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A survey on the ethnomedicinal practices of a folk medicinal practitioner in Manikganj district, Bangladesh

Sayeda Shahnaj, Ummarin Asha, Tanjila Mim, Nur Shalma Haque Rumi, Sharmin Akter, Subarna Rani Ghose, Sharmin Akter, Md. Tabibul Islam, Protiva Rani Das and Mohammed Rahmatullah*

Department of Pharmacy, University of Development Alternative, Lalmatia, Dhaka, Bangladesh

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ABSTRACT

An ethnomedicinal survey was carried out in Rathura village of Manikganj district, Bangladesh. The survey was carried out with the help of a semi-structured questionnaire and the guided field-walk method. The village folk medicinal practitioner was found to use a total of 91 plants distributed into 56 families in his formulations. The various formulations were used to treat helminthiasis, respiratory tract disorders, pain, gastrointestinal tract disorders, oral lesions, gonorrhea, skin disorders, edema, jaundice, passing of sperm with urine, burning sensations in hands or legs, chicken pox, cuts and wounds, allergy, heart disorders, diabetes, anemia, leucorrhea, uterine prolapse, paralysis, heat stroke, baldness, mental disorders, fever, tooth and gum problems, passing of blood with urine, malaria, rheumatic fever, presence of toxins in blood, weakness, menstrual disorders, bone fracture, sprain, and stuttering. Both simple and complex formulations were used by the practitioner suggesting a rich knowledge of plants and their properties. It is left to modern researchers to examine the scientific validity of the plants used for such folk medicinal knowledge can serve a useful purpose towards discovery of new medicines.

Key words: Folk medicine, Manikganj, medicinal plants, Bangladesh

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INTRODUCTION

Manikganj district is adjacent to Dhaka district, the capital of Bangladesh, Dhaka, being situated in the latter district. As such, the district cannot be called a totally rural district, being considerably influenced by the urban population of Dhaka. However, even under these semi-urban conditions, folk medicinal practitioners (FMPs) can be found in the various villages of Manikganj district, and it was of interest to document their folk medicinal practices. Folk medicinal practice is common in Bangladesh and there are probably no rural or urban settlements lacking a FMP.

Towards gaining meaningful insights into folk and tribal medicinal practices (the latter being a variant of folk medicinal practice), we had been conducting ethnomedicinal surveys of FMPs and tribal medicinal practitioners for a number of years [1-27]. This has enabled us to not only gain insights as to the medicinal plants used, diseases treated, and mode of selection of medicinal plants, but also to build up a database of the medicinal plants used by such practitioners within the country. The objective of the present study was to document the ethnomedicinal practices of a FMP in Rathura village of Manikganj district in Bangladesh.

EXPERIMENTAL SECTION

Prior Informed Consent was obtained from the FMP (Sheikh Khaleque, male, age 43 years, village Rathura, Manikganj district) for the survey. Actual interviews were carried out with the help of a semi-structured questionnaire and the guided field-walk method of Martin [28] and Maundu [29]. In this method, the FMP took the interviewers on guided field-walks through areas from where he collected his medicinal plants, pointed out the plants, and described their uses. Interviews were carried out in the Bengali language, which was spoken alike by the FMP and the interviewers. Plant specimens were photographed, collected, pressed and dried and identified at the Bangladesh National Herbarium.

RESULTS AND DISCUSSION

The FMP was observed to use a total of 91 plants distributed into 56 families in his formulations for treatment. The results are shown in Table 1. Both simple and complex formulations were used in his treatment. The various diseases treated included helminthiasis, respiratory tract disorders, pain, gastrointestinal tract disorders, oral lesions, gonorrhea, skin disorders, edema, jaundice, passing of sperm with urine, burning sensations in hands or legs, chicken pox, cuts and wounds, allergy, heart disorders, diabetes, anemia, leucorrhea, uterine prolapse, paralysis, heat stroke, baldness, mental disorders, fever, tooth and gum problems, passing of blood with urine, malaria, rheumatic fever, presence of toxins in blood, weakness, menstrual disorders, bone fracture, sprain, and stuttering.

