



Medico-ethnobotanical Claims used against Gastrointestinal Disorders by Different Tribes of Assam, India

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ABSTRACT

Aim: The present communication deals with some newly reported Medico-ethnobotanical claims used for the treatment of various gastrointestinal disorders like blood dysentery, chronic dysentery, diarrhea, and cholera by using medicinal plants documented during field survey since last 3 years.

Materials and methods: Field surveys were conducted in different locations of Assam where many folk healers were interviewed for documentation of Medico-ethnobotanical information. The reported plants are collected, identified, and specimens are preserved.

Results: Nine different tribes and communities of Assam are newly recorded to use 30 medico-ethnobotanical claims for the concerned purpose, while use of similar claims is already reported elsewhere by other tribes of different regions; the other tribes using similar claim are highlighted. Out of total 47 medicinal plant specimens documented, 10 medicinal plants were recorded for 11 single formulations, 39 medicinal plants for 19 compound formulations, and among these 2 medicinal plants are repeated for both compound and single formulations.

Conclusion: Ethnic societies are still depending upon the medicinal plants for the treatment of various diseases including gastrointestinal disorders. Further scientific investigations are needed for validation of these folk claims.

Clinical significance: Cross-cultural study along with other tribes was done and highlighted against enumeration for further validation of folk claims.

Keywords: Assam, Cholera, Cross-cultural study, Diarrhea, Dysentery, Medicinal plants.

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INTRODUCTION

Assam, a part of one of the biodiversity hotspots, occupies a special place in Northeastern India located between 24°44' N and 27°45' N latitude and 89°41' E to 96°02' E longitude, covering 78,438 km² area representing 2.4% of India's total geographical area. The annual rainfall of the area starts from minimum 178 cm to maximum 305 cm, and temperature ranges between 18 and 37°C, with 83% of average humidity.¹ Many folklore medicinal plants are used by different tribes and rural people of Assam to cure various disease conditions. Dysentery, diarrhea, and cholera are major problems in rural societies of Assam, and such diseases are treated by using folklore medicinal plants which are a part of their folk life. This traditional knowledge is generally transmitted from one generation to the next generation through word-of-mouth, which were studied in different times and published elsewhere in different headings like ethnobotanical studies or folklore practices²⁻²⁴ covering different disease conditions among which only one is directly focused on gastrointestinal diseases,²⁴ which is limited to few districts of Upper Assam only. Hence, a sincere attempt is made to present a compiled report of Medico-ethnobotanical claims reported for gastrointestinal disorders extracted from the surveys made in different locations of entire Assam during 2014 to 2016 to document various folklore medicinal plants used for various diseases by different tribes and indigenous communities of Assam.

MATERIALS AND METHODS

From 2014 to 2016, more than 40 field surveys were conducted by the survey team in different locations covering entire Assam where many folk healers were interviewed for documentation of Medico-ethnobotanical information of medicinal plants like local name, parts used, mode of preparation and administration, any other precaution, etc., related to gastrointestinal disorders along with other diseases. The plants were collected with the help

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of folk healers and preserved properly as herbarium and museum sample which were identified by local people²⁵ by matching the specimens with the standard preidentified specimens of the Herbarium of the Survey of Medicinal Plants Unit, Regional Ayurveda Research Institute for Gastro-Intestinal Disorders, Guwahati, Assam, India, where voucher specimens were finally deposited for further reference.

RESULTS

Results of the medico-ethnobotanical survey are enumerated in Tables 1 to 5, where folklore medicinal plants are arranged against diseases with scientific

name, family, habit, local name, parts used, amount of parts used, mode of administration, ethnic community involved with the prescription, and their area of report as district in parentheses. Earlier reports of the same plant in related or similar disease condition are also mentioned and compared for further cross-cultural investigation.

DISCUSSION

The present communication deals with total 30 medico-ethnobotanical prescriptions used for different gastrointestinal disorders covering 4 claims for blood dysentery, 2 claims for cholera, 9 claims for chronic dysentery, 2 claims for diarrhea, and 13 claims for dysentery-related

