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INDIGENOUS THERAPEUTIC PRACTICES FOR THE MANAGEMENT OF HEMORRHOIDS IN NORTHEAST INDIA

Agu Pertin[1], Sabita Gogoi[2], Moirangthem Kameshwor Singh[3]

[1]Assistant Protocol Officer, Itanagar, Arunachal Pradesh, India

[2]Assistant professor, Department of Zoology, G.L Choudhary College, Assam, India

[3]Assistant Professor, Department of Life Sciences, Dibrugarh University, Assam, India

[1]Corresponding Author Email: agupertin8638@gmail.com

ABSTRACT

The goal of present investigation is to throw light on the traditional knowledge of indigenous tribal communities of Northeast region of India with special reference to Sivasagar district of Assam and Namsai district of Arunachal Pradesh on the use of various medicinal flora and fauna in the treatment of various ailments especially like piles. Hemorrhoids or piles are a common problem faced by around 60% of the people of the North eastern region. Most of the used medicinal flora and fauna are native to the local area as the region has tremendous potential of bio-resources. Despite being rich in ethnicity and well equipped with traditional knowledge, due to lack of proper documentation and ethical belief, much useful information is confined only to the local folk communities. The present research is an assemblage of reports of folk medicines used by local people or Kabiraj for the treatment of piles through individual questionnaires. And the information generated from the current study will provide valuable facts of the indigenous medicine to the masses for proper utilization and systematic commercialization with scientific practices.

Keywords: *Piles, Folklore, ethno medicines, North East, Assam, Arunachal Pradesh*

INTRODUCTION

India being one of the tropical countries of the world has been bestowed with varieties of flora and fauna which make India a valuable source of drugs of natural origin. India is well known for its traditional knowledge of medicine since prehistoric times and is even practiced today in most of the rural areas. It is an amazing fact that the entire northeast India is included within one of the global biodiversity hotspots. According to Myer, northeast India has been identified as one of the world`s seven richest biodiversity [1]. Geographically, Arunachal Pradesh, Assam, Meghalaya, Sikkim, Tripura, Mizoram, Nagaland, Manipur constitute 8 states of Northeast India. Each state is a home of various tribes and sub-tribes which constitutes the cultural diversity of the north-eastern region.

The north-eastern region is also known as “Lungs of the Country” due to the presence of a large amount of unbroken dense forest which provides innumerable scope for application of various plant and animal derived products for therapeutic uses. Indigenous methods of curing was originally an indispensable part of semi-nomadic and agrarian tribal societies, though historical evidence for its continuance comes before 6000 BC, but it seems to have originated before the end of last ice age [2]. As per the information on ethno-botanical therapeutic healing and folk medicine, the number of newly identified drug yielding flora in India is about 2000 species & are well known to about 4000 drug industries to prepare medicine. The estimated number of plants used by rural ethnic groups for healing practice is about 7500 plants but the mainstream populations are still unknown about the real medicinal value of 5000 medicinal plants used by tribal people [3]. Though the advancement in the field of science and technology has made life easier to most of the growing populations in most of the metropolitan cities, the scenario is not the same in the countryside. In the rural areas people still lean on the local practitioners for most of their health related problems one of such as in the treatment of piles. Hemorrhoids are one of the painful or dreadful diseases suffered by people. Piles are painful swelling of veins usually found in the lower rectum and anus. It is generally an inflammation of vessels and becomes a serious issue when it swells up and causes bleeding [4]. Depending on the severity of the hemorrhoids, it is categorized into four grades-

Grade I: The vessels which are enlarged are still in the anal canal and not visible outside. It is mostly asymptomatic and can infer only when bleeding occurs,

Grade II: The vessel may come out while passing the stool and goes back by itself,

Grade III: The inflamed blood vessels of the rectum bulge out completely and have to push it back by themselves and

Grade IV: It is the most painful and severe stage where in the protruding veins cannot be pushed back inside the anal canal manually [5]. This might occur due to bad food habits, constipations, consumption of alcohol, chronic diarrhoea, lifting of heavy weights etc. In the fourth stage, the patients are suggested to undergo operation however it is not required in initial stages.

