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Plants used by the tribes for the treatment of digestive system disorders in Wayanad district, Kerala

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ABSTRACT

The tribes of Wayanad depend basically on different plants for their treatment. The field work documented about thirty two plant species used against digestive disorders. The plants used for the treatment with their botanical names, local name, mode of administration, status of plants and the tribes associated are listed in the form of table. Five different tribes, the kurichia, kuruma, kattunaika, paniya and adiya of Wayand district of Kerala state, India were interviewed. The interviewed tribal groups use plant parts either single or in combined form to treat digestive disorders like piles, ulcers, abdominal pain, diarrhea, dysentery, pinworm, vomiting, acidity, chest burning, jaundice and stomach pain. The tribal groups do not want to share their ancient traditional knowledge with other people. Moreover, the existing knowledge on traditional uses of medicinal plants are declining fast because of the lack of interest of young people to learn the traditional knowledge from the old tribal medical practitioner. So the documentation and conservation of the knowledge is essential.

INTRODUCTION

The origins of the therapeutic use of herbal medicine can be traced back to China about 5000 years ago. The extracts of several plants have been used as therapeutic agents. Many drugs presently prescribed by physicians are either directly isolated from plants or are artificially modified versions of natural products (Wang *et al.*, 2007). These medicines are safe and environment friendly. According to the WHO about 80% of the world's population relies on traditional medicine for their primary health care (Behera 2006). Herbalists and indigenous healers have used botanical medicines traditionally worldwide for the prevention and treatment of different pathologies. Clinical research has confirmed the efficacy of several plants for the treatment of gastro duodenal problems and their therapeutic effects (Kanner and Lapidot 2001; Gurbuz *et al*., 2000). For the past twenty years, orally transmitted knowledge due to its economic value has been actively investigated in less-developed areas such as Asia (El-Ghazali *et al*., 2010; Rahmatullah *et al*., 2010; Sher *et al*., 2010; Ullah *et al*., 2010), Africa (Giday *et al*.,2009; Teklehaymanot, 2009; Yirga, 2010) and Latin America (Halberstein, 1997; Tene *et al*., 2007). The traditional culture and the natural ecosystem of these regions have been relatively well conserved. Since orally transmitted traditional knowledge is possessed by older generation, most of it can disappear drastically following their deaths (Kim *et al*., 2006; Kim and Song, 2008).The aim of this study is to record and analyze orally transmitted traditional knowledge about treatment of digestive system diseases for the first time in Wayanad district. Kerala. As a result, new traditional therapies for digestive system diseases were recorded.

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MATERIALS AND METHODS

Ethno-botanical survey

The ethno botanical survey was conducted in the panchayats of three taluks - Mananthavady, Bathery, and Vythiri of Wayanad district, Kerala. Based on the total forest cover and tribal populations, the study areas can be considered as ethno-botanical hotspots of Wayanad.

Field survey and data collection

Field exploration was undertaken to collect information about tribes regarding their history, demography, life style, culture, art of living, socioeconomic background, food habits , major role in conserving medicinal plants, local languages they use and tra ditional medicinal practices they are associated with.

Further knowledge related to tribes were obtained from books, research papers, scientific magazines, Encyclopedias and internet sources of University library, Calicut & plant conservation centers at Wayanad, especially from Boys town at Mananthavady and M.S Swaminathan research foundation at Kalpetta.