Table 1: Medico-ethnobotanical claims for blood dysentery

Scientific name [accession number]	Family	Local name	Parts used	Amount of parts	Mode of administration	Tribe involved (district)	Earlier report (tribe; area)
<i>Centella asiatica</i> (L) Urban. [AC5818]	Apiaceae	Manimuni	Whole plant	10–15 gm	Crushed with 20–30 mL cow milk; 10–25 mL filtered milk juice of the crushed plant parts is given orally daily at morning in empty stomach for 3 days	Sonowal (Dibrugarh)	Blood dysentery (Chirus; Southern Assam) ²
<i>Hydrocotyle rotundifolia</i> Roxb. [AC6104]	Apiaceae	Horu manimuni	Whole plant	10–15 gm			Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Curcuma longa</i> L. [AC6285]	Zingiberaceae	Halodhi	Leaf	20–25 numbers	Leaf juice is mixed with sugar and given in empty stomach daily for 3 days	Kalita (Nagaon)	Diarrhea (Zeme; NC Hills) ³
<i>Garcinia pedunculata</i> Roxb. [AC4576]	Clusiaceae	Bor thekera	Fruit	1–3 pieces	Dry fruit is mixed with boiled rice, water, salt, and mustard oil; the mixture is given orally during trouble and given till cure	Keot (Nagaon)	Diarrhea, dysentery, and flatulence (different tribes; Tinsukia) ²³
<i>Oryza sativa</i> L. [AC5330]	Poaceae	Dhan	Grain	20 gm			Dysentery (Kamrup) ⁴
<i>Ocimum basilicum</i> L. [AC6407]	Lamiaceae	Bon tuloshi	Root and leaf	50–70 gm	Paste of both roots and leaves is given orally in empty stomach for 3 days	Ahom (Golaghat)	Dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ⁵

Table 2: Medico-ethnobotanical claims for cholera

Scientific name	Family	Local name	Parts used	Amount of parts	Mode of administration	Tribe involved (district)	Earlier report (tribe; area)
<i>Physalis minima</i> L. [FB539]	Solanaceae	Kopal phuta	Root	1–2 numbers	Paste of both the ingredients is mixed with water and given orally in empty stomach for 1–2 days	Ahom (Karbi Anlong)	Purgative (Kamrup) ⁴
<i>Piper nigrum</i> L. [AC6207]	Piperaceae	Jaluk	Fruit	2–3 numbers			Diarrhea and dysentery (Kamrup) ⁶
<i>Carica papaya</i> L. [AC5810]	Caricaceae	Amita	Root	10–15 mL juice	Juice of both the ingredients is prepared with water and given orally daily in empty stomach for 1–2 days	Ahom (Karbi Anlong)	Dysentery (Mishing; Nagaon, Golaghat) ⁷
<i>Piper nigrum</i> L. [AC6207]	Piperaceae	Jaluk	Fruit	2–3 numbers			Diarrhea and dysentery (Kamrup) ⁶