Prevalence of the disease in most people has compelled us to move deep into the matter. The present study through the survey in the two north-eastern states i.e. Arunachal Pradesh with special reference to Namsai and Sivasagar district of Assam has revealed many of the old traditional practices that exist among the ethnic people of the area. The study revealed that approx. 60% of the people are victims of this disease even after the operation. Therefore, the ultimate saviour becomes their traditional practitioner. The documentation of such verbal information holds a very important place in the process of its preservation and transmission of such knowledge to the future generation.

MATERIALS AND METHODS

The research study was carried out in Sivasagar district of Assam and Namsai district of Arunachal Pradesh during the month of March (2019) to August (2020). The documentation of information from the folkloric people was conducted through field surveys and standard structured questionnaires provided to the folk people along with the casual conversation with them by using the methodology of Jain[6] . Total 120

questionnaires were provided to the local folk healers of these areas. After 3 days from the provided day, the questionnaires were collected and organized friendly talk with the people regarding pros and cons of prescribed medicine and the information were recorded. The questionnaires contain the information regarding the preparation strategy of different medicines & their requirement, doses, specific time to consume the medicines, prescribed number of persons & recovered person, side effects (if any) of the medicine. After collecting the data the scientific name of the plants and animals are identified by using flora and fauna[7] and by using highly recommended taxonomical books (e.g. glimpse of biodiversity) and then data was structured. During the survey, the main problem encountered was the ethical issue associated with the belief that the sharing of information would lead to the loss of the effectiveness of the medicine. Initially the local folk healers heisted to share the information but were convinced later and lent a helping hand in completion of the survey.

RESULT AND DISCUSSION

The present report predominantly emphasized on conventional approach of treatment of hemorrhoids in the north-eastern states of India with special reference to Sivasagar district of Assam and Namsai district of Arunachal Pradesh is represented in Table A.1. It indicates various methods of curing piles which is an amalgamation of both plant and animal derived products prescribed orally as well as administered locally. It is found that relative use of plants and its products are more in comparison to animal derived products. The species of plants belong to families like Brassicaceae, Euphorbiaceae, Caricaceae, Combretaceae, Phyllanthaceae, Arecaceae, Myrtaceae, Apiaceae, Anacardiaceae, Piperaceae, and Fabaceae. The plant parts primarily that are used are leaves, stem, seed, bark of tree and other plant derived products including latex, oil etc. The only fauna that is administered for the treatment is earthworm which belongs to the family Megascolecidae.

In the present study, most of the traditional healers use earthworm as the most effective ingredient in the prepared medicine prescribed by the local practitioner of these areas. In many of the instances the earthworm has been used in combination with the other ingredients like bark of mango tree, bark of gooseberry, black pepper etc. on the other hand it has also been used alone (excreta). The procedure however varies in terms of its application and parts used. In some, the mouth part is used and administered orally while in others its excreta is used in treatment either as steam or as an ointment

Table A. 1 Folkloric methods of curing piles in Sivasagar district of Assam & Namsai district of Arunachal Pradesh

S N.	Materials Required	*Scientific Name*	Family	Local Name	Mode of preparation	Dose
1.	a) castor leaves	*Ricinus communis*	Euphorbiaceae	Era pat	Grind the castor leaves and collect the filtrate (100ml). Add half teaspoon turmeric powder, 3 drops of castor oil & 2	Apply in the infected area 5 times daily for 10 consecutive days.
	b) Turmeric powder	*Curcuma longa L.*	Fabaceae	Halodhi		
	c) Aloe Vera gel	*Aloe barbadensis miller*	Asphodelaceae	Aloe Vera		