On occasions, the FMP used different plants to treat the same disease, which was probably necessitated by the fact that all plants or plant parts (like fruits) are not available throughout the year. For instance constipation was treated with *Amaranthus spinosus*, *Plumeria acutifolia*, a combination of *Cuscuta reflexa* and *Acacia nilotica*, *Dillenia indica*, *Abroma augusta*, or a combination of *Aloe vera*, *Plantago ovata*, *Hyptis suaveolens*, *Tiliacora acuminata* and *Nigella sativa*. The FMP also treated complicated disorders like diabetes and heart disorders. Diabetes was treated with *Ipomoea mauritiana*, *Costus speciosus*, or *Musa paradisiaca*. Heart disorders were treated with *Terminalia arjuna* or *Ficus benghalensis*. Most formulations of the FMP were novel. For instance, for treatment of skin disorders, leaves of *Boerhaavia repens* and *Derris trifoliata* were crushed with seeds of *Nigella sativa* to extract juice. The juice was mixed with goat milk and applied topically to affected areas. A leaf of *Smilax roxburghiana* was the put over the area followed by bandaging the area with cloth. For treatment of passing of blood with urine, six seeds of *Santalum album* were mixed with fruits of *Terminalia chebula*, bark of *Cinnamomum verum* and whole plants of *Nymphaea nouchali*. Pills prepared from the crushed mixture were advised to be taken orally for 3 days twice daily in the morning and afternoon before meals. One of the interesting features of the FMP's treatment was his mention of possible adverse effects of some of his formulations.

Malaria was treated by the FMP with leaves of *Nyctanthes arbor-tristis* and *Zingiber officinale* rhizomes. This disease is characterized by high fever and body pain. The anti-pyretic, i.e. fever reducing property of *Nyctanthes arbor-tristis* has been reviewed [30]. The analgesic activity of leaves of the same plant has also been reported [31]. Thus *Nyctanthes arbor-tristis* is by itself sufficient to reduce fever and pain. However, the FMP also used rhizomes of *Zingiber officinale* along with. Notably, rhizomes of *Zingiber officinale* have also reportedly analgesic activities [32]. The combination can therefore be expected to act synergistically in reducing high fever and pain associated with malaria.

The most complex formulation of the FMP was against rheumatic fever and indigestion. In this instance, 125g each of whole plants of *Polygonum hydropiper* were mixed with fruits of *Phyllanthus emblica*, *Terminalia bellirica*, *Terminalia chebula*, *Carum copticum*, seeds of *Coriandrum sativum*, *Swertia chirayita*, *Piper cubeba*, and *Piper peepuloides*, and roots of *Glycyrrhiza glabra*, leaves of *Oroxylum indicum*, leaves of *Withania somnifera*, leaves of *Asparagus racemosus*, leaves of *Eclipta alba*, leaves of *Mollugo pentaphylla*, and barks of *Terminalia arjuna*, *Mangifera indica* and *Syzygium cumini* and boiled in 15 kg water till the volume has been reduced by half. The boiling was done over a period of 3 days. Two table spoonfuls of the decoction was advised to be taken orally twice daily.

Table 1. Medicinal plants and formulations of the FMP from Manikganj district, Bangladesh