Table 3: Medico-ethnobotanical claims for chronic dysentery

Scientific name	Family	Local name	Parts used	Amount of parts	Mode of administration	Tribe involved (district)	Earlier report (tribe; area)
<i>Alternanthera sessilis</i> (L.) R. Br. ex DC. DC. [AC6085]	Amarnthaceae	Mati-kaduri	Whole plant	1 bunch	Boiled with 1 crab and juice is given orally for 3–5 days	Koch Rajbangshi (Morigaon)	Dysentery (Darrang) ⁸
<i>Holarrhena antidysenterica</i> (L.) Wall. [AC6194]	Apocynaceae	Dudhkhari	Bark	500 gm	150 mL decoction is prepared from the ingredients and is given orally after breakfast till cure	Keot (Nagaon)	Dysentery (Lushai; NC Hills) ⁹
<i>Mimosa pudica</i> L. [FB3024]	Mimosaceae	Nilaji-bon	Root	10–15 gm			Dysentery (Zeme; NC Hills) ³
<i>Jatropha curcas</i> L. [FB3138]	Euphorbiaceae	Bhotera	LateX	5 mL	LateX is mixed with 125 mL goat milk and given orally in empty stomach for 3 days	Kalita (Nagaon)	Dysentery (Assam) ¹⁰
<i>Citrus paradisi</i> Macf. [FB333]	Rutaceae	Gol nemu	Fruit	1 number	One ripe fruit of <i>Citrus paradisi</i> Macf. is taken and a small hole is created where petiole of <i>Piper betle</i> L. is placed inside the fruit. Then the fruit is placed inside the burning <i>tuh</i> (by product of rice-lemma); after totally cooked, one fruit is given daily at morning in empty stomach up to 10 days	Ahom (Golaghat)	Data scarce Antiamoebic (Kamrup) ⁴
<i>Piper betle</i> L. [AC6174]	Piperaceae	Pan	Petiole	1 number			
<i>Sida cordifolia</i> L. [AC6302]	Malvaceae	Sonbaniyal	Roots	100 gm	Infusion of roots of <i>Sida cordifolia</i> mixed with fried rice of <i>Oryza sativa</i> L. var. <i>bora</i> and 250 mL of curd is prepared; the mixture is given orally once daily in the morning for 3 days	Ahom (Jorhat)	Dysentery and diarrhea (Deori, Muttak; Upper Assam) ²⁴
<i>Oryza sativa</i> L. var. <i>bora</i> [AC5330]	Poaceae	Bora Chaul	Fried product	100 gm			Dysentery (Kamrup) ⁴
<i>Capsicum frutescens</i> L. [FB837]	Solanaceae	Jalakiya	Seeds	3 numbers	Paste of the ingredients is given orally once daily till relief of symptoms	Ahom (Jorhat)	Data scarce
<i>Drymaria cordata</i> Willd. [AC227]	Caryophyllaceae	Lajjabari	Aerial part	1 bunch			Laxative (Tinsukia) ¹¹
<i>Ocimum sanctum</i> L. [AC3539]	Lamiaceae	Tulasi	Leaves	2 numbers			Blood dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ⁵
<i>Rubus buergeri</i> Miq. [FB759]	Rosaceae	Jetuli paka	Root	1 bunch	Juice given orally with cow milk in empty stomach for 4–5 days	Chutia (Jorhat)	Peptic ulcer (Karbi; Karbi Anglong) ¹²
<i>Citrus aurantifolia</i> (Christm.) Swingle. [FB30641]	Rutaceae	Kaji nemu	Fruit	20 mL	Dried powder of all the ingredients is mixed; oral application of ½ teaspoonful of powder thrice daily before food for 5–7 days is prescribed	Ahom (Jorhat)	Dysentery (Tinsukia) ¹¹
<i>Cyperus rotundus</i> L. [AC5596]	Cyperaceae	Keya ban	Tuber	10 gm			Dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ⁵
<i>Piper longum</i> L. [AC6419]	Piperaceae	Pippali	Fruit	2 numbers			Digestion (Mishing; Assam) ¹³
<i>Terminalia citrina</i> Roxb. ex Flem. [AC*5114]	Combretaceae	Jangi SiliKha	Fruit	10 gm			Data scarce
<i>Allium sativum</i> L.	Alliaceae	Naharu (Ass.)	Tuber bulb	3–4 numbers	One bunch aerial parts of <i>Stellaria media</i> is boiled and mixed with 3–4 bulbs of garlic and kept overnight and then filtered; orally one dose daily morning for 3–4 days or till relief of symptoms is prescribed	Ahom (Jorhat)	Dysentery (Kamrup) ⁴
<i>Stellaria media</i> (L.) Villars [AC0020]	Caryophyllaceae	Thutuni sak	Aerial part	1 bunch			Stomach disorder (Darrang) ⁸

Table 4: Medico-ethnobotanical claims for diarrhea

Scientific name	Family	Local name	Parts used	Amount of parts	Mode of administration	Tribe involved (district)	Earlier report (tribe; area)
<i>Asparagus racemosus</i> Willd. [AC0511]	Liliaceae	Satamul	Root	10–20 gm	Roots of both the ingredients are crushed together and the juice is given orally to stop diarrhea	Muslim (Karimganj)	Diarrhea (Riang, Kachari, Hmar; Barak) ¹⁴
<i>Stemona tuberosa</i> Lour. [AC6306]	Stemonaceae		Root/stem	10–15 gm			Data scarce
<i>Polygonum barbatum</i> L. [FB859]	Polygonaceae	Bihlangani	Root	2 pieces	Paste of both the ingredients is mixed with hot water (150 mL) and filtered; filtrate is given orally once daily till cure	Ahom (Jorhat)	Gastric trouble (Deori; Assam) ¹⁵
<i>Piper nigrum</i> L. [AC6207]	Piperaceae	Jaluk	Fruits	15 numbers			Diarrhea and dysentery (Kamrup) ⁶