					tablespoon aloevera gel, mix it well, store it in an airtight container	
2.	a)Earthworm (excreta)	*Metaphire houletti*	Megascolecidae	Bunda kesu	Dry the excreta of earthworm and burn it till it becomes hot red, put it on an earthen pot containing ¼ water. Take the steam in the infected area.	Take the steam in the infected area for 3 consecutive days.
	b) Earthen pot	_____	_____	Matir koloh		
3.	a) Earthworm	*Metaphire houletti*	Megascolecidae	Bunda kesu	Collect the head portion (1inch) of 3 earthworms, add 250ml water and add 15-20 crushed black pepper, boiled it for 15 mins.	Drink the decoction for 3 continuous days.
	b)Black pepper	*Piper nigrum*	Piperaceae	Jaluk		
	c)water & salt	_____	_____	Pani & nimokh		
4.	a) Taro	*Collocassia esculenta*	Araceae	Kola kosu	Take 21 stalks of taro, add 101 small bird eye chilli in 1 litre water. Boil it for 30 minutes. Separate out the juice and let it cool.	Drink two tablespoons daily for 10 days.
	b) bird eye chilli	*Capsicum annuum*	Solanaceae	Dhan jolokia		
5.	a) Baruna	*Crataeva nurvala*	Capparaceae	borun	Stems are burnt & its smoke is used in the infected area.	Once in a day for 5 consecutive days.
6.	a) chebulic myrobalan (bark)	*Terminalia chebula*	Combretaceae	Hilikha	In 300 ml water, the bark of chebulic myrobalan,arjuna tree,gooseberry tree(3 inch,each) and 5 earthworms (1inch) are mixed and boiled for 30 mins.	Consume 35ml of the decoction for 15 consecutive days.
	b) Arjun tree (bark)	*Terminalia arjuna*	Combretaceae	Arjun		
	c) Gooseberry tree (bark)	*Embilica officinalis*	Phyllanthaceae	Amlokhi		
	d) Earthworm	*Metaphire houletti*	Megascolecidae	Bunda kesu		
7.	a) Coconut (jute)	*Cocus nucifera*	Arecaceae	Narikol	Burn the coconut jute,crush it into the finest powdery form, mix with curd to make a paste.	Take 1 spoon of coconut jute powder in 100 gm curd, daily 3 times for 3
	b) Fresh curd	_____	_____	Doi		

						days.
8.	a) Indian blackberry (seed)	*Syzygium cumini*	Myrtaceae	Jamuk	Dry the seed of blackberry, mango & jeera, crush them separately.Take 25gm blackberry: 50gm mango: 25 gm jeera powder,keep it in airtight container.	Take 1 spoon of the proportion in lukewarm water (250ml) , drink daily for 25 days.
	b) Mango (seed)	*Mangifera indica*	Anacardiaceae	Aam		
	c) jeera (seed)	*Cuminum cyminum*	Apiaceae	Jeera		
9.	a) Earthworm (excreta)	*Metaphire houletti*	Megascolecidae	Bunda kesu	Take the fresh excreta and add 4-5 drops of mustard oil & make a paste.	Apply the paste in the infected area before going to bed.
	b) Mustard oil	*Brassica juncea*	Brassicaceae	Meetha tel		
10.	a) Barbados nut (leaves)	*Jatropha curcas*	Euphorbiaceae	Bengali era, bhoot era	Extract 50 ml juice from the fresh leaves of Jatropha curcas & mix with 250 ml water.	Drink the mixture for 15 days.
11.	a) Papaya	*Carica papaya*	Caricaceae	Omita	Latex of papaya plant	Rub the latex in the inflamed area for 10 days.
12.	a) Betel leaf	*Piper betle*	Piperaceae	Paan	Grind fresh leaves of betel leaves & make a paste	The prepared is administered in the infected area twice a day
13.	a) Aloe Vera gel	*Aloe barbadensis*	Asphodelaceae	Aloevera	Mix 4 tablespoon aloevera gel with 2 tablespoon lemon juice, add a pinch of black salt.	Take the mixture early in the morning for about 30 days.
	b) Lemon juice	*Citrus limon*	Rutaceae	Nemu		
	c) Black salt			Kola nimokh, alo		
14.	a) Dried elephant foot yam	*Amorphophallus*		Ool kosu	Add 50 gm. of dried elephant foot yam & 2gm of tamarind leaves in 1 L water & boil for 45 mins, cool & remove the excess water & make a paste.	Consume the paste for 10 days
	b) Tamarind (leaves)	*Tamarindus indica*	Fabaceae	Teteli		

***S N. – Serial number**

Regional Effect on Illness

The regional variation in climatic conditions, dietary habits, and lifestyle plays a significant role in the prevalence and severity of hemorrhoids in Northeast India.

- In humid regions such as Assam, high consumption of fermented and spicy foods may aggravate inflammation.
- In certain tribal communities of Arunachal Pradesh, meat-based diets and low fiber intake contribute to constipation, a major predisposing factor.
- Areas with limited medical facilities show higher dependence on traditional remedies.