The five major scheduled tribes of this area are Kurichia, Kuruma, Kattunaika, Paniya and Adiyan. They are distributed at different panchayath areas of the district. Basic information on the distribution of the selected five tribes was collected from Tribal development offices in Mananthavady, Bathery, Kalpetta and the Wayanad social service society office at Mananthavady, Rastha at Kambalakkad, and Sreyas at Bathery and villages were selected based on their distribution. Field trips were conducted from 2006-2010 among the tribal colonies of the three taluks. The main colonies, where tribal medical practitioners were residing were noted in the form of tables. The trips were organized every month, and were always accompanied by a taxonomist and tribal promoter to identify the colonies and plants. The trips were organized every month and each colony was visited for about 5-6 times. The location of Kurichia, Paniya and Kuruma colonies were found near their agricultural areas like paddy fields, coffee plantations etc. and Adiya tribes were seen scattered in different areas. Kattunaikkans are living in remote areas and seen interior to the forests and Hill tops. Tribes were interviewed with standard questionnaire to collect the necessary information. The questionnaire was prepared with questions related to informant consensus factor, method of application, therapeutic use, parts of plants used, name of diseases, symptoms of diseases, and causes of diseases etc. The identification of plants was done in consultation with the taxonomic experts from MS Swaminathan Research Foundation, Wayanad and by referring the authentic literatures of regional flora.

Table. 1: Plants used for diseases associated with digestive system (KU, KT, KR, PN, AD- kuruma, kattunaika, kurichia, paniya, adiya).

Sl. no	Botanical name	Local name used by the tribe	Family	Habit	Parts used	Mode of administration	Tribes associated	Status
1	*Abutilon indicum* (L.) Sweet.	Kattooram	Malvaceae	Herb	Leaf	The fresh leaf juice drinking cures ulcers	KT	Common
2	*Urena sinuata*	Uram	Malvaceae	Herb	Leaf	Leaves crushed with jaggary and tablets of approximately of 1gm are made, and taken 3 tablets once for piles	KU	Common
3	*Acorus calamus* L.	Vayambu	Araceae	Herb	Whole plant	The plant juice is administered orally to treat abdominal pain and diarrohea.	KU KR	Endangered
					Rhizome	Rhizome juice kills pinworms		
4	*Adenostemma lavenia* (L.)O.Ktze.var.lavenia	Karimpatta	Asteraceae	Herb	Whole plant	The whole plant is grinded mixed with pure water and make up to half a glass and taken internally for 6 days to cure ulcers.	KU	Common
5	*Aegle marmelos* (L.) Corr. Serr.	Koovalam Koovalachappu	Rutaceae	Tree	Root	Root juice for curing dysentery	KU KR AD	Not evaluated Red listed
					Bark	The dried bark along with curd drinking cures piles	KU	
					Leaf,	The leaf juice drinking cures vomiting	PN KT AD	
					Fruit	Promote digestion.	KT AD	
6	*Ageratum conyzoides L.*	Appa	Asteraceae	Herb	Leaf	The intake of leaf juice reduces Acidity.	KU KR	Common
7	*Alangium salvifolium* (L.f.) Wang.	Ankolanga	Alangiaceae	Shrub	Whole plant	The fresh plants are fried and taken internally to treat chest burning		Common.
8	*Allophylus cobbe* (L.) Raeusch.	Mukkannanperukilam	Sapindaceae	Shrub	Leaf. Root	Kurichia. The intake of leaf juice reduces ulcer	KU	Common.
9	*Allophylus serratus* (Roxb.) Kurz	Mukkannan perukilam	Sapindaceae	Shrub	Leaf.	The intake of grinded leaf juice reduces piles and ulcer,	KU	Common.
10	*Alpinia malaccensis* (Burm.f.) Rosc.	Malayelam	Zingiberaceae	Herb	Root	The rhyzome paste cures abdominal problems	KU KR	Common.
11	*Amaranthus spinosus* L.	Mullancheera	Amaranthaceae	Herb	Leaf	Leaf paste along with lemon juice is taken with food to cure stomach ulcer.	AD	Common.
12	*Amorphophallus paeoniifolius (Dennst.) Nicols.var. paeoniifolius*	Kattuchena.	Araceae	Herb	Corm	The dried and powered corm of this plant mixed with curd and hot water and take internally against Jaundice.	KR KT AD	Vulnerable.
					Corm	Cooked corm with curd cures piles	KR	
					Leaf and stem	The leaf and stem juice reduces ulcers.	KR	
13	*Andrographis paniculata* (Burm.	Kiriyathu Kattukiriyath	Acanthaceae	Herb	Leaf	The leaf and stem juice reduces ulcer.	KR	Common.
						The tender stem eating cures worms.	KR	
						The leaves of this plant mixed with Psidiumguajava, Clerodendron, Olea, Breynia and Ludwegia leaves grinded well and drink the juice to cure acidity.	KU KT KR	

