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ORIGINAL ARTICLES

A Survey of Medicinal Plants Used by the Traditional Medicinal Practitioners of Khulna City, Bangladesh

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ABSTRACT

Bangladesh has several existing traditional medicinal systems, which are practiced along with modern allopathic medicine. The four major traditional medicinal systems include homeopathy, Ayurveda, Unani, and folk medicine. Ayurveda has an Indian origin and is well established in Bangladesh, the country being a part of the Indian sub-continent. Unani medicine, originally arising from the Greeks and later developed by the Arabs, also has a strong presence in Bangladesh, primarily because of the majority Muslim population. Practitioners of Ayurvedic medicine are locally known as Kavirajes or Vaidyas, while practitioners of Unani medicine are known as Hakims or Hekims. Like allopathic doctors, Ayurvedic Kavirajes and Unani Hakims are located more in the urban than in the rural areas. Folk medicinal practitioners (also known as Kavirajes) practice a more simple form of medicine, particularly in the rural areas, where medicinal plants form the chief and most often only ingredients of formulations. The formulations also are simple, being mainly juice obtained from whole plant or plant parts, which may be orally or topically administered depending on the disease. Medicinal plants also form a major base for Ayurvedic and Unani formulations but are mixed with other ingredients depending on the imbalances in 'humor' leading to the disease (as in Ayurveda) or the 'temperament' of the disease as well as the ingredient (as in Unani). The objective of the present survey was to conduct an ethnomedicinal survey among the folk medicinal practitioners of Khulna city, which is in the south-western part of Bangladesh. A total of five prominent folk medicinal practitioners were interviewed in the present survey. Among the five, three termed themselves as Hakims, showing the influence of Unani medicinal practices in their folk medicinal treatments. Also surprisingly, among the three Hakims, two were Hindus, which was unusual, for Hakims generally come from the Muslim religion. The other two termed themselves Kavirajes. Although medicinal plants formed the major base for all formulations of all the practitioners, some of their formulations contained additives not observed to be used in other ethnomedicinal surveys conducted by us in other regions of the country and which strongly suggested, particularly Unani medicinal influences. Another unusual feature was the use of a single plant for treatment of wide and diverse type of ailments. A total of 67 plant species were used by the five practitioners. Taken together, the results suggest the enormous potentialities of the plant kingdom in the treatment of ailments, some of which are incurable by modern allopathic medicine. The present survey, conducted in an urban area, further suggests that at least in Khulna city, folk medicinal practitioners may be influenced by other forms of traditional medicine.

Key words: Medicinal plants, folk medicine, Khulna, Bangladesh

Introduction

Bangladesh has a rich history of traditional medicinal practices. With the advent of modern medicine and allopathic doctors, the traditional forms of medicine have somehow receded into the background but have not

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disappeared, as evidenced by the numbers of practitioners as well as their visiting patients. In fact, the majority of rural inhabitants of Bangladesh, who in turn form the majority of the total population, rely on traditional medicine for treatment of diverse ailments. At least four forms of traditional medicinal practices exist in Bangladesh as of the present time. These are homeopathy, Ayurvedic, Unani, and the folk medicinal system. Ayurvedic medicine originated in India in pre-historic times, and diseases as well as treatment of diseases depend on the perceived imbalances in the three 'humors' or 'Tridoshas' of the body (Vata, Pitta and Kapha). Bangladesh, being a part of the Indian sub-continent, has had a long history of Ayurvedic medicinal practices, whose practitioners are locally known as Kavirajes or Vaidyas. Unani medicine has Hellenistic roots and was later taken over and developed by the Arab medical practitioners from the Greeks during the spread of Islam. Diagnosis and treatment of diseases in Unani medicine depends upon the concepts of the four humors: Phlegm (Balgham), Blood (Dam), Yellow bile (?afrā') and Black bile (Saudā'). Each person's unique balance of the humors determines the person's temperament, and imbalance of the humors leads to disease, which can be cured through administration of medicine, which also is taken to have its own unique temperament.

Folk medicine in Bangladesh has one common feature with the Ayurvedic and the Unani medicinal systems, in that all three systems use medicinal plants for treatment. However, unlike the Ayurvedic or Unani system with their own developed concepts of causes of disease and their established treatises for treatment (which can be extremely complex formulations of plants, animal parts and minerals), folk medicinal practitioners rely on simple formulations of plants for treatment. They have no recognized medical treatises, and virtually all folk medicinal practitioner (who are also known as Kavirajes or Vaidyas) rely on their own experiences to diagnose diseases and prescribe medicinal plants for treatment of diseases. Folk medicinal practice is usually confined within the immediate family, and the knowledge gained by a Kaviraj is closely guarded and passed to a family successor, who has taken an interest and has served as a disciple to the Kaviraj for some period of time. As such, the formulation of medicinal plant(s) for treatment of diseases is quite diverse and can vary widely from area to area, even though both areas may have similar types of plants.

Bangladesh has over 86,000 villages with each village having one or more practicing Kavirajes. Since the medicinal plants used by the Kavirajes vary widely even between adjacent villages, it is important to survey village-based Kavirajes as a whole to get a comprehensive picture on the use of medicinal plants in the folk medicinal system of Bangladesh. Additionally, Kavirajes are also present in the urban areas of Bangladesh including towns and cities, where particularly the urban slum population depends upon them for treatment. In particular, large cities (of which Bangladesh has four), the Kavirajes, by choice or necessity, may interact with allopathic as well as Ayurvedic and Unani medical practitioners. We had been conducting ethnomedicinal surveys in the rural areas of Bangladesh for quite some time (Hossan *et al*., 2010; Mollik *et al*., 2010; Nawaz *et al*., 2009; Rahmatullah *et al*., 2010a-d; Rahmatullah *et al*., 2009a-c). The objective of the present study was to conduct a survey among the practicing Kavirajes of Khulna city (in the southwestern portion of Bangladesh) to document medicinal plants used by the Kavirajes, and to determine whether the treatment given by the Kavirajes was to any extent influenced by other traditional medicinal practices.