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Ailments and mode of medicinal use
1	*Andrographis paniculata* Burm.f.	Acanthaceae	Chirata	Leaf	Helminthiasis. Leaves of *Andrographis paniculata* and *Tinospora crispa* are cut into small pieces and soaked in water overnight followed by taking the water orally the following morning on an empty stomach for 7 days.
2	*Justicia adhatoda* L.	Acanthaceae	Bashok	Leaf	Whooping cough, coughs due to cold. Leaf juice is taken orally for 7 days on an empty stomach. Asthma. Young leaves of *Justicia adhatoda* and *Borassus flabellifer* are boiled in 1.25 kg water along with honey and mishri (crystalline sugar) till the amount reaches 250g. Two spoonfuls of the decoction is taken orally thrice daily.
3	*Aerva sanguinolenta* (L.) Blume	Amaranthaceae	Laal pata	Leaf	Pain. Leaves are crushed within the hand along with 2-3 grains of table salt and applied topically to painful areas 2-3 times daily.
4	*Amaranthus spinosus* L.	Amaranthaceae	Kata khura	Root	Gastric problems, constipation. Roots are crushed in water, and ½ kg of the water containing juice is taken orally on an empty stomach.
5	*Lannea grandis* Engl	Anacardiaceae	Jiga gach	Sap	Oral lesions in breast-feeding baby. Sap is burnt to ashes and powdered followed by application of the ashes with honey to lesions 1-2 times daily for 1-2 days.
6	*Mangifera indica* L.	Anacardiaceae	Aam	Bark	Blood dysentery. Juice obtained from clean bark is mixed with 125g goat milk and honey or sugar and taken orally for 7-8 days 3-4 times daily.
7	*Carum copticum* L.	Apiaceae	Joain	Fruit	See *Polygonum hydropiper*.
8	*Centella asiatica* (L.) Urb.	Apiaceae	Thankuni	Leaf, root	Gonorrhea. Roots of *Centella asiatica*, leaves of *Tinospora crispa* and rhizomes of *Zingiber officinale* are crushed in water followed by orally taking the juice. This is done thrice daily before meals for 3 weeks. Dysentery. Leaf juice is orally taken.
9	*Coriandrum sativum* L.	Apiaceae	Dhonia	Seed	See *Polygonum hydropiper*.
10	*Plumeria acutifolia* Poir.	Apocynaceae	Champa	Leaf	Constipation. Pills prepared from paste of leaves are dried under the sun. They are taken orally in the morning on an empty stomach for 7 days.
11	*Colocasia esculenta* (L.) Schott	Araceae	Shada kochu	Sap of stem	Eczema, scabies. The upper part of the stem is cut and the sap that emerges is applied topically once on the affected areas of the skin.
12	*Typhonium trilobatum* L.	Araceae	Kata kochu	Tuber	Edema. Tubers are put on top of a fire till soft followed by mashing the tubers and orally taking them in the mashed form along with hot peppers (fruits of *Capsicum frutescens*). This is done once daily for 2-3 days.
13	*Areca catechu* L.	Arecaceae	Supari	Inner portion of root	Helminthiasis. Inner portion of root is crushed and taken orally with lime water at a dose of 3 spoonfuls on an empty stomach.
14	*Borassus flabellifer* L.	Arecaceae	Tal	Leaf	See *Justicia adhatoda*.
15	*Cocos nucifera* L.	Arecaceae	Narikel	Fruit	See *Eclipta alba*.
16	*Aristolochia indica* L.	Aristolochiaceae	Ishwarmul	Leaf	Gastric ulcer. 50g leaf juice is taken orally once daily with sugarcane molasses on an empty stomach. Pain. Leaves of *Aristolochia indica*, *Azadirachta indica* and *Plumbago zeylanica* are made into a paste. Pills prepared from the paste are dried un der the sun and taken orally once daily on an empty stomach.
17	*Asparagus racemosus* Willd.	Asparagaceae	Shotomul	Leaf	See *Polygonum hydropiper*.
18	*Eclipta alba* (L.) Hassk.	Asteraceae	Kalo keshari	Whole plant	Jaundice, passing of sperm with urine. Whole plants of *Eclipta alba*, whole plants of *Scoparia dulcis*, and leaves of *Leonurus sibiricus* are crushed to obtain juice, which is then taken orally with water contained in the mature fruits of *Cocos nucifera* (coconut water) at a dose of 1 poa (local measure, 4 poas approximate 1 kg) for 3 days. See *Polygonum hydropiper*.