The study observed that remedies were slightly modified based on locally available plant species, demonstrating adaptive regional ethnomedicinal practices.

The biochemical reason behind the therapeutic effect of earthworm in the treatment of piles could be attributed to the coelomic fluid and earthworm possess antioxidant, ant inflammation, bacteriostatic , mitogenic properties and harbor wound homeostasis potential. These aforementioned parameters play a pivotal role in wound healing and epithelialization and collagen synthesis. [8]. Another widely used ingredient in preparation of decoction in piles treatment is black pepper. The blackpepper contains wound healing property which is attributed to its bioactive compounds i.e., alkaloid, flavonoid and triterpene. Studies suggest that these phytochemicals demonstrate wound healing properties by increasing the rate of epithelization due to their astringent and antibacterial and antimicrobial properties [9]. Histological studies suggest that castor leaf extract has the potentiality to accelerate epithelial migration and produce angiogenic response and tissue filling thereby showing positive result in wound healing mechanism so it is very efficient in impaired tissue caused by hemorrhoids[10]. Colocassia esculenta, one of the potent components in traditional medicine possesses antibacterial and antifungal properties due to the presence of ethanolic extract in it[11]. The wound healing property of C.nurvala or Baruna could be attributed to its bioactive compound betulinic acid, catechin, quercetin, stachydrine etc. The ethanol extract of *C.nuvvula* is mainly responsible for anti-inflammatory properties. The ethanol extract negatively controls the signal transduction process of extracellular kinase signals in macrophages and hinder the inflammatory symptoms caused by lipid polysaccharides[12]. Turmeric is one of the most potent herbs in folkloric medicine. It has antimicrobial, anti-inflammatory, antioxidant and anti-cancer, anti-mutagenic and anticoagulant properties. The key active bioactive compound is curcumin or diferuloylmethane. Curcumin possesses the ability to enhance granulation tissue formation, deposition of collagen fiber, remodeling of tissue and wound contraction, thereby it shows maximum therapeutic effect in wound on epithelium layer. [13].

Environmental Considerations

Most of the remedies documented in this study utilize locally available plant resources and biodegradable materials, resulting in minimal environmental impact. However, excessive harvesting of certain medicinal plants without sustainable management may lead to ecological imbalance. Therefore, conservation strategies and scientific cultivation practices are recommended to ensure long-term availability and ecological sustainability.

The data collected in accordance with the statement of local folk healers are mentioned in the table.

Effect and Time Taken by Remedies

The present study further elaborates that the therapeutic effect and duration of treatment varied depending on the severity (Grade I–IV) of hemorrhoids and the type of remedy administered. Based on feedback collected from local healers and patients:

- Topical applications (e.g., castor leaf paste, aloe vera gel, papaya latex) showed symptomatic relief such as reduction in pain, itching, and inflammation within **3–7 days**.
- Steam therapy using earthworm excreta demonstrated noticeable reduction in swelling within **3 consecutive days**.
- Decoctions containing *Terminalia chebula*, *Terminalia arjuna*, *Emblica officinalis*, and earthworm showed improvement in bleeding and bowel discomfort within **10–15 days**.
- Internal herbal preparations (e.g., seed powders of *Syzygium cumini*, *Mangifera indica*, and *Cuminum cyminum*) required **15–25 days** for significant improvement.

However, advanced Grade III and IV cases required longer duration and sometimes did not achieve complete recovery without surgical intervention.

Table A.2 Depicting prescribed no of persons along with its recovery rate

Types of Traditional medicine	Total No. of persons prescribed	No. of persons recovered	Recovery rate (%)
1	105	68	64.7%
2	130	107	82.3%
3	92	78	84.7%
4	65	34	52.3%
5	70	36	51.4%
6	142	120	84.5%
7	77	43	55.8%
8	113	82	72.5%
9	81	64	79%
10	92	64	69.5%
11	45	23	51.1%
12	87	44	50.5%
13	103	75	72.8%
14	95	72	75.7%

Gender Distribution and Patient Feedback

Out of the total cases reported by local healers, approximately 58% were male patients and 42% were female patients. The slightly higher prevalence among males may be associated with occupational strain, irregular dietary patterns, and alcohol consumption. Patient feedback revealed that nearly 72% reported relief in pain and bleeding, while 65% expressed satisfaction with the traditional treatments. Mild recurrence was observed in about 18% of cases. No severe side effects were reported during the course of treatment.