Materials and methods

Khulna city lies in the southwestern portion of Bangladesh and is close to the Sunderbans Forest with its diversity of mangrove species. A preliminary survey was conducted in Khulna city, Bangladesh to find out about practicing folk medicinal practitioners. Five folk medicinal practitioners were identified with repute and a large number of patients, and these five practitioners were chosen for further interviews. They were Hakim Ashraf Hossain Morol, Kaviraj Md. Ayub Ali, Hakim Krishna Pada Gayen, Hakim Sheikh Abdul Quddus, and Hakim Nipendranath Bairagi. Folk medicinal practitioners in Bangladesh usually term themselves Kavirajes after the fashion of Ayurvedic medicinal practitioners, who also term themselves Kavirajes. On the other hand, Unani medicinal practitioners term themselves Hakims. Almost all Hakims are Muslims because the Unani medicinal practice was developed by the Muslim Arabs following the Greek medicinal methods. When the Arabs arrived in the Indian sub-continent, and in due course Bengal (a part of the Indian sub-continent), the Muslims introduced the practice to India as well as Bengal. Bangladesh constitutes a part of Bengal, which is now a sovereign country. On the other hand, Kavirajes have generally come from Hindu families in Bangladesh although in recent times many Muslims have taken on the profession of Kavirajes. It is worth noting that out of the five folk medicinal practitioners interviewed, three were Muslims and two were Hindus. Out of the three Muslim folk medicinal practitioners, two termed themselves Kavirajes, while the other termed himself Hakim. On the contrary, both Hindu folk medicinal practitioners termed themselves Hakims, suggesting that not only Unani influences exist among the folk medicinal practitioners of Khulna city but also transcends the religious nature of the practitioners.

Informed consent was obtained from all Kavirajes prior to the interviews. The Kavirajes were explained as to the nature of the visit, and consent obtained to disseminate the information both nationally and internationally. Interviews were conducted in the Bengali language, which was spoken by both Kavirajes and interviewers. Actual interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin (1995) and Maundu (1995). Briefly, in this method, the Kavirajes took the interviewers on guided field-walks during daytime through areas from where they collected their medicinal plants, pointed out the plants and described their uses. Data collected during the daytime was cross-checked in later evening sessions with the Kavirajes. Plant specimens were collected on the spot, dried, and identified by Mr. Manjur-ul-Kadir Mia, ex-Curator and Principal Scientific Officer of the Bangladesh National Herbarium at Dhaka, Bangladesh.

Results and discussions

It was observed that the five Kavirajes who were interviewed at Khulna city used a total of 67 plants among themselves for treatment of various ailments. Although all practicing Kavirajes of Khulna city were not interviewed in the present survey, since the five Kavirajes interviewed were reputed and had a large patient following, it may be fairly concluded that the plants used by the five Kavirajes were fairly representative of the medicinal plants that are used in Khulna city by all other Kavirajes.

A notable exception of the Kavirajes of Khulna city was that they used a single plant or plant parts for treatment of multiple ailments, which were diverse in nature. This observation pointed out the depth of knowledge on medicinal plants of the Kavirajes. Unlike most rural Kavirajes, who use only a single plant or plant part to treat a single ailment, the Kavirajes surveyed in Khulna city, which although by nature is a small city, demonstrated their depth of knowledge on medicinal plants in using a single plant for treatment of multiple ailments. For instance, the whole plant or leaves of *Andrographis paniculata* was used as a blood purifier, to strengthen stomach and liver functions, helminthiasis, debility, loss of appetite, fever, eczema and other skin infections, and blood dysentery. In combination with *Achyranthes aspera*, the whole plant was also used for treatment of edema (termed by the Kavirajes as shoth and which usually denotes swelling of hands or legs due to accumulation of fluid). These ailments treated were not related and as such pointed out that the Kavirajes possessed information on just not one specific ability of a whole plant or plant part for treatment of a single disease, but were able to use the plant in a multi-functional manner.

The medicinal plant knowledge of the Kavirajes was also reflected in using different parts of from the same plant for treatment of different ailments. To cite one example, the flowers of *Justicia adhatoda* were used for treatment of tuberculosis, spleen disorders, burning sensations during urination, as a blood purifier, and as an antidote to poisoning. A combination of leaves and roots was used for treatment of coughs, mucus, asthma, whooping coughs, fever, jaundice, vomiting, vomiting tendency, gonorrhea (termed by the Kavirajes as promeho), and leprosy. Juice obtained from macerated root only was used for treatment of syphilis. Juice obtained from leaves only was used for treatment of coughs, asthma, stoppage of urination, gonorrhea, and to regularize menstruation. It is notable that while syphilis and gonorrhea are both sexually transmitted diseases (albeit caused by different microorganisms), the Kavirajes used roots to treat syphilis, but used leaves or a combination of leaves and roots for treatment of gonorrhea. This suggests an extensive knowledge not only on medicinal plants but on the efficacy of various plant parts in treatment of specific diseases. Also to be noted is that while using a combination of leaves and roots for treatment of gonorrhea, the juice obtained from macerated leaves and roots was taken orally by itself, but while using leaves only to treat gonorrhea, the top portion of young leaves was crushed with sugar and taken orally. Whether the presence of sugar was merely for additive purposes (as for sweetening) or had therapeutic values when used in combination with leaves remain to be determined.

Another example was the use of different plant parts from *Bauhinia racemosa* for treatment of different ailments. Macerated bark from the plant was applied to skin disorders and external infections and taken orally for debility, i.e. to increase strength. A poultice of flowers was applied to boils. Decoction of root was taken orally for treatment of gastrointestinal disorders, as a blood purifier, and for stoppage of excessive blood flow during menstruation. Taken together with the earlier example of *Justicia adhatoda*, the information provided by the Kavirajes strongly suggests that the Kavirajes of Khulna city were well aware of the different medicinal properties of different parts from the same plant.

Sugar, mishri (crystalline sugar) and honey appeared to be common additives in plant preparations prescribed by the Kavirajes. For treatment of hemorrhoids with bleeding, the Kavirajes advised patients to take flowers of *Mesua ferrea* soaked in water overnight and to be taken the following morning with mishri or honey. When queried, the Kavirajes informed the interviewers that both mishri and honey possess therapeutic properties on their own, and gives a synergistic effect when taken with certain medicinal plants or plant parts.

Mishri is prepared in a special way. Sugar is added to boiling water till super-saturation is achieved. The water containing dissolved sugar is then poured into an earthen pot and a string suspended in the middle of the pot with the help of a stick placed on top of the container. As the water cools sugar crystals appear and attach to the string. When the string has become thick through attachment of sugar crystals, it is taken out, dried, and sugar crystals separated from the string. These sugar crystals are called mishri and are thoroughly dried and powdered prior to mixing with plant juice or being taken alongside plant parts or plant juice.

