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Report on medicinal plant practices for dysentery, diarrhoea and cholera in different parts of Assam, India

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Abstract

The present communication deals with the folk medicinal practices used for treatment of various gastrointestinal diseases like blood dysentery, chronic dysentery, general dysentery, diarrhoea and cholera by using medicinal plants by 9 different tribe and communities of Assam documented during field survey. Total 30 numbers of folk medicinal practices have been reported where 47 medicinal plant species were used. 10 nos. of plant species are used under 11 nos. of single drug and 39 species are used in 19 nos. of compound drugs among which 2 species are used in both compound and single forms of drugs.

Keywords: Medicinal plants, dysentery, diarrhoea, cholera, Assam

1. Introduction

Assam, a part of one of the biodiversity hotspots, occupies a special place in Northeastern India located between 24⁰44' N to 27⁰45'N latitude and 89⁰41'E to 96⁰02'E longitude, covering 2.4% of the geographical area of the country, i.e. 78,438 sq. km. The annual rainfall ranges between 305 cm. max. to 178 cm. min. with an average of 211.76 cm. The temperature recorded in summer is 37 °C max. and 18 °C min. and 26 °C max. and 7 °C min. in winter, with an average humidity of 83.00% [1]. Many plants are used as folklore medicinal plants to cure various diseases by different tribes and rural people of Assam. The problem associated with dysentery, diarrhoea and cholera are major problem in rural societies of Assam and such diseases are treated by using of folklore medicinal plants which are a part of their folk life. This oral traditional knowledge are transmitted from one generation to next generation which were elsewhere published in different headings like ethno-botanical studies or folklore practices [2-23] among which one is directly focused on gastro-intestinal diseases [24]. A sincere attempt is being made to present report of a fresh survey made in different locations to document various folklore medicinal plants used for some of the gastro-intestinal diseases by different tribes and indigenous communities of Assam.

2. Materials and Methods

From January 2014 to August 2016 many field survey was conducted in different districts of Assam where traditional healers are interviewed for documentation of ethno medico botanical information's like local name, parts used, mode of preparation and administration, any other precaution etc. related to gastrointestinal disorders. The plants are collected by the help of folk healers and preserved properly as Herbarium and Museum sample which were identified by local floras [24] and by matching the specimens with the standard pre-identified specimens of the Herbarium of the Survey of Medicinal Plants Unit, Regional Ayurveda Research Institute for Gastro Intestinal Disorder (RARIGID), Guwahati (Assam) where voucher specimens were finally deposited for further reference.

3. Results and Discussion

Results of the survey are enumerated in Table: 1 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 parenthesis. Earlier reports of the same plant in related disease condition

is also mentioned and compared for further cross cultural investigation.

The present communication deals with 30 prescriptions of plant folk medicines (covering 5 disease conditions) involving 47 medicinal plant species under 43 genera belongs to 34 families. The family Piperaceae has found highest uses followed by Poaceae, Lamiaceae, Apocynaceae, Clusiaceae, Apiaceae etc. Total 19 (63.33%) drugs are found in compound plant formulations where 39 plant species are used and 11 (36.66%) drugs are found in the form of single plant formulation where 10 plant species are used and 2 species are

repeated in both compound and single drugs. Most of the preparations are orally administered either as extract, juice, paste, tablet and decoction or infusion. Different plants 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). Total 08 tribes and 01 community are found to be involved with these folk medico claims distributed in various part of the state of Assam among which Ahom tribe is highly involved followed by Keot, Koch Rajbangshi and other tribes.