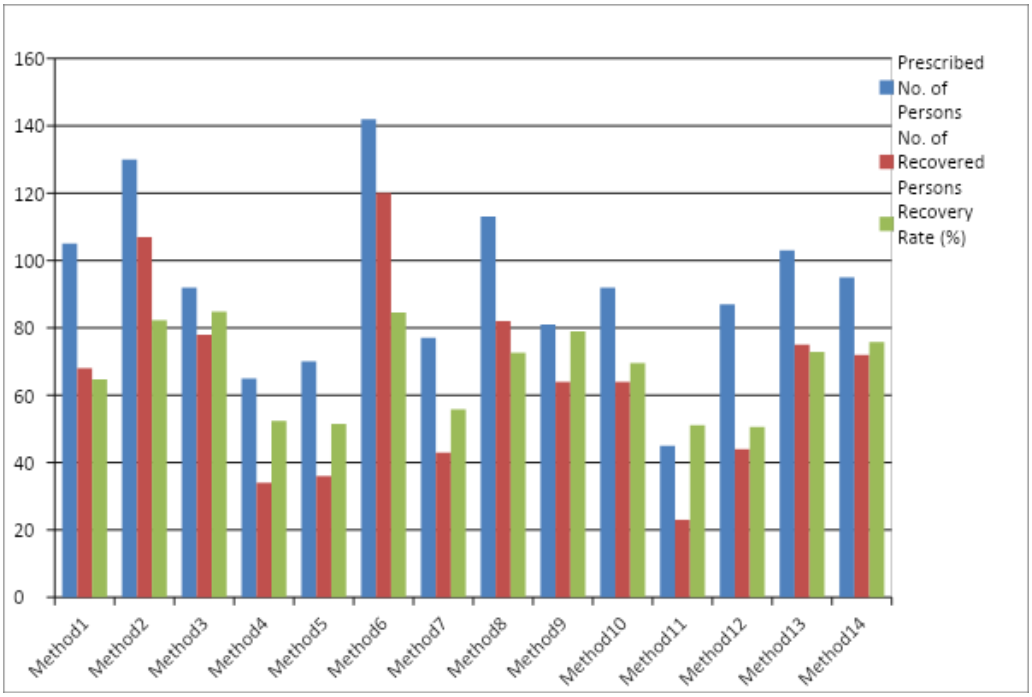

Fig.A.1 Bar graph representing recovery rate of various methods used in the treatment of piles.

The presented data of recovery rate are based only on animadversion provided by the recovered patients. The data depicts that the decoction prepared from the bark of Chebulic Myrobalan, Arjuna tree, Gooseberry tree and earthworm is the most effective method. In most of the analysis it is inferred that the method in which earthworm is used as one of the ingredients was found to have a high success rate.

Comparative Evaluation of Traditional Methods

Comparative analysis of all fourteen traditional methods indicates that Method 6 (decoction of *Terminalia chebula*, *Terminalia arjuna*, *Emblica officinalis*, and earthworm) demonstrated the highest recovery rate (84.5%). Method 3 also showed high effectiveness (84.7%). Moderate recovery rates were observed in Methods 8, 13, and 14 (72–76%), whereas Methods 4, 5, 11, and 12 showed comparatively lower recovery rates (around 50–52%). It is noteworthy that remedies incorporating earthworm as a component generally exhibited higher therapeutic success compared to plant-only preparations.

Table: A.3 List of indigenous medicinal flora and fauna practiced in the ailment of piles across North East India.