14	*Anethum graveolens* L.	Chathuppa	Apiaceae	Herb	Seed	Women chew the seeds after delivery for easy digestion of food	KR	Common
15	*Aristolochia tagala* Cham.	Garudakkody Eachamulla	Aristolochiaceae	Climber	Whole Plant.	The plant Paste taken internally to cure abdominal pain	PN KT KR	Lower risk least concern.
16	*Artemisia nilagarica (*Clarke) Pamp.	Kattukarpooram	Asteraceae	Shrub	Leaf	The leaf juice is taken internally to cure abdominal pain,Ulser	KU KR KT PN	Common
					Leaf	The grinded leaf with white garlic and drink the juice cures ulcer	KR	
17	*Artocarpus hirsutus* Lam.	Ainy	Moraceae	Tree	Bark	Grinded bark is a constituent of the medicine for piles	KR	Vulnerable Endemic. Red listed
					Leaf	Burn the leaves and the intake of ash cure abdominal problems.	KR	
					Leaf	Burn the leaves of Anjily *(Artocarpus hirsutus Lamk.)*, The ash is taken internally to treat abdominal problems.		
18	*Arundinaria densifolia*	Naikkarimbu	Moraceae	Shrub	Leaf	The leaf juice cures stomach problems	KU PN KT AD	Common
19	*Asystasia gangetica ILinn.)T. Anders*	Uplium	Acanthaceae	Herb	Whole plant	The whole plant paste cures ulcers.	KU	Common
20	*Atalantia racemosa* Wight *var.racemosa*	Malanarakam.	Rutaceae	Tree	Leaf	The leaf juice is taken internally to treat acidity	KR	Common
21	*Baccaurea courtallensis* (Wight) Muell.-Arg.	Keranda Moottilpazham.	Euphorbiaceae	Tree	Stem Leaf Root Fruit	Rock rubbed root paste and leaf paste of Keranda (*Baccaurea courtallensis(Wight)Mu ell.-Arg.*is mixed with required quandity of hot water and taken internally in the form of tablets to treat piles.Leaves, fruits and stem grind together and taken internally to take out poison	KR	Endemic
22	*Baliospermum montanum* (Willd.)Muell.-Arg.	Nagadenthi	Euphorbiaceae	Shrub	Root Seed Leaf	Root paste is applied externallyon the painfull swelling of Piles.	KR	Vulnerable.
23	*Boerhaavia diffusa* Linn	Thazhuthama	Nyctaginaceae	Herb	Whole plant	The plant is pasted with cumin and taken internally to cure digestive problems	KR	Common
24	*Centella asiatica* (L.)Urban.	Muthil Kudangal Murimarunnu	Apiaceae	Herb	Whole plant	The whole plant is grinded and mixed with the grinded tuber of *Amorphophallus paenifolius*, the leaves of *Allophylus serratus*, the leaves of *Clerodendrum serratulum*, the heart wood of peenari and the fruits of Vallikarmoosa and applied to treat piles.	AD	Common.
25	*Cuscuta reflexa* Roxb.	Moodillathali	Convolvulaceae	parasite	Whole plant root	The juice Juice kills Intestinal worms. The leaf and root grind together and the paste is applied on the the swelled	AL	Common
26	*Cyperus kyllinga* Endl.	Muthanga	Cyperaceae	Herb	Rhizo me	The rhizome paste mixed with milk is taken internally to cure dysentery.	AL	Common
27	*Dioscorea bulbbifera* L.	Kattukachil	Dioscoriaceae	Climber	Bulb	The boiled fruit intake cures ulcer	KR	Common
28	*Gomphostemma heyneanum* Benth.*var. heyneanum*	Theepperuku	Lamiaceae	Herb	Leaf	The leaf paste is used to cure dysentery and diarrhoea.	KR KU KT	Endemic
29	*Holarrhena antidysenterica (Roth)A.DC*	Kudakappala	apocynaceae	Tree	Stem Bark	The stem and bark powder is used to cure stomach problems.	KR	Common
30	*Oxalis corniculata* L.	Puliyarila Pulielai	oxalidaceae	Herb	Whole Plant	Used in stomach problems, refrigerant, vermifuge, it is used for developing taste, also used for sensitive teeth. Decoction of leaves is given in fever and dysentery.		Common
31	*Pongamia pinnata* (L.)	Ungu	Fabaceae	Tree	Seed	The seed powder juice kills pinworm	KR KT	Common
32	*Rhaphidophora pertusa* (Roxb.)Schott.	Aanakkarimbu Anachakkara	Araceae	Climber	Stem	The stem juice is taken internally in the treatment of abdominal pain	PN	Common