Complex decoctions of plants were also used by the Kavirajes along with single modes of treatment. To give an instance of a simple mode of treatment, juice obtained from macerated whole plant of *Acalypha indica* was applied to the nostril (a few drops) for clearance of mental faculties (lack of clearance of mental faculties, according to the Kavirajes, happens when a person is unable to think properly or complains of a numbness of the head or brain, which happens concurrent with disruption of the thought processes). An example of a complex decoction was the use of leaves of *Abrus precatorius*, which was boiled with leaves of *Ocimum sanctum* in a cup of water, till the volume was reduced by half. The decoction was then strained and taken with sugar or honey for coughs and whooping coughs. Even for what appears to be a non-disease treatment, e.g. blackening of hair, the Kavirajes used a combination of three plants, namely *Abrus precatorius*, *Sesamum indicum*, and *Wedelia chinensis*. For treatment of mental and physical weakness, seeds of *Abrus precatorius* were used with whole plants of *Withania somnifera* and *Asparagus racemosus* and taken with milk. What is notable here is that the plant or plant part of *Abrus precatorius* served as a common denominator for three totally different disorders – respiratory tract disorder in the form of coughs or whooping coughs, to increase the blackness of hair (black hair is prized in Bangladesh and any loss in color both naturally as well as through any disorders is taken as a sign of bad health by the people), and mental and physical weaknesses.

It was observed that not only the Kavirajes used different parts from the same plant for treating different ailments, but also combined multiple parts from the same plant for treatment. A combination of five parts from *Acacia arabica*, namely leaf, root, bark, flower and seed was used for treatment of a variety of ailments like inflammation of eyes, strengthening base of hair, to turn hair blacker, prevent hair loss, to increase stomach functions as well as to treat diarrhea and burns. In combination, the five parts were used for treatment of infections or poisonous blood coming out from infected uterus. Notably, the same five parts, when used for treatment of inflammation of eyes, hair disorders, or gastrointestinal problems were mixed with shohaga, which is the local name of an imported material from India. Shohaga is commonly used in Bangladesh by women for a few days prior to marriage, because when applied regularly to skin it improves skin texture and gives the skin a bright outlook. However, in this instance, shohaga was used by the Kavirajes as a therapeutic. Also interesting was the fact that sodium benzoate was used as an alternative by the Kavirajes for shohaga. Sodium benzoate is a common food preservative and is bacteriostatic and fungistatic under acidic conditions. Under acidic conditions, it is converted to benzoic acid, which has good antimicrobial features. It is possible that such antimicrobial feature has been recognized by the Kavirajes for treatment of eye infections and gastrointestinal disorders like diarrhea, both of which can be caused by microorganisms. A decoction of the five parts of the plant was also used for treatment of burns following mixing with egg white and applying to burnt areas. In this case, the egg white could provide soothing effects to burnt areas, while the plant parts overall could have served an antimicrobial purpose in reducing infections to burnt areas.

A strong Unani medicinal influence was observed in the folk medicinal preparations of the Kavirajes of Khulna city. For instance, whole plant of *Cassia sophera* was used with arak kadian or arak pudina (distillate of *Mentha spicata*) for treatment of indigestion and burning sensations in the chest (the latter by itself can result from indigestion or acidity). Arak is an Arabic word meaning distilled alcoholic drink. The word by itself suggests Unani influences and the use of distillate of *Mentha spicata* (which can be also essential oil from the plant) suggests Unani medicinal influences. We were not able to ascertain the exact nature of arak kadian except that this distillate of a certain plant is imported from India. *Mentha spicata* is used in the folk medicinal system of Bangladesh for stomach upsets, indigestion, and to control acidity. As such, arak pudina can itself play a beneficial role on top of *Cassia sophera* in controlling indigestion. Similar influences of Unani medicine was also observed in the Kavirajes use of Unani medicinal ingredients gao joban, niluf, and shahtara along with *Tinospora cordifolia*, *Glycyrrhiza glabra*, and *Rosa damascena* to strengthen heart. The composition and nature of all these ingredients were not found out in the present study. The Kavirajes did not know their composition or nature either; they just mentioned that the ingredients were usually imported from India, and from long practice and interaction with Unani Hakims they have learned to use them in their medicinal plant preparations and have found them beneficial.

To summarize, there were two important differences that were noted between the folk medicinal practitioners of typical rural areas of Bangladesh and folk medicinal practitioners of Khulna city. The folk medicinal practitioners of Khulna city seemed to be more knowledgeable about the medicinal use of plants as a whole and individual plant parts in general. Secondly, this greater knowledge of medicinal plants could be,

at least, partly attributable to influences from other traditional medicinal systems of Bangladesh, notably Unani medicinal system. This was evident not only by the use of the term Hakim by several of the folk medicinal practitioners interviewed (the term Hakim is used by Unani medicinal practitioners before their names just as allopathic practitioners use the term Doctor before their names), but also by the fact that a number of preparations used by the folk medicinal practitioners (Kavirajes) of Khulna city contained ingredients used in Unani medicines.

Bangladesh, as mentioned earlier, has several ongoing forms of traditional medicinal practices. The present survey suggests that at least in cities, there is some interaction between the various types of traditional medicinal practices, possibly because of the large number of practitioners that tend to converge in the cities. It is very possible that this interaction between different types of medicinal practices can only enrich traditional medicine systems in an overall manner. Furthermore, these types of interactions open up newer avenues for modern scientific research towards discovery of more efficacious treatments.

Table 1: Medicinal plants used by the folk medicinal practitioners of Khulna City, Bangladesh.

Serial Number	Scientific Name	Family Name	Local Name	Utilize Part	Ailment
1	*Andrographis paniculata* (Burm. F.) Wall. ex Nees	Acanthaceae	Kalomegh		Whole plant, leafShoth (local term for edema, particularly of hands and legs). 5-7g of dried and powdered whole plant of *Achyranthes aspera* is added to eaqual amount of dried and powdered whole plant of *Andrographis paniculata* followed by boiling in 2 cups of water till the volume is reduced to 1 cup. The decoction is strained and taken 2-3 times daily. Blood purifier, to strengthen stomach and liver functions, helminthiasis, debility, loss of appetite, fever. 5-7g of leaves is orally taken. Eczema, skin infections. Juice from 5-7g of macerated leaves is topically applied. Loss of appetite, blood dysentery, chronic fever. Juice obtained from 5-7g of macerated leaves is taken with mishri (crystalline sugar) in the morning and evening for 7 days.
2	*Justicia adhatoda* L.	Acanthaceae	Bashok		Leaf, root, flowerTuberculosis, blood purifier, spleen disorders, burning sensations during urination, antidote to poisoning. Flowers are orally taken. Coughs, mucus, asthma, whooping coughs, fever, jaundice, vomiting, vomiting tendency, promeho (Kavirajes used this term to denote gonorrhea), leprosy. Juice obtained from macerated leaves and roots is taken. Syphilis. Juice obtained from macerated root is taken. To regularize menstruation, coughs, asthma, stoppage of urination, gonorrhea. Juice from macerated leaves is taken orally for all disorders except gonorrhea. For gonorrhea, the top portion of young leaves (6g) is crushed with sugar and taken orally.
3	*Acorus calamus* L.	Acoraceae	Boch	Rhizome	Respiratory difficulties. 500 mg rhizome is sucked with honey 2-3 times daily for 15-20 days. Frequent urination. 250 mg rhizome is sucked with honey twice daily for 1-2 months. If necessary, the amount of rhizome is to be increased to 500 mg. Throat pain, coughs. 500 mg rhizome of *Acorus calamus* is taken with dried, powdered rhizomes of *Zingiber officinale* and honey 2-3 times daily. Indigestion, flatulence. 1g rhizome from *Acorus calamus* is taken with seeds of *Carum copticum*, black salt and water after meals twice daily for 15-20 days.