States	Common name	*Scientific name*	Family	Local name	Parts used
	1.Black pepper	*Piper nigrum*	Piperaceae	Jaluk	Fruit
	2.Trefle Gros	*Desmodium triquetrum*	Papilionaceae	Elucha	Leaves
	3.Beleric	*Terminalia bellirica*	Combretaceae	Bhumura	Fruit
	4.Chebulic myrobalan	*Terminalia chebula*	Combretaceae	Hilikha	Fruit, bark
	5.Earthworm	*Metaphire houletti*	Megascolecidae	Bunda kesu	Excreta,whole body
	6.Touch me not plant	*Mimosa pudica*	Fabaceae	Lajukibon	whole plant
	7. Castor plant	*Ricinus communis*	Euphorbiace	Erapat	Oil, leaves

			ae		
	8. Mango plant	*Mangifera indica*	Anacardiaceae	Aam	Seed, bark
	9. Papaya	*Carica papaya*	Caricaceae	Omita	Latex
	10.Indian bael	*Aegle marmelos*	Rutaceae	Bel	Leaves
1.ASSAM	11.Onion	*Allium cepa*	Liliaceae	Nohoru	Rhizome
	12.Giloi	*Tinospora cordifolia*	Menispermaceae	Hogunilota	Stem
	13. False daisy	*Eclipta alba*	Compositae	Kehraji	Whole plant
	14.Lotus	*Nelumbo nucifera Gaertn*	Nymphaeaceae	Podoom phul	Dry flower
	15. Glory tree	*Clerodendrum viscosum Vent.*	Verbenaceae	Vetmali	Leaves
	16.Bryophyllum	*Kalanchoe pinnata (Roxb.) Pers.*	Crassulaceae	Dupor Tenga	Leaves
	17. Arjuna tree	*Terminalia arjuna*	Combretaceae	Arjun gos	Bark
	1. Earthworm	*Metaphire houletti*	Megascolecidae	Donkal	Dry excreta
	2. Giloy	*Tinospora cordifolia*	Menispermaceae	Amrit lata	Stem
	3. Betel leaf	*Piper betel*	Piperaceae	Paan	Leaves
	4. Castor plant	*Ricinus communis*	Euphorbiaceae	Miggim	Whole plant
	5. Spiny Amaranth	*Amaranthus spinosus*	Amaranthaceae	Mon, yankhisoul pa	Whole plant
2.Arunachal Pradesh	6. Horse chestnut	*Aesculus assamica*	Sapindaceae	Ozoansak	Leaves
	7. Neem plant	*Azadirachta indica A. Juss.*	Meliaceae	Neem	Leaves, seed
	8. Barbados nut	*Jatropha curcas*	Euphorbiaceae	Bongali era	Leaves
	10. Taro	*Colocasia esculenta*	Araceae	Aenge	Whole plant
	11. Birds eye chilli	*Capsicum annuum*	Solanaceae	Pattang mirchi	Fruit
	12.Papaya plant	*Carica papaya*	Caricaceae	Papita, omita	Latex, leaf
	1. Cassie flower	*Acacia farnesiana (Linn.)*	Mimosaceae	Chingonglei hangampal	Leaves
	2.Garlic	*Allium sativum Linn.*	Liliaceae	Chanam	Bulbs
	3. Greater galangal	*Alpinia galangal (Linn.) Swartz.*	Zingiberaceae	Kanghu	Rhizome
	4. Red Amaron	*Amaranthus gangeticus Linn.*	Amaranthaceae	Chengkruk angangba	Stem ,leaves
	5. Neem tree	*Azadirachta indica A.Juss.*	Meliaceae	Nim	Tender , branches
	6. papaya	*Carica papaya Linn.*	Caricaceae	Awathabi	Milky latex
	7. European nettle tree	*Celtis australis Linn.*	Ulmaceae	Heikreng	Leaves
	8. Turks turban	*Clerodendrum colebrookianum Walp.*	Lamiaceae	Kuthap	Leaves