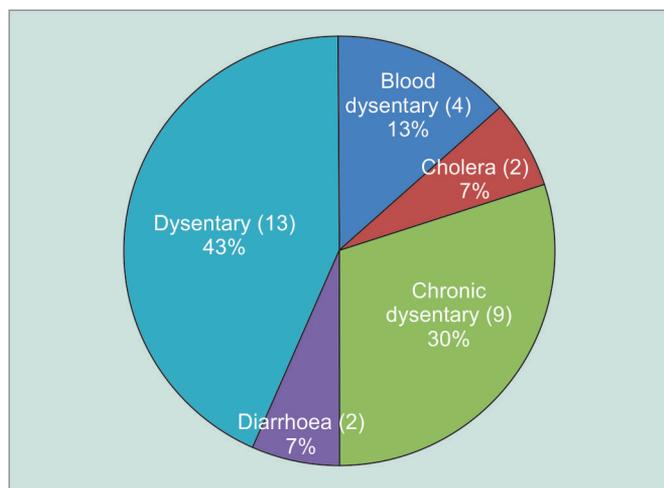
Table 5: Medico-ethnobotanical claims for dysentery

Scientific name	Family	Local name	Parts used	Amount of parts	Mode of administration	Tribe involved (district)	Earlier report (tribe; area)
<i>Curcuma longa</i> L. [AC6285]	Zingiberaceae	Halodhi	Rhizome	25 mL juice	Juice of rhizome is mixed with equal amount of lime water and given orally after dinner for a day	Koch Rajbangshi (Baksa)	Diarrhea (Zeme; NC Hills) ³
<i>Dillenia indica</i> L. [AC6012]	Dilleniaceae	Ou tenga	Fruit		5–6 gm tablets are prepared from fruit and given daily in the morning and evening till cure	Koch Rajbangshi (Bongaigaon)	Dysentery (Kamrup) ⁴
<i>Alstonia scholaris</i> R. Br. [AC6428]	Apocynaceae	Satiyan	Bark	5 gm	250 mL infusion of the ingredients is given orally in the morning in empty stomach till cure	Koch Rajbangshi (Bongaigaon)	Dysentery (Manipuri; Barak) ¹⁶
<i>Oroxylum indicum</i> Vent. [FB353]	Bignoniaceae	Bhatghila	Bark	20 gm			Dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ⁵
<i>Garcinia pedunculata</i> Roxb. [AC4576]	Clusiaceae	Thekera	Fruit	10 gm	3–4-year-old fruit is given orally	Ahom (Golaghat)	Diarrhea, dysentery, and flatulence (different tribes; Tinsukia) ²³
<i>Citrus aurantifolia</i> (Christm.) Swingle. [FB3061]	Rutaceae	Nemu	Fruit	1 number	One roasted fruit is kept overnight in dew and taken in morning empty stomach	Rabha (Kamrup Rural)	Dysentery (Tinsukia) ¹¹
<i>Alstonia scholaris</i> R. Br. [AC6428]	Apocynaceae	Sotiyona	Bark	100 gm	100 mL of juice of all the ingredients is mixed with 100 mL of goat milk; the juice is given orally 4 spoonfuls for adults and 2 spoons for children twice daily till cure	Keot (Nagaon)	Dysentery (Manipuri; Barak) ¹⁶
<i>Mangifera indica</i> L. [AC5721]	Anacardiaceae	Aam	Bark	100 gm			Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Syzygium cumini</i> (L.) Skeels. [AC5560]	Myrtaceae	Jaam	Bark	100 gm			Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Spondias pinnata</i> (L.f.) Kurz. [AC6155]	Anacardiaceae	Amara	Bark	100 gm			Dysentery (Deori, Muttak; Upper Assam) ²⁴

