant is uprooted and used in the preparation of the drugs. This calls for conservation measures to facilitate sustainable utilization of these plant resources (Fig. 2). However, the tribals also contribute to sustainable utilization by planting seedlings. Results from the habit of species used show that 71% of the gastrointestinal herbal remedies are obtained from trees and shrubs (Fig. 3).



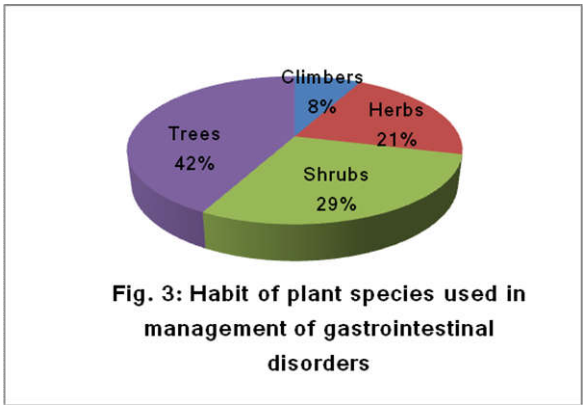


Fig. 3: Habit of plant species used in management of gastrointestinal disorders

Table 1. Enumeration of recorded data

Name of the Plant (Family)	Local Name	Habit	Uses Recorded	Use value	Relative frequency of Citation
Aegle marmelos (L.) Correa (Rutaceae)	Belo	Tree	Leaves are chewed to cure stomach ache. Unripe fruit-pulp sun-dried, powdered and given in blood dysentery.	1.54	2.88
Abutilon indicum (L.) Sweet (Malvaceae)	Pedipedika	Shrub	Root paste given once in day for 3 days to treat blood dysentery.	0.69	2.36
Ageratum conyzoides (L.) L. (Compositae)	Poksunga	Herb	Herb infusion is given in stomach ailments such as diarrhoea, dysentery and intestinal colic with flatulence.	1.08	2.36
Alternanthera sessilis (L.) R. Br. ex. DC. (Amaranthaceae)	Madaranga saga	Herb	Leaf is used for indigestion, burning sensation, diarrhoea.	0.46	1.57
Andrographis paniculata (Burm.f.) Nees (Acanthaceae)	Kalmeg	Herb	Leaves are pasted with (Bhuiamla) *Phyllanthus fraternus* and seed of fenugreek (Methi) and boiled in water and taken to expel intestinal worm.	0.77	2.62
Asparagus racemosus Willd. (Asparagaceae)	Chhataori	Climber	Root extract is used for stomach pain.	0.54	1.83
Baccharoides anthelmintica (L.) Moench (Compositae)	Somraj	Herb	Seed paste is given in de-worming.	0.62	2.09
Barringtonia acutangula (L.) Gaertn. (Lecythidaceae)	Hijal	Tree	Leaf juice is given in diarrhoea.	0.46	1.57
Bridelia retusa (L.) A. Juss. (Phyllanthaceae)	Kasi	Tree	Bark and roots powder are used in the treatment of indigestion.	0.62	2.09
Caesalpinia bonduc (L.) Roxb. (Leguminosae)	Nata-karanjo	Shrub	Seed paste is given to stomach disorder and in jaundice.	0.85	2.36
Cassia fistula L. (Leguminosae)	Sunari	Tree	Fruit, seed and flower paste are taken in constipation and gastric problems.	1.15	2.09
Catunaregam spinosa (Thunb.) Tirveng. (Rubiaceae)	Kalai kanta	Tree	Bark paste is taken in diarrhoea and dysentery.	0.46	1.57
Cissus quadrangularis L. (Vitaceae)	Hadsara	Shrub	Plant paste is taken orally for easy digestion.	0.69	2.36
Crotalaria retusa L. (Leguminosae)	Biljhunhun	Herb	Root powder mixed with spices is used as a remedy for intestinal colic.	0.31	1.05
Cryptolepis dubia (Burm.f.) M.R.Almeida (Apocynaceae)	Dudhi	Climber	Root extract taken orally to cure jaundice.	0.62	2.09