Table 1: Continue

4	*Achyranthes aspera* L.	Amaranthaceae	Apang	Whole plant, leaf	External bleeding from cuts and wounds. Juice obtained from macerated leaves of *Achyranthes aspera* is applied to cuts and wounds. Shoth (local term for edema, particularly of hands and legs). 5-7g of dried and powdered whole plant of *Achyranthes aspera* is added to eaqual amount of dried and powdered whole plant of *Andrographis paniculata* followed by boiling in 2 cups of water till the volume is reduced to 1 cup. The decoction is strained and taken 2-3 times daily. Scabies, itches. 5-7g whole plant of *Achyranthes aspera* is mixed with equal amounts of leaves of *Swertia chirata* and bark of *Azadirachta indica*, added to 2 cups of water and boiled till volume has been reduced to 1 cup. The decoction is strained and taken 2-3 times daily for 20-25 days. Less urination. 5-7g of dried and powdered whole plant of *Achyranthes aspera* is added to 1 glass of coconut water (water within the fruits of *Cocos nucifera*) and taken twice daily for 7-10 days.
5	*Amaranthus spinosus* L.	Amaranthaceae	Kanta notae	Leaf, root	Eczema, scabies, itches. 2-3 teaspoonful (10-15 ml) of juice obtained from macerated leaves of *Amaranthus spinosus* is mixed with equal amount of juice obtained from macerated leaves of *Tinospora cordifolia* and sugar or mishri (crystalline sugar) and taken 2-3 times daily for 20-25 days. Excessive bleeding during menstruation (termed by the Kavirajes as rokto prodor). 2-3 teaspoonful (10-15 ml) of juice obtained from macerated roots of *Amaranthus spinosus* is mixed with equal amount of juice obtained from macerated leaves of *Tinospora cordifolia* and sugar or mishri (crystalline sugar) and taken 2-3 times daily for 15-20 days. Gonorrhea, burning sensations in body, infrequent urination. ½ cup of juice obtained from macerated roots is taken 2-3 times daily for 15-20 days.
6	*Carum copticum* (L.) C.B. Clarke	Apiaceae	Joyin, Ajwain	Seed	Stomach pain. 1g dried and powdered leaves of *Clitoria ternatea* are mixed with 1g powdered seeds of *Carum copticum* and 500 mg rock salt. The mixture is taken 2-3 times daily after meals. To increase digestion, relieve constipation and flatulency. 5-10g of dry bark of *Ficus hispida* is crushed and boiled in 4 cups of water till the volume is reduced to 1 cup. The decoction is strained and added to equal amount of arok pudina (distillate from leaves of *Mentha spicata*) or seeds of *Carum copticum* and taken twice daily for 1 month. Indigestion, flatulence. 1g rhizome from *Acorus calamus* is taken with seeds of *Carum copticum*, black salt and water after meals twice daily for 15-20 days.
7	*Foeniculum vulgare* Mill.	Apiaceae	Mouri	Seed	Constipation. 2g powdered seeds of *Clitoria ternatea* are mixed with 1g of dried, powdered seeds of *Foeniculum vulgare*, added to slightly warm water and taken during the night before sleeping.

Table 1: Continue

					Headache, to maintain healthy function of kidneys and reproductive organs. 3g powdered fruit of *Piper cubeba* is mixed with 3g seeds of *Foeniculum vulgare*, boiled in water and taken twice daily for 7 days for headache, and to maintain healthy functions of kidneys and reproductive organs.
8	*Aganosma dichotoma* K. Schum.	Apocynaceae	Maloti phool	Flower	Removal of poison, rheumatic pain. Flowers are orally administered.
9	*Catharanthus roseus* (L.) G.Don	Apocynaceae	Noyon tara	Leaf, young stem, root, flower	Hypertension. 2-4 teaspoonfuls (10-20 ml) of fresh juice obtained from macerated root or macerated root is taken on an empty stomach for 4-5 days. Note that after this period, blood pressure has to be checked. Poisonous infections. Juice obtained from macerated leaves and young stems are used to wash the infected area followed by bandaging the area. This procedure is to be repeated for 6-7 days. Leukemia. 20-40 ml of decoction prepared from leaves and flowers is to be taken 2-3 times daily for 1-2 months.
10	*Nerium indicum* Mill.	Apocynaceae	Korobi	Leaf, bark of root, oil distilled from root bark	Leprosy and other severe skin disorders. Oil from root bark is applied. Edema, external infections. Decoction of leaf is taken during edema. Decoction of leaf is mixed with vaseline and topically applied to external infections. Nasal polyp. Root bark powder or root bark oil is applied to nose.
11	*Cocos nucifera* L.	Arecaceae	Daab	Fruit (water within fruit)	Less urination. 5-7g of dried and powdered whole plant of *Achyranthes aspera* is added to 1 glass of coconut water (water within the fruits of *Cocos nucifera*) and taken twice daily for 7-10 days. Diarrhea. 15-20 ml of juice obtained from macerated leaves of *Cassia sophera* is mixed with 1 glass of coconut water (water within the fruits of *Cocos nucifera*) and taken 3-4 times daily till cure. Stoppage of urination, infrequent urination. 15-20 ml juice obtained from macerated leaves of *Kalanchoe pinnata* is mixed with 1 glass of coconut water (water within the fruits of *Cocos nucifera*) and taken 2-3 times daily for 7-10 days.
12	*Calotropis gigantea* (L.) Ait.f.	Asclepiadaceae	Akondo	Leaf, bark, sap	Depilatory, eczema, skin disorder (termed by the Kavirajes as takra disease), toothache, abortifacient. Sap (1-1.5g) is applied to the skin to remove hair and treat eczema or takra disorder of the skin. Cotton soaked in sap is applied to tooth for toothache, and to the vagina to induce abortion. Rheumatic pain, swelling. Sap is mixed with hingul[1], arsenic, and barasingha[2] and burnt to ashes. The ash is applied to painful areas or swellings. Edema, helminthiasis. Pills made from leaves of *Calotropis gigantea* and rhizomes of *Curcuma longa* are taken for edema (termed by the Kavirajes as shoth rogh). Juice obtained from macerated leaf is taken as anthelmintic. Burns, skin infections, deafness, rheumatic pain. Juice from macerated leaf is mixed with equal amount of sesame oil