19	*Enhydra fluctuans* Lour.	Asteraceae	Helencha	Leaf	Burning sensations in hands or legs, severe pain, chicken pox. Leaves are taken orally for 2-4 days in the fried or soup form.
20	*Spilanthes acmella* Murr.	Asteraceae	Shialmoti	Leaf	To stop bleeding from external cuts and wounds. Leaves are squeezed within the hand and applied topically.
21	*Oroxylum indicum* Vent.	Bignoniaceae	Shona pata	Leaf	See *Polygonum hydropiper*.
22	*Bombax ceiba* L.	Bombacaceae	Shimul	Root	Dysentery. Root is soaked in the evening in a glass of water followed by orally taking the water the following morning on an empty stomach.
23	*Heliotropium indicum* L.	Boraginaceae	Hatishura	Leaf, root	Chicken pox. Root juice is taken orally for 2-3 days. Allergy. Leaf juice is taken orally for 2-3 days.
24	*Terminalia arjuna* (Roxb.) Wight & Arn.	Combretaceae	Arjun	Bark	Heart disorders (having difficulty breathing). Pills made from dried bark powder are taken orally with honey twice daily after meals in the morning and night for 7 days. See *Polygonum hydropiper*.
25	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Bohera	Fruit	See *Polygonum hydropiper*.
26	*Terminalia chebula* Retz.	Combretaceae	Hortoki	Fruit	See *Nymphaea nouchali*. See *Polygonum hydropiper*. See *Phyllanthus emblica*.
27	*Ipomoea mauritiana* Jacq.	Convolvulaceae	Bhui kumra	Tuber	Diabetes, to maintain good health. Tubers are dried and powdered. One spoonful of the powder is taken orally with cow milk. Alternately, tubers are taken in the mashed form or cooked and eaten as vegetable. This is done once daily for 7 days or if necessary for 15 days to a month. The medication may lead to frequent urination, weakness, loss of strength in hands or legs, and delay in cure of skin infections.
28	*Costus speciosus* Koen.) Sm.	Costaceae	Kaey	Root	Diabetes. Pills prepared from roots of *Costus speciosus* and *Typha elephantina* are taken orally.
29	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Pathorkuchi	Leaf	Bloating, indigestion. Leaves are chewed with a pinch of table salt and the juice swallowed 1-2 times daily. Note that this medication may lead to hardening of abdomen, hiccups with foul odor and loss of appetite.
30	*Cuscuta reflexa* Roxb.	Cuscutaceae	Alok lota	Stem	Anemia, constipation. Stems of *Cuscuta reflexa* and bark of *Acacia nilotica* are boiled in 3 kg water with 125g sugarcane molasses till the amount reaches 1 kg. 25-50g of the decoction is taken daily orally on an empty stomach. See *Acacia nilotica*.
31	*Dillenia indica* L.	Dilleniaceae	Chalta	Leaf	Constipation. Two mature leaves are crushed in ½ kg water and the water taken orally with sugarcane molasses for 2 days in the morning on an empty stomach. Note that if this medication is continued for more than 7 days, the patient may have water accumulation in the liver and develop heart problems.
32	*Phyllanthus emblica* L.	Euphorbiaceae	Amloki	Fruit	To increase appetite, to increase digestion. Fruits of *Phyllanthus emblica* and *Terminalia chebula* are soaked in water overnight followed by drinking the water only the following morning on an empty stomach for 7 days. See *Polygonum hydropiper*. See *Santalum album.*
33	*Acacia nilotica* (L.) Willd. ex Delile	Fabaceae	Babla	Bark	To maintain good health, leucorrhea. ½ kg bark of *Acacia nilotica* and ½ kg stems of *Cuscuta reflexa* is boiled in 2 kg water till the amount reaches approximately 1 kg. 1 kg sugarcane molasses is added to the decoction and heated till it starts boiling. The decoction is then put in a glass jar and ash of gold and silver added. One chatak (local measure, 16 chataks approximate 1 kg) decoction is taken orally one hour after meals for 1 week. Note that the decoction