3. Manipur	9.Palm fern	*Cycas pectinata Griff.*	Cycadaceae	Yeandang	Female corns
	10. Dog grass	*Cynodon dactylon (Linn.) Pears.*	Poaceae	Tingthao	Whole plant
	12. Lantena	*Lantana camara Linn.*	Verbenaceae	Thirei	Leaves/shoot/tips
	13. Touch me not plant	*Mimosa pudica Linn.*	Mimosaceae	Kangphal ekaithabi	Whole plant
	14. Chebulic myrobalan	*Terminalia chebula Retz.*	Combretaceae	Manahi	Fruit
Meghalaya	1 Horse chestnut.	*Aesculus hippocastanum*	Sapindaceae	Diengdula	Leaves
	2.Mango	*Mangifera indica*	Anacardiaceae	Soh pieng	Seed
	3.Bitter gourd	*Momordica charantia*	Cucurbitaceae	Karela	Leaves
	4. Onion	*Allium cepa*	Apiaceae	Piat	Leaves
	5. Java plum	*Syzygium cumini*	Myrtaceae	Soh iong	Fruit
	6.Field mustard	*Brassica rapa*	Brassicaceae	Sla tyrso	Leaves
	7.Stone flower	*Bergenia ligulata*	Saxifragaceae	La khowang	Leaves and root
	8. Fig	*Ficus carica*	Moraceae	Dudhilo	Fruit
	9. Chebulic myrobalan	*Terminalia chebula*	Combretaceae	Soh Salukah	Fruit
	10.Zinger	*Zingiber officinale*	Zingiberaceae	Lakadong	root
Mizoram	1.Begonia	*Begonia inflata*	Begoniaceae	Se-khup-thur	Whole plant
	2.Broadleaf plantain	*Plantago major L.*	Plantaginaceae	Kelbe-an	Leaves
	3. chaff flower	*Achyranthes aspera L.*	Amaranthaceae	Buchhawl	Leaves
	4.Elephant foot yam	*Amorphophallus paeoniifolius*	Araceae	Telhawng	Rhizome
	5. Averrhoa	*Averrhoa ramiflora L.*	Rutaceae	Theiherawt	Leaves
	6. White turmeric	*Curcuma zedoaria*	Zingiberaceae	Aidizing	Rhizome
	7. Lasia	*Lasia spinosa(L.) Thaw.*	Araceae	Zawngzang	Root and leaves
	8. Blackberry nightshade	*Solanum nigrum L.*	Solanaceae	Anhling	Fruit
	9.Beleric	*Terminalia bellirica (Gaertn) Roxb.*	Combretaceae	Tuikuk-reraw	Fruit
	10.Spiny coriander	*Eryngium foetidum L.*	Apiaceae	Bahkhawr	Whole plant
Nagaland	1.Taro	*Colocasia esculenta*	Araceae	Banu,Manu	Whole plant
	2. Pencil yam	*Dioscorea transversa*	Dioscoreaceae	Pokmaso	Seed and tuber
	3.Gooseberry	*Emblica officinalis*	Phyllanthaceae	Jakhethi	Fruit and seed
	4.Greater galangal	*Alpinia galangal Linn. Willd.*	Zingiberaceae	Ramrhou	Rhizome
	5.Dandal	*Xylosma longifolia Clos.*	Salicaceae	Nungshanpanba	Leaves
	6.Chaste tree	*Vitex negundo Linn.*	Verbenaceae	Warek- lou	Leaves

Sikkim	1.Veldt Grape	*Cissus quadrangularis*	Vitaceae	Halijora	Whole plant
	2.Aloevera	*Aloe barbadensis Mill.*	Asphodelaceae	Ghee Kumari	Leaves
	3.Fire-flame bush	*Woodfordia fruticosa*	Lythraceae	Dhayeroo	Flower and bark
	4.Bridal coach tree	*Hymenodictyon orixense*	Rubiaceae	Latikaran	Bark
	5.Goosefoot	*Chenopodium album*	Chenopodiaceae	Bethu saag	Whole plant
	6.Himalayan silver	*Abies webbiana*	Pinaceae	Gobre salla	Leaves
	7.Water yam	*Dioscorea alata*	Dioscoreaceae	Ghar Tarul	Tuber
	8.Prickly Blue Poppy	*Meconopsis horridula*	Papaveraceae	Tser Ngon	leaves
	9. Sikkim Rhubarb	*Rheum nobile*	Polygonaceae	Tchuka	Rhizome
Tripura	1.Bhaulan	*Hymenodictyon excelsum*	Rubiaceae	Latikoram	Bark
	2.Beleric	*Terminalia belerica*	Combretaceae	Barra	Dried fruit
	3.Bengal arum	*Typhonium trilobatum (Linn.) Schott*	Araceae	Kharkan	Leaves and tubers
	4.Touch me not plant	*Mimosa pudica*	Mimosaceae	Sada lajjabati	Root
	5. Wild yam	*Dioscorea bulbifera L.*	Dioscoreaceae	Varahi kand	Tuber
	6. Spider lily	*Crinum asiaticum L.*	Amaryllidaceae	Khubarom	Leaves
	7. Bitter gourd	*Momordica charantia L.*	Cucurbitaceae	Gangrauk	Fruits and twigs