Entada rheedii Spreng. (Leguminosae)	Sarkara	Climber	Stem powder is taken to cure diarrhoea.	0.77	2.62
Evolvulus alsinoides (L.) L. (Convolvulaceae)	Bichhamalia	Herb	Herb is used to cure dysentery and jaundice.	0.92	1.83
Flemingia chappar Benth. (Leguminosae)	Rani kathi	Shrub	The fruit powder is given as purgative.	0.69	2.36
Flemingia grahamiana Wight & Arn. (Leguminosae)	-	Shrub	Exudation from pod is used as anthelmintic.	0.38	1.31
Flemingia macrophylla (Willd.) Merr. (Leguminosae)	Thutokur	Shrub	Exudation from pod is used as anthelmintic.	0.46	1.57
Glochidion lanceolarium (Roxb.) Voigt. (Phyllanthaceae)	Pitari	Tree	Bark powder is taken to cure Diarrhoea.	0.46	1.57
Hemidesmus indicus (L.) R. Br. ex Schult. (Apocynaceae)	Sugandhi	Climber	Root and pepper paste is used in stomach pain and diarrhoea.	0.92	2.09
Hibiscus rosa-sinensis L. (Malvaceae)	Parijat	Shrub	Leaf paste is given to cool stomach.	0.92	3.14
Holarrhena pubescens Wall. ex G.Don (Apocynaceae)	Indrajalo	Tree	Root paste is taken in stomach pain. Bark paste has anthelmintic properties. Leaf juice taken twice daily for 3 days in spleen disorders.	1.23	1.83
Holoptelea integrifolia Planch. (Ulmaceae)	Charla	Tree	Stem bark warmed and kept on stomach for pain relief.	0.31	1.05
Homalium nepalense Benth. (Salicaceae)	Dhanimari	Tree	Bark paste is given in stomach ache.	0.23	0.79
Jatropha curcas L. (Euphorbiaceae)	Jode	Shrub	Leaf juice is given de-worming.	0.69	2.36
Jatropha gossypiifolia L. (Euphorbiaceae)	Baigawa	Shrub	Bark paste is taken orally to cure dysentery.	0.54	1.83
Lawsonia inermis L. (Lythraceae)	Manjuati	Tree	Leaf paste is given with water to cool stomach.	0.38	1.31
Litsea glutinosa (Lour.) C.B.Rob. (Lauraceae)	Ledha chhali	Tree	The bark is used as a remedy for dysentery.	0.38	1.31
Mangifera indica L. *(Anacardiaceae)*	Ambo	Tree	Leaf extract and stem bark paste is taken to cure dysentery and diarrhoea.	0.69	2.36
Micromelum minutum Wight & Arn. (Rutaceae)	Soidani	Tree	Paste of the young leaves is used to treat worm infection.	0.46	1.57
Monochoria vaginalis (Burm. f.) C.Presl. (Pontederiaceae)	Mirmira	Herb	Leaf paste is given to constipation.	0.38	1.31
Morinda pubescens Sm. (Rubiaceae)	Aachu	Shrub	Leaf juice is taken before meal for easy digestion.	0.62	2.09
Pavetta indica L. (Rubiaceae)	Macharanka	Shrub	Roots are grounded with water and given 2 days in the treatment of blood dysentery.	0.54	1.83
Persicaria hydropiper (L.) Delarbre (Polygonaceae)		Herb	Whole plant paste is taken orally in stomach pain.	0.38	1.31
Phyllanthus urinaria L. (Phyllanthaceae)	Bhuin amla	Herb	Plant decoction is given twice a day for 3 days in dysentery and jaundice.	1.23	2.36