					must be shaken before taking orally. See *Cuscuta reflexa*.
34	*Cajanus cajan* (L.) Millsp.	Fabaceae	Arul	Leaf	Jaundice. Leaf juice is taken orally in the form of sherbet with sugar or sugarcane molasses for 3 days in the morning on an empty stomach.
35	*Derris trifoliate* Lour.	Fabaceae	Kalir lota	Leaf	See *Boerhaavia repens*.
36	*Mimosa diplotricha* C. Wright	Fabaceae	Shada lojjaboti	Leaf, stem	Uterine prolapse. 10g leaf and stem is boiled in water till the volume becomes approximately 1 cup. The water is taken orally once daily on an empty stomach for 15-30 days.
37	*Saraca asoca* (Roxb.) Willd.	Fabaceae	Ashok	Leaf	Pain, paralysis. Leaves of *Saraca asoca*, *Chrysopogon aciculatus* and *Vitex negundo* are warmed and applied topically to affected areas 2-3 times daily.
38	*Tamarindus indica* L.	Fabaceae	Tetul	Young leaf	Chronic dysentery. Young leaves are boiled in 2 cups water until volume reaches 1 cup. Then the leaf is taken out and squeezed between the hands and the juice that comes out is taken orally 4 times daily for 3-4 days. Burning sensations in hands and feet. Leaves are soaked in water overnight followed by drinking the water the following morning on an empty stomach for 3-4 days. See *Hibiscus rosa sinensis*.
39	*Swertia chirayita* (Roxb. ex Fleming) H. Karst.	Gentianaceae	Chirata	Fruit	See *Polygonum hydropiper*.
40	*Hyptis suaveolens* (L.) Poit.	Lamiaceae	Tokma	Seed, fruit	Abscess. Paste of fruit is applied topically over the abscess followed by bandaging the abscess with a piece of wet cloth. This is done once. See *Aloe vera*.
41	*Leonurus sibiricus* L.	Lamiaceae	Juna pata	Leaf	See *Eclipta alba*.
42	*Leucas aspera* (Willd.) Linn.	Lamiaceae	Dondo kolosh	Leaf	Cold, pain, asthma, eczema, facial lesions. Leaves of *Leucas aspera* and seeds of *Nigella sativa* are fried in oil, powdered and taken orally in the mashed form. For facial lesions, the combination is chewed and taken orally. The medication is continued over 3-4 days. Note that this medication may lead to asthma or respiratory difficulties.
43	*Ocimum tenuiflorum* L.	Lamiaceae	Kalo tulshi	Leaf	Cold. One teaspoon of leaf juice of *Ocimum tenuiflorum* and rhizome juice of *Curcuma longa* is taken once daily on an empty stomach for 2-3 days.
44	*Cinnamomum verum* J. Presl	Lauraceae	Daru chini	Bark	See *Nymphaea nouchali*.
45	*Dehaasia kurzii* King ex Hook.f.	Lauraceae	Pipul jangi	Leaf	Heat stroke. Leaf juice is taken orally 2-3 times daily.
46	*Allium cepa* L.	Liliaceae	Peyaj	Bulb	Baldness. Juice from small bulbs is applied to scalp followed by massaging the bald area with rock salt and dried powdered fruits of *Piper nigrum*.
47	*Lygodium flexuosum* (L.) Sw.	Lygodiaceae	Dheki shak	Top portion of young leaf	To maintain healthy liver. Top portions of young leaves are fried and taken orally as vegetable.
48	*Hibiscus rosa sinensis* L.	Malvaceae	Rokto joba	Flower	Chronic dysentery. Paste of red flowers of *Hibiscus rosa sinensis* and *Nymphaea nouchali*, 12-year old fruits of *Tamarindus indica* and molasses is prepared. Pills prepared from the paste are dried under the sun and taken thrice daily orally before meals for 3-4 months.
49	*Sida cordifolia* L.	Malvaceae	Barula	Whole plant except roots	Mental disorders. Plant juice is taken orally with sugar in the morning on an empty stomach for 7 days.
50	*Azadirachta indica* A. Juss.	Meliaceae	Neem	Leaf, stem	To maintain healthy teeth and gums. Stems are used to brush teeth. Helminthiasis, frequent salivation with mucus in the saliva. Leaves of *Azadirachta indica* and rhizomes of *Curcuma longa* are made into a paste. Pills prepared from the paste are dried under the sun and one pill is taken every morning on an empty stomach. See *Aristolochia indica*.
51	*Tiliacora acuminata* Miers.	Menispermaceae	Pahari til	Seed	See *Aloe vera*.