[source:- 14,15,16,17,18,19,20,21]

Table A.3 depicts the conventional methods of treating piles in the entire North-eastern States of India. It involves the use of various plants and animal parts in the treatment of piles which includes fruit, leaves, bark, seed, rhizome, stem and excreta belonging to 47 different families in the region. This study indicates that leaves are found to be used and administered in the highest proportion in comparison to the other parts of the plant used. It is also seen that there are certain plant species belonging to families like Combretaceae, Verbenaceae, Zingiberaceae, Dioscoreaceae that are most commonly used in most of the states of northeastern region. *Terminalia sp.* of the family Combretaceae is known to be frequently recommended in the state of Assam, Manipur, Meghalaya, Mizoram and Tripura. The Verbenaceae family which encompasses plant species like *Clerodendron viscosum, Lantana camara, Vitex negundo* is also prominently put to use in the states of Assam, Manipur and Nagaland. However the animal that is solely used is *Metaphire houletti* belonging to the family Megascolecidae and is so far found only in the states of Assam and Arunachal Pradesh also. The study also depicts that other families like Euphorbiaceae, Rutaceae, Solanaceae, Araceae, Anacardiaceae, Menispermaceae, Piperaceae etc. are of common occurrence in the treatment of piles

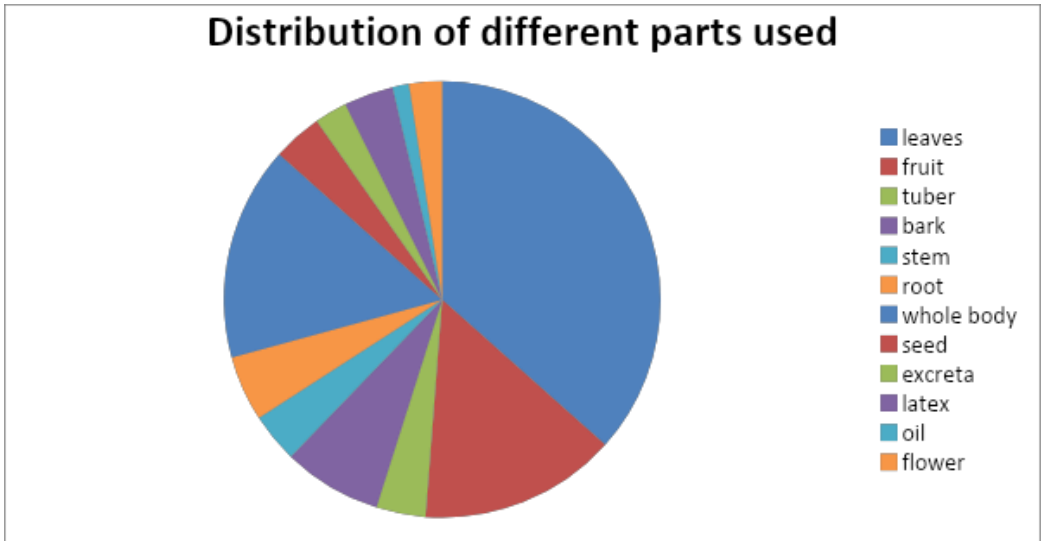

Fig. A.2 Distribution of different parts used in treatment of piles across Northeast India

CONCLUSION

The present study systematically documents indigenous therapeutic practices used for the management of hemorrhoids in Northeast India, particularly in Assam and Arunachal Pradesh. The findings reveal that several traditional remedies demonstrate considerable therapeutic potential, especially formulations containing *Curcuma longa*, *Terminalia chebula*, *Crataeva nurvala*, and *Metaphire houletti*. Remedies incorporating earthworm showed comparatively higher recovery rates.

Regional dietary habits, climatic conditions, and lifestyle factors significantly influence both disease prevalence and treatment outcomes. Although traditional remedies exhibited promising results with minimal reported side effects, further pharmacological validation, toxicity studies, and controlled clinical trials are necessary to establish safety and efficacy. Integration of scientific research with indigenous knowledge systems may facilitate the development of standardized and sustainable therapeutic agents.

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Declaration of Interest

The authors declare no competing interests.

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