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Scientific name	Family	Local name	Parts used	Amount of parts	Mode of administration	Tribe involved (district)	Earlier report (tribe; area)
<i>Citrus medica</i> L. [AC5712]	Rutaceae	Nemu	Fruit juice	10 mL	Both the juices are mixed and 1–2 spoons of the mixture is given orally daily 2–3 times	Kalita (Nagaon)	Dysentery (Manipuri; Cachar) ¹⁷
<i>Saccharum officinarum</i> L. [FB287]	Poaceae	Kuhiyar	Stem juice	200 mL			Dysentery (Karbi; Karbi Anglong) ¹²
<i>Houttuynia cordata</i> Thunb. [FB290]	Saururaceae	Masendari	Leaf	3–5 numbers	Paste of all the ingredients is given orally in empty stomach till cure	Keot (Nagaon)	Dysentery (Chutia, Deori, Ahom, Sonowal; Sivasagar) ¹⁸
<i>Mentha spicata</i> L. [AC5668]	Lamiaceae	Pudina	Young branch	3–5 numbers			Stomach disorder (Dimasa Kachari; Cachar) ¹⁹
<i>Oryza sativa</i> L. [AC5330]	Poaceae	Dhan	Grain	5–10 gm			Dysentery (Kamrup) ⁴
<i>Psidium guajava</i> L. [AC5942]	Myrtaceae	Madhuriam	Leaf	3–5 numbers			Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Acacia farnesiana</i> Willd. [FB533]	Mimosaceae	Tarua kadam	Leaf	50 gm	Pea motor-sized tablets are prepared from a mixture of all the ingredients and daily one tablet is given orally in empty stomach for 3 days	Adibashi (Karbi Anglong)	Stomach pain (Kamrup) ⁴
<i>Acorus calamus</i> L. [AC4585]	Araceae	Boch	Rhizome	50 gm			Diarrhea (Lushai; NC Hills) ⁹
<i>Cajanus cajan</i> (L.) Millsp. [AC5854]	Papilionaceae	Arhar	Leaf	50 gm			Jaundice (Thengal Kachari; Jorhat) ²⁰
<i>Desmodium triflorum</i> (L.) DC. [AC5815]	Papilionaceae	Kodaliya	Leaf	50 gm			Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Hydrocotyle rotundifolia</i> Roxb. [AC6104]	Apiaceae	Saru Manimuni	Leaf	50 gm			Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Cissampelos pareira</i> L. [AC5992]	Menispermaceae	Tubuki lota	Stem	15–25 gm	Paste of the stem is mixed with 1 gm salt and given orally in empty stomach daily in the morning for 3 days	Ahom (Golaghat)	Liver diseases (Boro, Karbi, Sonowal; Kamrup) ²¹
<i>Garcinia pedunculata</i> Roxb. [AC4576]	Clusiaceae	Thekera	Fruit	10–15 gm	One-fourth part dried fruit of <i>Garcinia pedunculata</i> is soaked in half cup of 15–20 mL water for few hours, then mixed with salt and pseudostem water of <i>Musa bulbisiana</i> is given to cure dysentery	Ahom (Golaghat)	Diarrhea, dysentery, and flatulence (different tribes; Tinsukia) ²³
<i>Musa bulbisiana</i> Colla. [FB549]	Musaceae	Bhim kol	Pseudo stem	100 mL water			Dysentery (Chorie; Southern Assam) ²²
<i>Psidium guajava</i> L. [AC5942]	Myrtaceae	Modhuri aam	Young twigs	3 numbers	Paste of all the ingredients is given with water in empty stomach daily in the morning for 3 days	Ahom (Golaghat)	Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Spondias pinnata</i> (L. f.) Kurz. [AC6155]	Sapindaceae	Amora	Bark	20–30 gm			Dysentery (Deori, Muttak; Upper Assam) ²⁴
<i>Viscum album</i> L.	Loranthaceae		Young twigs	5 numbers			Data scarce
<i>Eclipta alba</i> (L.) Hassk. [AC5745]	Asteraceae	Keheraj	Leaves	10 mL	Leaf juice is prescribed orally 3 times a day till cure	Ahom (Jorhat)	Diarrhea (Riang, Kachari, Hmar; Barak) ¹⁴



Graph 1: Showing reported percentage of different Gastro-Intestinal disease conditions

diseases (Graph 1). All the documented claims involve 47 medicinal plant species found in the region which are grouped under 43 genera belonging to 34 families. The family Piperaceae has been found to possess highest uses followed by Poaceae, Lamiaceae, Apocynaceae, Clusiaceae, Apiaceae, etc. Total 19 (63.33%) compound formulations involving 39 plant species and 11 (36.66 %) single formulations are recorded involving 10 plant species, and among these 2 species are repeated in both compound and single formulations. Most of the preparations are orally administered either as extract, juice, paste, tablet and decoction, or infusion. Different plant parts which are used as medicine are aerial part or young branches (5), stem bark (8), fruit (13), grain (2), latex (1), leaf (9), petiole (1), pseudo-stem (1), rhizome (2), root (9), stem (2), seed (1), tubers (2), and whole plants (3) (Graph 2). Although these plants are used by different tribes of the region for similar or other disease conditions, total eight tribes and one community have been recorded newly which were not published elsewhere to

use the documented medicinal plant species for gastro-intestinal disorders. Among the newly reported tribes, Ahom tribe is highly involved followed by Keot, Koch Rajbangshi, and other tribes for use of medicinal plants for gastrointestinal disorders.