52	*Tinospora crispa* Miers.	Menispermaceae	Aam guruj	Stem	Chronic fever, pain, gastric trouble. 2-3 stems are soaked in a glass of water followed by orally taking the water on an empty stomach in the morning for 7 days. For patients with chronic fever, the temperature will remain normal following the medication during daytime but the fever will return at night. See *Centella asiatica*. See *Andrographis paniculata*.
53	*Mollugo pentaphylla* L.	Molluginaceae	Khet papra	Leaf	See *Polygonum hydropiper*.
54	*Ficus benghalensis* L.	Moraceae	Bot	Sap, bark	Heart disorders. Sap that oozes out after breaking off young stems is taken orally with sugar for 5-7 days in the morning on an empty stomach. Obesity. Crushed bark is soaked in a glass of warm water. The water is divided in to two halves and each half is taken orally in the morning and evening on an empty stomach.
55	*Ficus hispida* L.	Moraceae	Jol dumra	Stem	Toothache, gum swelling, oozing of pus from tooth or gum. Stems are used to brush teeth for 2-3 days.
56	*Moringa oleifera* Lam.	Moringaceae	Sajina	Leaf	Liver disorders. Leaves are fried and taken orally.
57	*Musa paradisiaca* L.	Musaceae	Bichi kola	Young leaf, inner portion of stem	To keep body healthy. Young leaf juice (125g) is taken orally with sugar or molasses in the morning on an empty stomach for 7 days. Diabetes. Inner portion of stem is sliced into small pieces and soaked in a glass of water overnight followed by drinking the water the following morning.
58	*Psidium guajava* L.	Myrtaceae	Peyara	Young leaf	Contraceptive. Young leaf juice is taken orally for 3 days in the morning on an empty stomach.
59	*Syzygium cumini* (L.) Skeels	Myrtaceae	Jaam	Bark	See *Polygonum hydropiper*.
60	*Boerhaavia diffusa* L.	Nyctaginaceae	Pumolova	Leaf, top of aerial parts	Severe pain. Leaves and top of aerial parts are fried or boiled and taken orally for 2-3 days.
61	*Boerhaavia repens* L.	Nyctaginaceae	Jhapatia	Leaf	Skin diseases. Leaves of *Boerhaavia repens* and *Derris trifoliata* are crushed with seeds of *Nigella sativa* to extract juice. The juice is mixed with goat milk and applied topically to affected areas. A leaf of *Smilax roxburghiana* is then put over the area followed by bandaging the area with a piece of cloth.
62	*Nymphaea nouchali* Burm.f.	Nymphaeaceae	Rokto shapla	Whole plant	Passing of blood with urine. Six seeds of *Santalum album* are mixed with fruits of *Terminalia chebula*, bark of *Cinnamomum verum* and whole plants of *Nymphaea nouchali*. Pills prepared from the crushed mixture are taken orally for 3 days twice daily in the morning and afternoon before meals. See *Hibiscus rosa sinensis*.
63	*Nyctanthes arbor-tristis* L.	Oleaceae	Shefali	Leaf	Malaria. Half cup of juice obtained from equal amounts of juice of *Nyctanthes arbor-tristis* leaves and *Zingiber officinale* rhizomes is taken orally for 7-10 days twice daily.
64	*Averrhoa carambola* L.	Oxalidaceae	Kamranga	Fruit	Chronic cough. Fruit is put on top of burning coals in an earthen pot. When soft, the fruit is taken out and squeezed to obtain juice. 5-10 drops of the juice is taken with a pinch of table salt orally at night after meals for 2-3 days.
65	*Piper cubeba* L.	Piperaceae	Kabab chini	Fruit	See *Polygonum hydropiper*.
66	*Piper longum* L.	Piperaceae	Pipol	Fruit	Cold, respiratory difficulties, asthma. Pills prepared from dried and powdered fruits are taken orally with honey.
67	*Piper nigrum* L.	Piperaceae	Gol morich	Fruit	See *Allium cepa*.
68	*Piper peepuloides* L.	Piperaceae	Pipol	Fruit	See *Polygonum hydropiper*.
69	*Plantago ovata* Forssk.	Plantaginaceae	Isabgul	Husk	See *Aloe vera*.
70	*Plumbago zeylanica* L.	Plumbaginaceae	Kalpanath	Leaf	Helminthiasis, itch. Pills prepared from mashed *Plumbago zeylanica* leaves and *Curcuma longa* rhizomes are taken orally for 15 days in the morning on an