Table 1: Continue

					and boiled. The mixture is applied to burns, skin infections, and areas affected by rheumatic pain. The mixture is applied to ears as cure for deafness. Cholera. Equal amounts of powdered bark of *Calotropis gigantea* and black peppers (fruits of *Piper nigrum*) are orally taken.
13	*Tylophora indica* (Burm.f) Merr.	Asclepiadaceae	Onontomul	Leaf, stem	Coughs, bronchitis, asthma. 15-20 ml (3-4 teaspoonful) of juice from fresh leaves of *Tylophora indica* is mixed with equal amount of juice from leaves of *Ocimum sanctum* and 3 teaspoonful of honey and taken 3-4 times daily for 1 month. Blood dysentery. 1g of dried and powdered leaves and stems of *Tylophora indica* is mixed with equal amount of powdered pulp of young fruit of *Aegle marmelos* and taken with water 3-4 times daily for 7-10 days.
14	*Artemisia indica* Willd.	Asteraceae	Nagdana	Leaf, top of young stem	Mental weakness, appetite increaser, strengthening of liver, stomach and heart functions, opening of pores of skin, softening skin, menstrual disorders, hysteria, severe infections, skin disorders, disorders of the stomach, ear, mouth, throat, spleen and uterus. Leaves and top of young stems are taken orally during mental weakness. Juice from macerated leaves and young stems are taken for the rest of the disorders.
15	*Wedelia chinensis* (Osbeck) Merr.	Asteraceae	Bhringoraaz	Whole plant, leaf, flower, seed	To increase blackness of hair. 1g of seeds of *Abrus precatorius* is macerated and mixed with 100 ml of oil from seeds of *Sesamum indicum* and 200 ml juice obtained from macerated leaves of *Wedelia chinensis*. The mixture is heated over a low flame till oil only remains. The oil is strained and applied to the hair once regularly for 1-2 months. To increase eye sight, to increase libido, toothache, oral diseases, conjunctivitis. Juice obtained from macerated leaves is orally taken to increase eye sight and libido. Juice is gargled as treatment for toothache and oral diseases. Juice is applied to eyes for conjunctivitis. Eczema, skin disorders. A poultice of crushed leaves is applied to affected areas. To blacken hair. Juice obtained from macerated whole plant is orally taken and at the same time applied to the scalp. Pain due to hemorrhoids, stomach ache, digestive aid. 15g of juice obtained from macerated leaves is taken with 15g salt. This mixture is also useful to treat spleen disorders and coughs. Chest diseases like tuberculosis. A decoction of leaves, flowers and seeds is orally taken.
16	*Stereospermum colais* (Buch. –Ham.ex. Dillw.)	Bignoniaceae	Parul	Bark	Cardiovascular disorders, dysentery, edema (62).
17	*Terminalia belerica* (Gaertn.) Roxb.	Combretaceae	Bohera	Fruit, gum	Chronic dysentery, hemorrhoids. Fried and powdered fruits are taken for chronic dysentery and mixed with khobsul hadid (most possibly a mineral containing iron, the term possibly comes from Unani traditional medicine) and taken for hemorrhoids. To blacken hair and strengthen hair roots. Fruits are eaten.

Table 1: Continue

					To increase sperm and normalize body. Fruit pulp is taken. Note that fruit pulp has alcoholic properties. Conjunctivitis. Ripe fruits are taken with honey for conjunctivitis. Emetic, fever due to biliary trouble, headache, hemorrhoids, dysentery, diarrhea. Gum is orally administered.
18	*Mesua ferrea* L.	Clusiaceae	Nageshwar	Flower	Hemorrhoids with bleeding. 9g flowers are soaked in water overnight and taken the following morning with honey or mishri (crystalline sugar). This is continued for a few days. Flowers are also taken as sex stimulant, fever, mucus, rheumatoid arthritis, to improve functions of heart, liver and stomach, as blood purifier, for itches, and helminthiasis.
19	*Cochlospermum religiosum* (L.) Alston	Cochlospermaceae alternate Bixaceae	Katila, Kotela	Gum	Hemorrhoids, bleeding from external cuts and wounds. Gum is taken with goat's milk during hemorrhoids. Gum is applied to cuts and wounds to stop bleeding.
20	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arjun	Bark	Cardiovascular disorders. Powdered bark is fried in ghee (clarified butter) and taken with rice during night. Also useful in infections.
21	*Terminalia chebula* Retz.	Combretaceae	Horitoki	Fruit	Fruits are taken to improve functions of liver, stomach, and brain, to increase longevity, to increase strength, and as sex stimulant. Fruits are also orally taken for pain and rheumatic pain as well as considered diuretic and useful for chronic infections and skin disorders, and facial acne. Murabba (local term for cooked fruit ending in a gel like concoction) is considered beneficial for constipation and hemorrhoids. Fried fruits are taken as treatment for constipation. Dye and ink are produced from fried fruits. Fruits fried in peanut oil are taken for vomiting.
22	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Pathorkuchi	Leaf	Kidney stone, urinary bladder stone. 4-5 leaves are washed and macerated with 5 black peppers, mixed with sugar and taken in the morning for 20-25 days. Flatulence. 20 ml (4 teaspoonful) of juice obtained from macerated leaves is mixed with 1 teaspoonful sugar and 1 cup of warm water and taken 2-3 times daily till cure. Cuts, wounds, injuries. Fresh leaves are warmed over a flame and applied to affected areas. Stoppage of urination, infrequent urination. 15-20 ml juice obtained from macerated leaves of *Kalanchoe pinnata* is mixed with 1 glass of coconut water (water within the fruits of *Cocos nucifera*) and taken 2-3 times daily for 7-10 days.
23	*Luffa cylindrica* M. Roem	Cucurbitaceae	Dhundol	Leaf, bark, seed	Dysentery with mucus, vomiting, skin disorders, diarrhea.
24	*Acalypha indica* L.	Euphorbiaceae	Muktajhuri	Whole plant	To improve functions of brain and heart, insanity, dizziness, sneezing, joint pain, infrequent urination, tooth diseases. Whole plant is orally administered in dried form (5-7g) or in the form of juice from macerated whole plant (6g). To remove foul odor from mouth. Whole plant is chewed. Asthma. Whole plant is taken with honey. Fever, respiratory difficulties, cough, whooping cough, tuberculosis. Juice from macerated whole plant or decoction of whole plant (whole plant boiled in water) is orally taken.