RESULTS

The interviewed tribal groups use same formulations for the treatment of a particular gastrointestinal problem. For example *Amorphophallus paeoniifolius* species, the dried and powered corm of this plant is mixed with curd and hot water and taken internally against Jaundice by the kurichia, adiya and the kuruma tribes in Wayand. Rubbed root paste of *Ardisia solanacea* used to reduce acidity and ulcer by the kurichia, kuruma and adiya tribes. The leaves of this plant mixed with the grinded leaves of *Psidium guajava, Clerodendron, Olea, Breynia* and *Ludwegia* and the juices of these plants were consumed to cure acidity by the tribal groups Kurichia, Kuruma and Kattunaika. Kuruma and paniya tribes drink the leaf juice of *Achyranthes bidentata* to cure dysentery and diarrhea. Kurichia and kuruma tribes administered the plant juice of *Acorus calamus* orally to treat abdominal pain and diarrohea. Kurichia, kuruma and adiya tribes drink the juice of *Aegle marmelos* to cure dysentery. The kattunaika and adiya tribes drink the fruit juice of this plant to promote digestion. A total of 32 plant species were documented which are used for the problems of digestive disorders by the five major tribes of Wayanad district. The plants used for the treatment with their botanical names, local name, mode of administration, status of plants and the tribes associated are listed in **Table 1.** *Aegle marmelos, Abutilon indicum, Artocarpus hirsutus, Hackeria subpeltata, Allophylus serratus* and *Baliospermum montanum* are used for the treatment of piles. Few antihelminthic plants like *Acorus calamus, Hibiscus furcatus, Citrus media, Ardisia solanacea* and *Pongamia pinnata,* anti ulcer plants like *Abutilon indicum, Adenostemma lavenia, Allophylus cobbe , Allophylus serratus, Amaranthus spinosus, Andrographis paniculata, Ardisia solanacea, Artemisia nilagarica, Asystasia gangetica* and *Dioscorea bulbbifera,* jaundice curing plants like *Amorphophallus paeoniifolius, Boerhaavia diffusa, Centella asiatica* and *Cuscuta reflexa* were documented in table. *Holarrhena antidysenterica , Achyranthes bidentata, Acorus calamus, Aegle marmelos, Ageratum conyzoides, Alangium salvifolium, Alpinia malaccensis, Anethum graveolens, Ardisia solanacea, Aristolochia tagala, Arumndinaria densifolia, Cyperus kyllinga, Gomphostemma heyneanum, Oxalis corniculata* etc.,were used for the treatment of digestive problems.