CONCLUSION

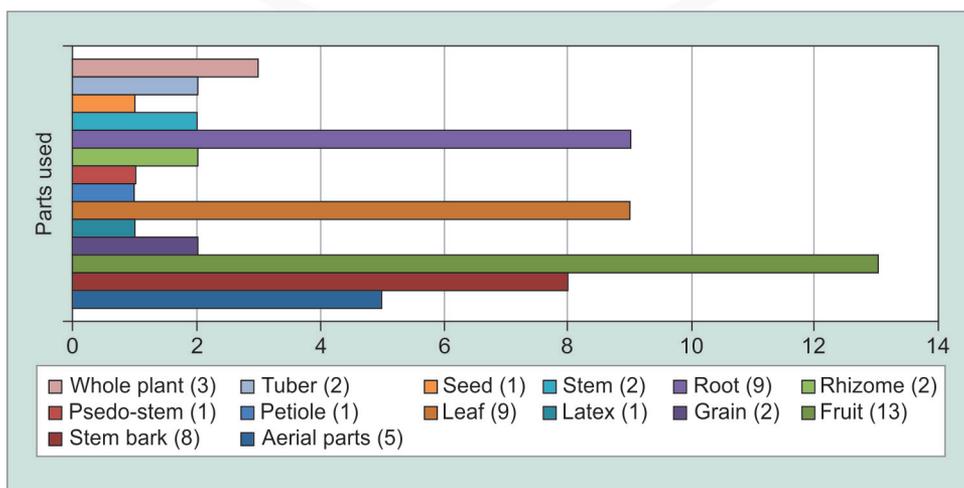
It is observed that ethnic groups as well as local people of Assam are still depending upon the medicinal plants for treatment of various diseases including gastrointestinal disorders. Since such types of diseases are prevailing in every society, further scientific investigations are needed for the validation of these folk claims at ethnopharmacology level so that possible lead can be achieved.

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Graph 2: Showing reported parts used against different Gastro-intestinal disease conditions



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हिन्दी सारांश

असम के विभिन्न जन-जातिय द्वारा जठरांत्र विकार में प्रयोग होने वाले पारंपरिक वनौषधि चिकित्सा

¹देवांजल बोरा, ²सेलीम मेहमुद, ³डी बरूवा, ⁴बी के भराली, ⁵चिन्मय रथ
⁶अनुपम के मंगल, ⁷जी वी आर जोसेफ

लक्ष्य: इस शोध पत्र के जरिए पिछले तीन वर्षों के क्षेत्र सर्वेक्षण के उपरांत विभिन्न जठरांत्र रोग जैसे- डीसेंट्री, डाइरिया और कोलेरा इत्यादि के उपचार हेतु लोक-वानस्पतिक दावों के कुछ नए तथ्यों का प्रलेखन किया गया है।

सामग्री और विधियां: असम के विभिन्न स्थानों पर क्षेत्र सर्वेक्षण किया गया जहां चिकित्सा-प्रजाति वानस्पतिक के प्रलेखनों की जानकारी के लिए कई लोक चिकित्सकों का साक्षात्कार किया गया साथ ही साथ प्रतिवेदित किए गए पौधों को एकत्रित और पहचान करके उनके नमूनों को संरक्षित किया गया।

परिणाम: यहां असम के 09 जन-जातियों द्वारा प्रयोगित नए दावों का वर्णन किया गया है हांलाकि वही दावें अन्य जन-जातियों में पहले से ही वर्णित है। कुल 30 लोक-वानस्पतिक पद्धतियों में से 47 वनस्पति प्रजातियों का उपयोग शामिल है, जिसमें 11 एकल औषधीयों योग में कुल 10 वनस्पति और वहीं 19 योगिक योग में 39 वनस्पतियों के उपयोग का वर्णन है। यहां 02 प्रजातियों को दोनों स्थानों में प्रयोग किया जाता है।

निष्कर्ष: जठरांत्र विकारों सहित विभिन्न बीमारियों के इलाज के लिए जातीय समाज अभी भी औषधीय पौधों पर ही निर्भर है। इन लोक दावों की वैधता के लिए आगे वैज्ञानिक जांच की आवश्यकता है।

नैदानिक महत्व: शोध में सत्यापन हेतु पार-सांस्कृतिक अध्ययन पर जोर दिया गया है।

शब्द कुँजी: औषधीय पौधों, डीसेंट्री, डाइरिया, कोलेरा, पार-सांस्कृतिक अध्ययन, असम।