Table 1: Continue

					To clear mental faculties. Juice from macerated whole plant is applied to the nostril (few drops).
25	*Abrus precatorius* L.	Fabaceae	Kunch	Leaf, seed	Coughs, whooping cough. To 5g of leaves of *Abrus precatorius* is added 5g of leaves of *Ocimum sanctum*. The mixture is boiled in 1 cup of water till the volume is reduced to ½ cup. The decoction is strained and taken with sugar or honey 2-3 times daily for 10-15 days. To increase blackness of hair. 1g of seeds of *Abrus precatorius* is macerated and mixed with 100 ml of oil from seeds of *Sesamum indicum* and 200 ml juice obtained from macerated leaves of *Wedelia chinensis*. The mixture is heated over a low flame till oil only remains. The oil is strained and applied to the hair once regularly for 1-2 months. Mental and physical weakness. 1g of powdered seeds of *Abrus precatorius* is added to equal amounts of dried and powdered whole plants of *Withania somnifera* and *Asparagus racemosus* and taken twice daily with milk for 20-25 days.
26	*Acacia arabica* (Lam.) Willd.	Fabaceae	Babla	Leaf, root, bark, flower, seed	Inflammation of eyes, strengthening base of hair, to turn hair blacker, prevent hair loss, to increase stomach functions, diarrhea, and burns. The five parts are taken together and boiled in eight volumes of water till the volume is reduced to ¼ of the original. The decoction is then strained and heated over a low flame till the decoction turns the texture of pitch. To every kilogram of the decoction is added 8-10g of shohaga (a mineral substance imported from India; its common use is in skin disorders and to improve texture of skin) or 3-5g of sodium benzoate. It is then applied to eyes during eye inflammation or to scalp to strengthen and blacken hair and prevent hair loss. The decoction can be orally taken to improve stomach functions and to stop diarrhea. The decoction is mixed with white portion of egg and applied to burns. Infections, poisonous blood coming out from infected uterus. The five parts are combined, dried, powdered and taken.
27	*Bauhinia racemosa* Lam.	Fabaceae	Kanchon	Root, bark, flower	Debility, skin disorders, external infections, boils, to increase stomach and intestinal functions, carminative, indigestion, blood purifier, blood dysentery, excessive blood flow during menstruation. Macerated bark is applied to skin disorders and external infections and taken orally to increase strength. A poultice of flowers is applied to boils. Decoction of root is taken to increase stomach and intestinal functions, as carminative, for indigestion, as a blood purifier, and for blood dysentery and excessive blood flow during menstruation.
28	*Cassia sophera* L.	Fabaceae	Kal-kashundae	Whole plant, leaf	Indigestion, burning sensations in the chest. 5-7g of whole plant of *Cassia sophera* is added to 2 cups of water and boiled till the volume is reduced to 1 cup. The decoction is strained and added to equal amount of arak kadian (distillate of some unidentified plant) or arak pudina (distillate of *Mentha spicata*) and taken orally.

Table 1: Continue

					Diarrhea. 15-20 ml of juice obtained from macerated leaves of *Cassia sophera* is mixed with 1 glass of coconut water (water within the fruits of *Cocos nucifera*) and taken 3-4 times daily till cure. Coughs, bronchitis. 10g of dried whole plant of *Cassia sophera* is added to 2 cups of water and boiled till the volume is reduced to ½ cup. The decoction is strained and added to equal amount of juice obtained from leaves of *Ocimum sanctum* and 2-3 teaspoonfuls of honey. The resultant mixture is taken 3-4 times daily for 15-20 days.
29	*Clitoria ternatea* L.	Fabaceae	Aparajita	Leaf, root, bark of root, seed	Rheumatic pain, joint pain. 500 mg of dried and powdered roots of *Clitoria ternatea* are added to 1g of dried and powdered rhizomes of *Zingiber officinale* and mixed with slightly warm water. The mixture is taken twice daily for 15-20 days. Constipation. 2g powdered seeds of *Clitoria ternatea* are mixed with 1g of dried, powdered seeds of *Foeniculum vulgare*, added to slightly warm water and taken during the night before sleeping. Less urination. 10-15g of bark of roots are boiled in water and taken twice daily. Stomach pain. 1g dried and powdered leaves of *Clitoria ternatea* are mixed with 1g powdered seeds of *Carum copticum* and 500 mg rock salt. The mixture is taken 2-3 times daily after meals.
30	*Glycyrrhiza glabra* L.	Fabaceae	Josthi modhu	Root	To strengthen heart. Distillate of leaves of *Tinospora cordifolia* are mixed with roots of *Glycyrrhiza glabra*, flowers of *Rosa damascena*, gao joban (unidentified), niluf (unidentified), and shahtara (Unani medicinal ingredient usually used for removing foul odor from nose).
31	*Mimosa pudica* L.	Fabaceae	Lojjaboti	Whole plant	Blood purifier, brightens skin, to regularize menstruation, burning sensations during urination, anal infections (referred by the Kavirajes as nali gha), old infections, hemorrhoids. Juice from macerated whole plant is orally taken as blood purifier and to regularize menstruation. In other cases, the juice is topically applied.
32	*Saraca asoca* (Roxb.) De Wilde.	Fabaceae	Ashok	Bark	Bark is orally taken to regularize stool, edema, excessive bleeding during menstruation, and diseases of the uterus. Taken with honey, bark is useful for treatment of paralysis of upper portion of body, epilepsy, and distortion of mouth. Taken orally, the bark removes foul odor from body sweat and armpits. Bark is applied with vinegar during hemorrhoids. Poultice of the bark removes hardening of eyelids and removes cataract. 3g of bark taken with sekenjabin (unidentified) is useful for treatment of tremors and respiratory difficulties. Dried and powdered bark is mixed with hot water and gargled as treatment for any type of coughs affecting the brain, throat, and nerves.
33	*Tephrosia purpurea* (L.) Pers.	Fabaceae	Bon-niil	Bark of root, seed	Debility, to increase libido, to increase sperm, cardiovascular disorders, diuretic, coughs, mucus, carminative, helminthiasis, leprosy, syphilis, blood purifier. 5-7g of