Table 1

Sl No	Scientific Name	Family	Local Name	Parts used	Amount of Parts	Mode of administration	Tribe involved (District)	Earlier report (tribe; area)
I								
Blood dysentery								
1	<i>Centella asiatica</i> (Linn.) Urban.	Apiaceae	Manimuni	Whole plant	10-15 gm	Crushed with 20-30 ml cow milk. 10-25 ml juice 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.	Apiaceae	Horumanimuni	Whole plant	10-15 gm			Dysentery (Deori, Muttak; Upper Assam) ^[23]
2	<i>Curcuma longa</i> Linn.	Zingiberaceae	Halodhi	Leaf	20-25 m	Juice is mixed with sugar and given in empty stomach daily for 3 days.	Kalita (Nagaon)	Diarrhoea (Zeme; NC Hills) ^[3]
3	<i>Garcinia pedunculata</i> Roxb.	Clusiaceae	Borthekera	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)	Constipation Dysentery (Deori, Muttak; Upper Assam) ^[23]
	<i>Oryza sativa</i> Linn.	Poaceae	Dhan	Grain	20 gm			Dysentery (Kamrup) ^[4]
4	<i>Ocimum basilicum</i> Linn.	Lamiaceae	Bontuloshi	Root & leaf	50-70 gm	Paste is given orally in empty stomach for 3 days.	Ahom (Golaghat)	Dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ^[5]
II								
Cholera								
1	<i>Physalis minima</i> Linn.	Solanaceae	Kopalphuta	Root	1-2 nos.	Paste is mix with water and given orally in empty stomach for 1-2 days.	Ahom (Karbi Anlong)	Purgative (Kamrup) ^[4]
	<i>Piper nigrum</i> Linn.	Piperaceae	Jaluk	Fruit	2-3 nos.			Diarrhoea and dysentery (Kamrup) ^[6]
2	<i>Carica papaya</i> Linn.	Caricaceae	Amita	Root	10-15 ml juice	Juice is mixed with water which given orally daily in empty stomach for 1-2 days.	Ahom (Karbi Anlong)	Dysentery (Mishing; Nagaon, Golaghat) ^[7]
	<i>Piper nigrum</i> Linn.	Piperaceae	Jaluk	Fruit	2-3 nos.			Diarrhoea and dysentery (Kamrup) ^[6]
III								
Chronic dysentery								
1	<i>Alternanthera sessilis</i> (Linn.) R. Br. ex DC. DC.	Amaranthaceae	Mati-kaduri	Whole plant	1 bunch	Boiled with 1 crab & juice is given orally for 3-5 days.	Koch Rajbangshi (Morigaon)	Dysentery (Darrang) ^[8]
2	<i>Holarrhena antidysenterica</i> (L.) Wall.	Apocynaceae	Dudkhari	Bark	500 gm	150 ml decoction is given is given orally after breakfast till cure the disease.	Keot (Nagaon)	Dysentery (Lushai; NC Hills) ^[9]
	<i>Mimosa pudica</i> Linn.	Mimosaceae	Nilaji-bon	Root	10-15 gm			Dysentery (Zeme NC Hills) ^[3]
3	<i>Jatropha curcas</i> Linn.	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]
4	<i>Citrus paradisi</i> Macf.	Rutaceae	Golnemu	Fruit	1 no.	1 ripe fruit of <i>Citrus paradisi</i> Macf. is taken & create a small hole where petiole of <i>Piper betle</i> Linn. 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	Ahom (Golaghat)	Data deficient
	<i>Piper betle</i> Linn.	Piperaceae	Pan	Petiole	1 no.			Antiamoebic (Kamrup) ^[4]