DISCUSSION

There are many common phyto-medicinal remedies used by the five major tribes against gastrointestinal disorders. The remedies for stomach troubles have been found to be used against dysentery, blood-dysentery, diarrhea, stomach-ache, jaundice, worms (anti-helminthic). Plant species used for the treatment of acidity, piles, dysentery, diarrhea, stomach ache, bleeding piles, constipation, vomiting, bowel movements, digestion, ulcer, jaundice and chest burning by the tribes were recorded (Table1). In the present study we found that kurichia tribes are using the boiled corm of *Amorphophallus paeonifolius* with salt to cure piles. The studies of (Jomy and Sivadasan 2004) also revealed that the cooked corm in curd is used to cure piles by malayarayan tribes of Periyar. Kavitha *et al*., (2004) isolated alkaloids from the ethanolic extract of *Holarrhena antidysenterica* seeds, evaluated and confirmed the activity against *E. coli. Centella asiatica* is one of the important plant shows antibacterial activity against wide variety of bacteria. Diarrhea is a major public health problem in developing countries. Multiple drug resistance among enteropathogens in various geographic regions presents a major threat in the control of diarrhea. Mamtha *et al* (2004) was observed broad spectrum activity of *Centella asiatica* against a wide range of enteric pathogens. They used viable cell count method to study whether the observed inhibition was bactericidal or bacteriostatic in action. In case of *Vibrio cholerae, Shigella* species and *Staphylococcus aureus,* the alcoholic extract of plant showed bactericidal action within 2 hours.

In vitro antimicrobial activity of *Gomphostemma* species against *E.coli* was screened by (Deka *et al.,* 2006) and the inhibition diameter 22mm were observed which is higher than the inhibition diameter 17mm of antibiotic ampicillin against *E.coli*. In indigenous system Dandamudi *et al.,* (2010) revealed excellent antioxidant activity and total phenol content in *Pongamia pinnata* flowers. Kalairasan *et al.,* (2011) evaluated and documented the presence of alkaloids, glycolysides, carbohydrates, flavonoides, phenols, saponins and tannins in the ethanolic stem extract *Raphidophora pertusa* and observed excellent activity against *E.coli*.

CONCLUSION

During the period of the documentation it is observed that the tribal people of the district are shy and conservative in nature. They do not want to share their ancient traditional knowledge with other people. Moreover, the existing knowledge on traditional uses of medicinal plants are declining fast because of the lack of interest of young people to learn the traditional knowledge from the old tribal medical practitioner. The valuable and experienced knowledge on the medicinal uses of plants are also disappearing due to modernization, destruction of forests, urbanization, industrialization, etc. Scientific investigations through the evaluation of plants for their biological activity and isolation of active constituents responsible for their medicinal properties for digestive system disorders need to be carried out in various pharmaceutical industries and National laboratories which will give a chance to develop new natural medicines.

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REFERENCES

Behera K. K.. Ethnomedicinal Plants used by the Tribals of Similipal Bioreserve, Orissa, India: A Pilot Study, Ethnobotanical Leaflets 2006; 10: 149-173.

Dandamudi R. B. In Vitro Studies on Extracts of Pongamia pinnata (L) Pierre Flowers as a Potent Antioxidant , International Journal of Agriculture and Food Science Technology, 2010; 1(19):7-11.

Deka H., Gogoi D., Gogoi H. K.., Handique P.J., *In vitro* evalution of antimicrobial property of two species of genus *Gomphostemma*. Journal of Cell Tissue Res., 2006;6: 787-91.

El-Ghazali G.E., Al-Khalifa K.S., Saleem G.A., Abdallah E.M. Traditional medicinal plants indigenous to Al-Rass provinces, Saudi Arabia. J. Med. Plants Res., 2010; 4(24): 2680-2683.

Giday M., Asfaw Z., Woldu Z . Medicinal plants of the Meinit ethnic group of Ethiopia: An ethnobotanical study. J. Ethnopharmacol., 2009; 124: 513-521.