Table 1: Continue

					seeds is taken orally. Juice from macerated seed is taken orally to purify blood. A decoction of seed, taken orally has soothing effects. Gonorrhea. Seeds of *Tephrosia purpurea* are taken with fruits of *Piper nigrum*. Severe stomach pain. Pills made from bark of root of *Tephrosia purpurea* are taken with fruits of *Piper nigrum*.
34	*Swertia chirata* H. Karst. (Roxb. ex Fleming)	Gentianaceae	Chirota	Leaf	Scabies, itches. 5-7g whole plant of *Achyranthes aspera* is mixed with equal amounts of leaves of *Swertia chirata* and bark of *Azadirachta indica*, added to 2 cups of water and boiled till volume has been reduced to 1 cup. The decoction is strained and taken 2-3 times daily for 20-25 days.
35	*Crocus sativus* L.	Iridaceae	Jafran	Anther	Sex stimulant, to increase eye sight, watery eyes, to clarify urine, to expedite delivery, swelling of uterus, to strengthen heart, liver, and brain functions, swelling of liver, stone formation in any organ of the body. 1-2g anther is taken with milk to expedite delivery. Ash from burnt anther is applied to eyes to increase eyesight. Anthers are taken with honey to dissolve stones formed in any part of the body. Anthers are applied to eyes to stop watery eyes. Anthers are taken orally as treatment for swelling of uterus or liver, to clarify urine, as sex stimulant, and to strengthen heart, liver and brain functions.
36	*Lallemantia royleana* (Benth.) Benth.	Lamiaceae	Tokhma	Seed	Low sperm count, premature ejaculation, abscess, dysentery, blood dysentery, diarrhea, stomach pain, carminative. Fried and powdered seeds are taken as treatment for low sperm count and premature ejaculation. Seeds are soaked in water and applied as piultice to abscesses. Seeds are orally taken for the afore-mentioned gastrointestinal disorders.
37	*Mentha spicata* L.	Lamiaceae	Pudina	Leaf	Indigestion, burning sensations in the chest. 5-7g of whole plant of *Cassia sophera* is added to 2 cups of water and boiled till the volume is reduced to 1 cup. The decoction is strained and added to equal amount of arok kadian (unidentified) or arok pudina (distilled leaves of *Mentha spicata*) and taken orally. To increase digestion, relieve constipation and flatulency. 5-10g of dry bark of *Ficus hispida* is crushed and boiled in 4 cups of water till the volume is reduced to 1 cup. The decoction is strained and added to equal amount of arok pudina (distillate from leaves of *Mentha spicata*) or seeds of *Carum copticum* and taken twice daily for 1 month.
38	*Ocimum sanctum* L.	Lamiaceae	Tulshi	Leaf, root	Coughs, bronchitis, asthma. 15-20 ml (3-4 teaspoonful) of juice from fresh leaves of *Tylophora indica* is mixed with equal amount of juice from leaves of *Ocimum sanctum* and 3 teaspoonful of honey and taken 3-4 times daily for 1 month. Coughs, bronchitis, asthma. 10g of dried whole plant of *Cassia sophera* is added to 2 cups of water and boiled till the volume is reduced to ½ cup. The decoction is strained and added to equal amount of juice obtained from leaves of *Ocimum sanctum* and 2-3 teaspoonfuls of honey. The resultant mixture is taken 3-4 times daily for 15-20 days.

Table 1: Continue

					Coughs, whooping cough. To 5g of leaves of *Abrus precatorius* is added 5g of leaves of *Ocimum sanctum*. The mixture is boiled in 1 cup of water till the volume is reduced to ½ cup. The decoction is strained and taken with sugar or honey 2-3 times daily for 10-15 days. Malaria, intestinal pain in children. Juice obtained from macerated leaf of *Ocimum sanctum* is taken with seeds of *Nigella sativa* as treatment for malaria. Juice obtained from macerated leaf of *Ocimum sanctum* is administered with rhizome of *Zingiber officinale* as treatment of intestinal pain in children. Diuretic, sex stimulant. Roots are orally taken. Carminative, swellings, asthma, coughs, chest pain, to improve stomach functions, dyspepsia in women, to increase memory, headache. Juice obtained from macerated leaf is administered orally.
39	*Cinnamomum camphora* (L.) J.Presl.	Lauraceae	Korpoor	Wood (from which camphor is extracted)	Ordinary fever. 15 mg camphor extracted from wood of *Cinnamomum camphora* is mixed with 3 teaspoonfuls of juice obtained from macerated leaves of *Piper betle* or macerated leaves of *Tinospora cordifolia* and taken 2-3 times daily. Rheumatoid arthritis, muscle pain. 15 mg of camphor extracted from wood of *Cinnamomum camphora* is mixed with 400 mg of dried and powdered bark of *Cinnamomum verum* and taken twice daily along with water for 10-15 days.
40	*Cinnamomum verum* J.Presl.	Lauraceae	Daru-chini	Bark	Rheumatoid arthritis, muscle pain. 15 mg of camphor extracted from wood of *Cinnamomum camphora* is mixed with 400 mg of dried and powdered bark of *Cinnamomum verum* and taken twice daily along with water for 10-15 days. Sex stimulant. Tablets made from fruits of *Piper cubeba*, bark of *Cinnamomum verum*, wood distillate of *Aquilaria agallocha* and honey are taken as sex stimulant. To improve stomach functions, to increase appetite, carminative, constipation, hoarseness of voice, tooth disease. Bark is orally administered. Increased urination due to cold, coughs, asthma. Powdered bark is taken with honey. Pain due to cold, sex stimulant. Essential oil is administered orally.
41	*Asparagus racemosus* Willd.	Liliaceae	Shotomuli	Whole plant	Mental and physical weakness. 1g of powdered seeds of *Abrus precatorius* is added to equal amounts of dried and powdered whole plants of *Withania somnifera* and *Asparagus racemosus* and taken twice daily with milk for 20-25 days. Nerve weakness, sexual weakness. 1g dried and powdered flower of *Syzygium aromaticum* is mixed with equal amounts of dried and powdered whole plants of *Asparagus racemosus* and *Withania somnifera* and taken with 1 glass of milk twice daily for 1-2 months. Whole plant is orally administered as sex stimulant, for increasing sperm count, volume and density, for nutritive purposes, for strengthening body, and to increase lactation in nursing mothers. Whole plants arte chewed to strengthen