Continue ……

Rauvolfia serpentina (L.) Benth. ex Kurz (Apocynaceae)	Patal garur	Shrub	Root paste is used for stomach pain.	0.46	1.57
Saraca asoca (Roxb.) Willd (Leguminosae)	Ashoko	Tree	Bark decoction is an efficacious remedy for dysentery.	0.62	2.09
Scoparia dulcis L. (Plantaginaceae)	Atisirsa	Herb	Leaves are pasted and given with sugar candy for 1 week to treat jaundice.	0.69	2.36
Senna alata (L.) Roxb. (Leguminosae)		Shrub	Leaf paste is useful to cure intestinal worm infection.	0.54	1.83
Senna occidentalis (L.) Link (Leguminosae)	Kasinda	Shrub	Root is used to cure stomach pain.	0.38	1.31
Senna hirsuta (L.) H.S.Irwin & Barneby (Leguminosae)	Bado chakunda	Shrub	Decoction of leaves is taken to cure constipation	0.38	1.31
Shorea robusta Gaertn. (Dipterocarpaceae)	Sal	Tree	Leaf extract is given to check dysentery.	0.85	2.88
Streblus asper Lour. (Moraceae)	Sahara	Tree	Root paste is used in dysentery.	0.54	1.83
Symplocos racemosa Roxb. (Symplocaceae)	Lodh	Tree	Root is grind in water and given in stomach pain. Bark decoction is taken in constipation	0.69	1.31
Syzygium cuminii (L.) Skeels (Myrtaceae)	Jamu	Tree	Stem bark powder mixed with milk is taken orally to cure dysentery	0.77	2.62
Tamilnadia uliginosa (Retz.) Tirveng. & Sastre (Rubiaceae)	Telkur	Tree	The roasted fruit pulp is used as a remedy for diarrhoea and dysentery.	0.54	1.83
Terminalia arjuna (Roxb. ex DC.) Wight & Arn. (Combretaceae)	Arjun	Tree	Bark is used as medicine for dysentery.	0.62	2.09
Terminalia bellirica (Gaertn.) Roxb. Combretaceae	Bahada	Tree	Fruit powder used to treat stomach pain.	0.69	2.36
Trichodesma indicum (L.) Lehm. (Boraginaceae)	Hetamundia	Herb	Plant paste is given to cure stomach ache.	0.31	1.05
Triumfetta rhomboidea Jacq. (Malvaceae)	Chitki	Shrub	Powder of dry roots given for 3 days to treat dysentery and intestinal worms.	0.69	1.31
Xylia xylocarpa (Roxb.) Taub. (Leguminosae)	Tangini	Tree	Fruits are used for digestion.	0.46	1.57

Aegle marmelos and *Shorea robusta* have high Rfc proving that they are potential candidate for further study. *Asparagus racemosus*, *Ageratum conyzoides*, *Azadirachta indica*, *Mangifera indica*, *Terminalia chebula*, are widely used as gastrointestinal herbal remedies. A comparison of ethnobotanical data gathered in the present study with Indian medicinal plant literature (Kirtikar & Basu, 1951; Jain, 1975; Ambastha, 1986; Chopra et al., 1976) indicated that the information regarding the use of some plants (*Bridelia retusa*, *Homalium nepalense*, *Micromelum minutum*, *Persicaria hydropiper,* (*Xylia xylocarpa*,) for a particular disease is relatively less known.

The methods of using ethnobotanically valuable plants varied according to the nature of diseases. In a single case, a combination was used for treatment otherwise single plant parts were used. In a majority of the cases, a decoction made of leaves, stems, barks, fruits and roots was administered or rubbed on the body for curing diseases. Most of the decoctions were prepared by crushing the plant parts with the help of mortar and pestle, but some were made by boiling plant partSome herbal medicines were prescribed for the period while some of the medication was taken till cure. The method of use of these plants varied according to the nature of different compounds present in different parts of the plants, with specific doses and nature of diseases (Phondani et al., 2010).

Conclusion

This research summarized ethnobotanical uses of plants distributed in KWLS. The present study provided an example of sustainable utilization of native plants for sustaining the traditional healthcare system based on ethnobotanical knowledge and needs scientific validation of available knowledge before its losses. The outcomes of the present study would be helpful in better understanding and appreciating the multiple values and potential of native plants and also to contribute narrowing the gap in the literature. This comprehensive information will help the local people, traditional healers, plant nursery owners, researchers, academicians, conservation professionals and restoration specialists to identify and use the appropriate native plant species for different developmental schemes. Based on the present study, the following recommendations are suggested for future study:

- Develop and incorporate ethno botanical knowledge/traditional health care system related curriculum in schools and universities so as to create awareness and interest among the masses.
- Support research and development activities to evaluate and standardize traditional phytomedicines in order to promote their safe, effective and affordable use.
- Promote home/school herbal gardens by involving the local communities, research organizations and academic institutions.
- An urgent need to identify appropriate collection time of the plant parts used in traditional health care system and threat assessment of potential plants.
- Create awareness for documentation of ethno botanical knowledge and ecologically, economically, and medicinally valuable native plants used for urban landscaping through trainings, workshops, exposure visits and publications.