Gurbuz I., Akyuz C., Yesilada E., Sener B. Anti-ulcerogenic effect of *Momordica charantia* L. fruits on various ulcer models in rats. Journal of Ethnopharmacology, 2000; 71: 77-82.

Halberstein R.A. Traditional botanical remedies on a small Caribbean Island: Middle (Grand) Caicos, West Indies. J. Altern. Complement. Med., 1997; 3(3): 227-239.

Jagtap N.S., Khadabadi S.S., Ghorpade D.S., Banarase N.B ., Naphade S.S. Antimicrobial and antifungal activity of *Centella asiatica* (L.) Urban,Umbeliferae, *Research J. Pharm. and Tech.* 2009; 2 (2):328-330,

Jomy A., Sivadasa M., , Ethnomedicinal plants of Periyar tiger reserve, Kerala, India. Ethnobotany 2004; 16, 44-49.

Kalairasan A., Ahmed John S. Evaluation of *Rhaphidophoral pertusa*, Schott (Araceae) for antibacterial activities. Journal of Pharmacy Research., 2011; 4: 1-2.

Kanner J., Lapidot T. The stomach as a bioreactor: dietary lipid peroxidation in the gastric fluid and the effects of plant-derived antioxidants. Free Radical Biology and Medicine, 2001; 31 (Suppl 11): 1388-1395.

Kavitha D., Shilpa P.N., Devaraj S.N., Antibacterial and antidiarrhoel effects of alkaloids of *Holarrhena antidysenterica* Wall. Indian J Exp Biol . 2004. 42; 589-594.

Kim H., Song M.J. 2008. Ethnobotany. Worldscience Co. Seoul, Korea.

Kim H., Song M.J., Potter D. Medicinal efficacy of plants utilized as temple food in traditional Korean buddhism. J. Ethnopharmacol., 2006;104: 32-46.

Mamtha B., Kavitha K., Srinivasan K.K.,. Shivananda P.G. An *in vitro* study of the effect of *Centella asiatica* [Indian pennywort] on enteric pathogens. *Indian J. Pharmacol.* 2004 ; 36: 41.

Rahmatullah M., Mollik A.H., Rahman S., Hasan N., Agarala B., Jahan R . A medicinal plant study of the Santal tribe in Rangpur district, Bangladesh. J. Altern. Complement Med., 2010 ;16(4): 419-425.

Sher H., Alyemeni M.N., Wijaya L., Shah A.J. Ethno pharmaceutically important medicinal plants and its utilization in traditional system of medicine, observation from the Northern Parts of Pakistan. J. Med. Plants Res., 2010; 4(8): 1853-1864.

Teklehaymanot T. Ethnobotanical study of knowledge and medicinal plants use by the people in Dek Island in Ethiopia. J. Ethnopharmacol., 2009; 124: 69-78.

Tene V, Malagón O, Finzi PV, Vidari G, Armijos C, and Zaragoza T. An ethnobotanical survey of medicinal plants used in Loja and Zamora-Chinchipe, Ecuador. J. Ethnopharmarcol., 2007., 111:63-8 1.

Ullah R., Hussain Z., Iqbal Z., Hussain J., Khan F.U., Khan N., Muhammad Z., Ayaz S., Ahmad S., Rehman N.U., Hussain I . Traditional uses of medicinal plants in Darra Adam Khel NWFP Pakistan. J. Med. Plants Res., 2010; 4(17): 1815-1821.

Wang M. W., Hao X., Chen, K.. Biological screening of natural products and drug innovation in China, Phil. Trans. R. Soc. B. 2007; 362: 1093–1105.

Yirga G. Use of traditional medicinal plants by indigenous people in Mekele town, capital city of Tigray regional state of Ethiopia. J. Med. Plants Res., 2010; 4(17): 1799-1804.

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