						given daily at morning in empty stomach up to 10 days.		
5	<i>Sida cordifolia</i> Linn.	Malvaceae	Sonbariyal	Roots	100 gm	Infusion of <i>Sida cordifolia</i> mixed with <i>Oryza sativa</i> Linn. var. <i>bora</i> and 250 ml of curd. Orally once daily morning for 3 days	Ahom (Jorhat)	Dysentery and Diarrhoea (Deori, Muttak; Upper Assam) ^[23]
	<i>Oryza sativa</i> Linn. Var. <i>bora</i>	Poaceae	Bora Chaul	Fried product	100 gm			Dysentery (Kamrup) ^[4]
6	<i>Capsicum frutescens</i> Linn.	Solanaceae	Jalakiya	Seeds	3 nos.	Paste is given orally once daily till relief of symptoms.	Ahom (Jorhat)	Data deficient
	<i>Drymaria cordata</i> Willd.	Caryophyllaceae	Laijabari	Aerial part	1 bunch			Laxative (Tinsukia) ^[11]
	<i>Ocimum sanctum</i> Linn.	Lamiaceae	Tulasi	Leaves	2 nos.			Blood dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ^[5]
7	<i>Rubus moluccanus</i> auct non Linn.	Rosaceae	Jetulipaka	Root	1 bunch	Juice given orally with cow milk in empty stomach for 4-5 days.	Chutia (Jorhat)	Pectic ulcer (Karbi; Karbi Anglong) ^[12]
8	<i>Citrus aurantifolia</i> (Christm.) Swingle.	Rutaceae	Kajinemu	Fruit	20 ml	Orally ½ tea spoonful of powder thrice daily before food for 5-7 days.	Ahom (Jorhat)	Dysentery (Tinsukia) ^[11]
	<i>Cyperus rotundus</i> Linn.	Cyperaceae	Keyaban	Tuber	10 gm			Dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ^[5]
	<i>Piper longum</i> Linn.	Piperaceae	Pippali	Fruit	2 nos.			Digestion (Mishing; Assam) ^[13]
	<i>Terminalia citrina</i> Roxb. ex Flem.	Combretaceae	JangiSilikha	Fruit	10 gm			Data deficient
9	<i>Allium sativum</i> Linn.	Alliaceae	Naharu (Ass.)	Tuber bulb	3-4 nos.	One bunch aerial parts of <i>Stellaria media</i> are 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.	Ahom (Jorhat)	Dysentery (Kamrup) ^[4]
	<i>Stellaria media</i> (L.) Villars	Caryophyllaceae	Thutunisak	Aerial part	1 bunch			Stomach disorder (Darrang) ^[8]
IV Diarrhoea								
1	<i>Asparagus racemosus</i> Willd.	Liliaceae	Satamul	Root	10-20 gm	Crushed together and the juice is given orally to stop diarrhoea.	Muslim (Karimganj)	Diarrhoea (Riang, Kachari, Hmar; Barak) ^[14]
	<i>Stemona tuberosa</i> Lour.	Stemonaceae		Root/Stem	10-15 gm			Data deficient
2	<i>Polygonum barbatum</i> Linn.	Polygonaceae	Bihlangani	Root	2 pieces	Paste 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> Linn.	Piperaceae	Jaluk	Fruits	15 nos.			Diarrhoea and dysentery (Kamrup) ^[6]
V Dysentery								
1	<i>Curcuma longa</i> Linn.	Zingiberaceae	Halodhi	Rhizome	25 ml juice	Juice is mixed with equal amount of lime water & given orally after dinner for a day.	Koch Rajbangshi (Baksa)	Diarrhoea (Zeme; NC Hills) ^[3]
2	<i>Dillenia indica</i> Linn.	Dilleniaceae	Outenga	Fruit		5-6 gm tablet prepared and given daily at morning & evening for till cure.	Koch Rajbangshi (Bongaigaon)	Dysentery (Kamrup) ^[4]
3	<i>Alstonia scholaris</i> R.Br.	Apocynaceae	Satiyan	Bark	5 gm	250 ml infusion is given orally at morning in empty stomach for till cure.	Koch Rajbangshi (Bongaigaon)	Dysentery (Manipuri; Barak) ^[16]
	<i>Oroxylum indicum</i> Vent.	Bignoniaceae	Bhatghila	Bark	20 gm			Dysentery (Sonowal, Tai Ahom, Chutia, Apatani Ao-Naga; Jorhat) ^[5]
4	<i>Garcinia pedunculata</i> Roxb.	Clusiaceae	Thekera	Fruit	10 gm	3 to 4 years old fruit is given orally	Ahom (Golaghat)	Constipation Dysentery (Deori, Muttak; Upper Assam) ^[23]
5	<i>Citrus aurantifolia</i> (Christm.) Swingle.	Rutaceae	Nemu	Fruit	1 no.	One roasted fruit is kept overnight in dew and taken in morning empty stomach.	Rabha (Kamrup Rural)	Dysentery (Tinsukia) ^[11]