					empty stomach. The medication may lead to bloating in children and loss of appetite in children and adults. See *Aristolochia indica*.
71	*Chrysopogon aciculatus* (Retz.) Trin.	Poaceae	Namna	Leaf	See *Saraca asoca*.
72	*Polygonum hydropiper* L.	Polygonaceae	Bish katali	Whole plant	Rheumatic fever, indigestion. 125g each of whole plants of *Polygonum hydropiper* are mixed with fruits of *Phyllanthus emblica*, *Terminalia bellirica*, *Terminalia chebula*, *Carum copticum*, seeds of *Coriandrum sativum*, *Swertia chirayita*, *Piper cubeba*, and *Piper peepuloides*, and roots of *Glycyrrhiza glabra*, leaves of *Oroxylum indicum*, leaves of *Withania somnifera*, leaves of *Asparagus racemosus*, leaves of *Eclipta alba*, leaves of *Mollugo pentaphylla*, and barks of *Terminalia arjuna*, *Mangifera indica* and *Syzygium cumini* and boiled in 15 kg water till the volume has been reduced by half. The boiling is done over a period of 3 days. Two table spoonfuls of the decoction is taken orally twice daily.
73	*Nigella sativa* L.	Ranunculaceae	Kalo jeera	Seed	See *Aloe vera*. See *Boerhaavia repens*.
74	*Ziziphus mauritiana* Lam.	Rhamnaceae	Boroi	Young leaf	Stomach pain. Young leaves are chewed with a pinch of table salt and taken orally.
75	*Hedyotis diffusa* Willd.	Rubiaceae	Khet papra	Whole plant	Presence of toxins in blood (symptoms: blood does not come out if itches are scratched, formation of swellings or abscesses on skin). 3-4 whole plants are washed and dried under the sun for 2 days. The dried plants are then soaked in water overnight resulting in the water turning a red color by morning. 250g of the water is taken orally in the morning on an empty stomach for 15-20 days.
76	*Santalum album* L.	Santalaceae	Chandan	Seed	Chronic dysentery. Seeds of *Santalum album* and *Phyllanthus emblica* are made into a paste and mixed with honey. Pills prepared from the paste are dried under the sun and taken orally in the morning on an empty stomach for 7 days. See *Nymphaea nouchali*.
77	*Scoparia dulcis* L.	Scrophulariaceae	Chinigura	Leaf	Heatstroke (symptoms: restlessness, feverish sensation, loss of appetite, vomiting tendency, and tiredness in hands and legs). Leaves are chewed and taken orally or leaf juice is taken orally once daily. See *Eclipta alba*.
78	*Smilax roxburghiana* Wall.	Smilacaceae	Kata kumra	Topmost aerial part	To increase strength, weakness. The topmost aerial part of the plant is chewed and taken orally. See *Boerhaavia repens*.
79	*Capsicum frutescens* L.	Solanaceae	Morich	Fruit	See *Typhonium trilobatum*.
80	*Datura metel* L.	Solanaceae	Kalo dhutura	Leaf	Asthma. Leaves are dried and powdered and then smoke inhaled through a water pipe for 5-7 days. During this time, any tobacco products cannot be taken as well as duck meat and duck eggs.
81	*Datura stramonium* L.	Solanaceae	Shada dhutra	Root	Mental disorders. Root juice is taken orally once. Note that eating the fruits of the plant can lead to mental disorders.
82	*Solanum indicum* L.	Solanaceae	Tit baegun	Fruit	Eczema, scabies. Fruits are fried and taken orally for 2-3 days.
83	*Withania somnifera* (L.) Dunal	Solanaceae	Ashwagandha	Whole plant	See *Polygonum hydropiper*.
84	*Abroma augusta* L.	Sterculiaceae	Ulot kombol	Stem	Constipation. Stems are stripped of leaves, cut into small pieces and soaked in water overnight. The water is stirred the next morning, strained and taken orally with sugar or sugarcane molasses till cure.
85	*Typha elephantina* (Roxb.)	Typhaceae	Tarot	Root	See *Costus speciosus*.