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REFERENCES

Albuquerque, U.P., Lucena, R.F.P., Monteiro, J.M., Florentio, A.T.N., Almedida, C.F.C.B.R. 2006. Evaluating two quantitive ethnobotanical techniques. *Ethno-Botany Research and Applications* 4, 051–060.

Ambastha, S.P. 1986. *The Useful Plants of India*. Publications and Information Directorate, Council of Scientific and Industrial Research, New Delhi, India.

Byg, A. and Balslev, H. 2001. Diversity and use of plams in Zahamena,eastern Madagascar. *Biodiversity and Conservation* 10, 951–970.

Chopra R.N, S.L. Nayar, and I.C. Chopra. 1956. *Glossary of Indian Medicinal Plants*. Publications & Information Directorate, Council of Scientific and Industrial Research, New Delhi. 330 p.

Gomez-Beloz, A., 2002. Plant use knowledge of the Winikina Warao, the case for questionnaires in ethnobotany. *Economic Botany* 56 (3), 231–241.

Haines, H. H. 1921–25. *The Botany of Bihar and Orissa*. London, repr. Ed. 1961, Calcutta.

Ignacimuthu, S., Ayyanar, M., Sankarasivaraman, K. 2008. Ethnobotanical study of medicinal plants used by Paliyar tribals in Theni district of Tamil Nadu, India. *Fitoterapia* 79:562-568.

Jain S.K. 1975. *Medicinal Plants*. National Book Trust of India, New Delhi.

Kamboj, V.P. 2000. Herbal Medicine. *Current Science* 78: 35-39.

Kirtikar, K.R., and B.D. Basu. 1951. *Indian Medicinal Plants*. Lalit Mohan Basu Publications, Allahabad, India.

Kumar, A., Pandey, V.C., Tiwari, D.D., 2012. Documentation and determination of consensus about phytotherapeutic veterinary practices among the Tharu tribal community of Uttar Pradesh, India. *Tropical Animal Health Production* 44, 863–872.

Kumar, A., Pandey, V.C., Singh, A.G., Tewari, D.D., 2013. Traditional uses of medicinal plants for dermatological healthcare management practices by the Tharu tribal community of Utter Pradesh India. *Genetic Resources and Crop Evaluation* 60, 203–224.

Martin, G.J. 1995. *Ethnobotany: A Methods Manual*. Chapman and Hall, London; New York. 268 p.

Pattanaik, C., C.S. Reddy. 2008. Medicinal Plant Wealth of Local Communities in Kuldiha Wildlife Sanctuary, Orissa, India. *Journal of Herbs, Spices & Medicinal Plants* 14(3–4): 175 – 184.

Phillips, O., Gentry, A.H., 1993. The useful plants of Tambopata, Peru, I. Statistical hypotheses test with a new quantitive technique. *Economic Botany* 47 (1), 15–32.

Phondani P.C., Maikhuri, R. K. and Rawat, L. S. 2010. Ethnobotanical uses of plants among Bhotiya tribal communities of Niti Valley in Central Himalaya, India. *Ethnobotanical Research Application* 8:233–244.

Rajakumar, N. and Shivanna, M.B. 2010. Traditional herbal medicinal knowledge in Sagara taluk of Shimoga District, Karnataka, India. *Indian J of Natural Products & Resources* 1(1):102-108.

Rao S.R., B. Negi. 1980. Observation on Ethnobotany of the Khasi and Garo tribes in Meghalaya. *Journal of Economic and Taxonomy Botany* 1:57-162.

Saxena, H.O., and M. Brahmam. 1996. *The Flora of Orissa*, Vol I–IV., Orissa Forest Development Corporation Limited, Bhubaneswar, Orissa, India.

Singh, M. P. 1999. *Indigenous Medicinal Plants, Social Forestry & Tribes*. Daya Publication House, New Delhi,

Upadhyay, R. and Singh J. 2005. Ethnomedicinal uses of plants from Tikri Forest Gonda District*, Ethnobotany* 17:167-170.1.

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