6	<i>Alstonia scholaris</i> R. Br.	Apocynaceae	Sotiyona	Bark	100 gm	100 ml of juice is mixed with 100 ml goat milk. The juice is given orally 4 spoonfuls for adults and 2 spoons for child twice daily till cure the disease.	Keot (Nagaon)	Dysentery (Manipuri; Barak) ^[16]
	<i>Mangifera indica</i> Linn.	Anacardiaceae	Aam	Bark	100 gm			Dysentery (Deori, Muttak; Upper Assam) ^[23]
	<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Jaam	Bark	100 gm			Dysentery (Deori, Muttak; Upper Assam) ^[23]
	<i>Spondias pinnata</i> (L.f.) Kurz.	Anacardiaceae	Amara	Bark	100gm			Dysentery (Deori, Muttak; Upper Assam) ^[23]
7	<i>Citrus medica</i> L.	Rutaceae	Nemu	Fruit	10 ml	1-2 spoon of the mixture is given orally daily for 2-3 times.	Kalita (Nagaon)	Dysentery (Manipuri; Cachar) ^[17]
	<i>Saccharum officinarum</i> Linn.	Poaceae	Kuhiyar	Stem	200 ml			Dysentery (Karbi; Karbi Anglong) ^[12]
8	<i>Houttuynia cordata</i> Thunb.	Saururaceae	Masendari	Leaf	3-5 nos.	Paste is given orally in empty stomach till cure the disease.	Keot (Nagaon)	Dysentery (Chuttia, Deori, Ahom, Sonowal; Sivasagar) ^[18]
	<i>Mentha spicata</i> Linn.	Lamiaceae	Pudina	Young branch	3-5 nos.			Stomach disorder (Dimasa Kachari; Cachar) ^[19]
	<i>Oryza sativa</i> Linn.	Poaceae	Dhan	Grain	5-10 gm			Dysentery (Kamrup) ^[4]
	<i>Psidium guajava</i> Linn.	Myrtaceae	Madhuriam	Leaf	3-5 nos.			Dysentery (Deori, Muttak; Upper Assam) ^[23]
9	<i>Acacia farnesiana</i> Willd.	Mimosaceae	Taruakadam	Leaf	50 gm	Pea motor sized tablets are prepared and daily one tablet is given orally in empty stomach for 3 days.	Adibashi (Karbi Anglong)	Stomach pain (Kamrup) ^[4]
	<i>Acorus calamus</i> Linn.	Araceae	Boch	Rhizome	50 gm			Diarrhoea (Lushai; NC Hills) ^[9]
	<i>Cajanus cajan</i> (L.) Millsp.	Papilionaceae	Arhar	Leaf	50 gm			Jaundice (Thengal Kachari; Jorhat) ^[20]
	<i>Desmodium triflorum</i> (L.) DC.	Papilionaceae	Kodaliya	Leaf	50 gm			Dysentery (Deori, Muttak; Upper Assam) ^[23]
	<i>Hydrocotyle rotundifolia</i> Roxb.	Apiaceae	Saru Manimuni	Leaf	50 gm			Dysentery (Deori, Muttak; Upper Assam) ^[23]
10	<i>Cissampelos pareira</i> Linn.	Menispermaceae	Tubukilota	Stem	15-25 gm	Paste is mixed with 1 gm salt & given orally in empty stomach daily at morning for 3 days.	Ahom (Golaghat)	Liver diseases (Boro, Karbi, Sonowal; Kamrup) ^[21]
11	<i>Garcinia pedunculata</i> Roxb.	Clusiaceae	Thekera	Fruit	10-15 gm	¼ part dried fruit of <i>Garcinia pedunculata</i> is soaked in half cup (15-20 ml) water for few hours then mixed with salt & pseudo-stem water of <i>Musa bulbisiana</i> is given to cure dysentery.	Ahom (Golaghat)	Constipation (Deori, Muttak; Upper Assam) ^[23]
	<i>Musa bulbisiana</i> Colla.	Musaceae	Bhimkol	Pseudo stem	100 ml water			Dysentery (Chorie; Southern Assam) ^[22]
12	<i>Psidium guajava</i> Linn.	Myrtaceae	Modhuriaam	Young twigs	3 nos.	Paste is given with water in empty stomach daily at morning for 3 days.	Ahom (Golaghat)	Dysentery (Deori, Muttak; Upper Assam) ^[23]
	<i>Spondias pinnata</i> (Linn.)	Sapindaceae	Amora	Bark	20-30 gm			Dysentery

	f.) Kurz.							(Deori, Muttak; Upper Assam) ^[23]
	<i>Viscum album</i> Linn.	Loranthaceae		Young twigs	5 nos.			Data deficient
13	<i>Eclipta alba</i> (Linn.) Hassk.	Asteraceae	Keheraj	Leaves	10 ml	Orally thrice daily till cure.	Ahom (Jorhat)	Diarrhoea (Riang, Kachari, Hmar; Barak) ^[14]

4. Conclusion

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

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