86	*Clerodendrum viscosum* Vent.	Verbenaceae	Bhadaila	Nodules inside inner part of root, leaf	Chronic dysentery. Nodules are dried, powdered and taken orally for 7 days on an empty stomach. The medication might cause some mucus to come out with stool. Frequent salivation with mucus, menstrual disorders. Top portions of leaves of *Clerodendrum viscosum* and leaves of *Vallaris solanacea* are made into a paste and pills prepared from the paste. Pills are taken orally 2-3 times daily in the morning for 7 days on an empty stomach.
87	*Vitex negundo* L.	Verbenaceae	Nishinda	Leaf	Waist pain, bone pain. Leaves are soaked in 5-7 kg water and boiled. After the boiled water has turned lukewarm, the water is poured slowly over the painful areas. This is done 2-3 times for 2-3 days. See *Saraca asoca*.
88	*Cissus quadrangularis* L.	Vitaceae	Har mochka	Whole plant except roots	Bone fracture. Paste is prepared from 2-3 plants of *Cissus quadrangularis*, rhizomes of *Zingiber officinale* and table salt. Paste is topically applied over the fractured area. Then the area is tied around with a banana leaf. The bandage is opened after 24 hours, otherwise if delayed, the bone becomes enlarged.
89	*Aloe vera* (L.) Burm.f.	Xanthorrheaceae	Ghritokumari	Pulp inside leaf	Constipation. Pulp inside leaf of *Aloe vera* is mixed with sugar or sugarcane molasses, husks of *Plantago ovata*, seeds of *Hyptis suaveolens*, seeds of *Tiliacora acuminata*, and seeds of *Nigella sativa* and water and taken orally in the form of sherbet (3-4 spoonfuls). Acne. Pulp inside leaf is applied toplically.
90	*Curcuma longa* L.	Zingiberaceae	Holud	Rhizome	Sprain. Paste of rhizome, table salt and lime is warmed and applied topically to sprains 1-2 times daily for 5-7 days. Stuttering. Rhizomes are dried and powdered followed by frying the powder in ghee (clarified butter) and taken orally for 5-7 days. See *Ocimum tenuiflorum*. See *Azadirachta indica*.
91	*Zingiber officinale* Roscoe	Zingiberaceae	Ada	Rhizome	See *Nyctanthes arbor-tristis*. See *Cissus quadrangularis*. See *Centella asiatica*.

Plants or plant parts may contain hundreds of phytochemicals, some of which may have desired pharmacological activities with disease curing effects, but other phytochemicals present in the same plant or plant part may have undesirable effects. The traditional medicinal practitioners are aware of this as is also evidenced by the present FMP's mentioning adverse effects of some of his formulations. To circumvent this problem, the FMPs resort to polyherbal formulations not only to synergize desirable effects but also to negate the adverse effects of one plant with another plant. That the present FMP used a number of polyherbal formulations suggest that the FMP was quite aware of both synergistic and adverse effects of different plants and used various plants judiciously, at least according to his judgment. Whether his judgment was sound or not remains for scientists to analyze. However, the case for malaria treatment is suggestive that the FMP's formulations may have scientific basis and so can be validated in their uses.

CONCLUSION

The folk medicinal practitioner of the present survey used a number of simple and complex formulations to treat common as well as generally difficult to treat diseases like diabetes, heart disorders and malaria. These formulations merit further scientific consideration as to their efficacy in treatment.

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