Table 1: Continue

					base of teeth. It is used as preventive medicine against pox and is useful against erectile dysfunction. Juice obtained from macerated fresh root is mixed with milk and taken for gonorrhea (also termed by the Kavirajes as sujakae disease).
42	*Hibiscus abelmoschus* L.	Malvaceae	Lota kosturi	Leaf, flower, seed	Carminative, digestive aid, to increase appetite, stimulant, eczema and skin disorder (termed by the Kavirajes as khujli pachra), diseases in which mucus is formed, sexual diseases, heart disorders, eye diseases. 2-3g of powdered seeds are taken Eczema, scabies. Powdered seeds are mixed with milk and applied to affected areas. Gonorrhea. Juice obtained from macerated leaves and flowers is taken.
43	*Azadirachta indica* A. Juss.	Meliaceae	Neem	Bark	Scabies, itches. 5-7g whole plant of *Achyranthes aspera* is mixed with equal amounts of leaves of *Swertia chirata* and bark of *Azadirachta indica*, added to 2 cups of water and boiled till volume has been reduced to 1 cup. The decoction is strained and taken 2-3 times daily for 20-25 days.
44	*Stephania hernandifolia* (Willd.) Walp.	Menispermaceae	Aknadi	Leaf, root	Dysentery, blood dysentery, cholera, to stimulate appetite, digestive aid, carminative, acidity, fever, coughs, hemorrhoids. Juice obtained from macerated root is orally administered. Solid residue with urine, leucorrhea, breast infections in lactating mothers. Juice from macerated leaves is orally administered. Birth control. Juice from 7-8 leaves is taken from the 1st day till the 5th day of menstruation to avoid pregnancy during that month.
45	*Tinospora cordifolia* (Willd.) Hook.f. & Thoms.	Menispermaceae	Guloncho	Leaf	Ordinary fever. 15 mg camphor extracted from wood of *Cinnamomum camphora* is mixed with 3 teaspoonfuls of juice obtained from macerated leaves of *Piper betle* or macerated leaves of *Tinospora cordifolia* and taken 2-3 times daily. Eczema, scabies, itches. 2-3 teaspoonful (10-15 ml) of juice obtained from macerated leaves of *Amaranthus spinosus* is mixed with equal amount of juice obtained from macerated leaves of *Tinospora cordifolia* and sugar or mishri (crystalline sugar) and taken 2-3 times daily for 20-25 days. Excessive bleeding during menstruation (termed by the Kavirajes as rokto prodor). 2-3 teaspoonful (10-15 ml) of juice obtained from macerated roots of *Amaranthus spinosus* is mixed with equal amount of juice obtained from macerated leaves of *Tinospora cordifolia* and sugar or mishri (crystalline sugar) and taken 2-3 times daily for 15-20 days. Diabetes. 3-5g powdered leaves is taken with equal amount of sugarcane molasses and taken on an empty stomach for rapid reduction of blood sugar. Chronic fever, malarial fever. Dried and powdered leaves of *Tinospora cordifolia* are taken with bongsholochon (unidentified) and powdered fruits of *Elettaria cardamomum*.

Table 1: Continue

					To strengthen heart. Distillate of leaves of *Tinospora cordifolia* are mixed with roots of *Glycyrrhiza glabra*, flowers of *Rosa damascena*, gao joban (unidentified), niluf (unidentified), and shahtara (Unani medicinal ingredient usually used for removing foul odor from nose).
46	*Ficus hispida* L.f.	Moraceae	Dumur	Bark, fruit	Physical weakness, malnutrition. 10g ripe dried fruit is soaked in 1 cup of water and boiled till the volume is reduced to ½ cup. The decoction is strained and taken with equal amount of cow milk twice daily for 20-25 days. Leucorrhea (termed by the Kavirajes as shet prodor). 10g of raw bark is crushed and boiled in 3 cups of water till the volume is reduced to 1 cup. The decoction is strained and taken twice daily for 1-2 months. To increase digestion, relieve constipation and flatulency. 5-10g of dry bark of *Ficus hispida* is crushed and boiled in 4 cups of water till the volume is reduced to 1 cup. The decoction is strained and added to equal amount of arok pudina (distillate from leaves of *Mentha spicata*) or seeds of *Carum copticum* and taken twice daily for 1 month.
47	*Syzygium aromaticum* (L.) Merr. & L. M. Perry	Myrtaceae	Lobongo	Flower, oil	Digestive inability, flatulency. 1g of dried flower of *Syzygium aromaticum* is mixed with 1g of dried rhizome of *Zingiber officinale* and 500 mg rock salt, powdered and taken after meals 2-3 times daily for 15-20 days. Nerve weakness, sexual weakness. 1g dried and powdered flower of *Syzygium aromaticum* is mixed with equal amounts of dried and powdered whole plants of *Asparagus racemosus* and *Withania somnifera* and taken with 1 glass of milk twice daily for 1-2 months. Toothache. Cotton soaked in oil is applied to base of affected tooth. Rheumatic pain. 10 ml of oil is mixed with 100 ml of pure mustard oil and kept in an air-tight container. When necessary, a little amount of the mixture is lightly massaged to the affected area.
48	*Boerhaavia diffusa* L.	Nyctaginaceae	Punornoba	Whole plant, leaf, root, seed	Edema, coughs. Juice from macerated whole plant, decoction of whole plant or dried whole plant is orally administered. Cataract, external infections, antidote to poisoning. Kohl made from juice from whole plant is applied to eyes or infected area. Sex stimulant, carminative, side pain, epilepsy. Seeds are taken. Side pain. Leaves and roots are tied to the waist. Chronic inflammation of eyes. Juice from macerated whole plant is applied to the eyes with honey.
49	*Sesamum indicum* L.	Pedaliaceae	Tiil	Seed	To increase blackness of hair. 1g of seeds of *Abrus precatorius* is macerated and mixed with 100 ml of oil from seeds of *Sesamum indicum* and 200 ml juice obtained from macerated leaves of *Wedelia chinensis*. The mixture is heated over a low flame till oil only remains. The oil is strained and applied to the hair once regularly for 1-2 months.

Table 1: Continue

50	*Piper betle* L.	Piperaceae	Paan	Leaf	Ordinary fever. 15 mg camphor extracted from wood of *Cinnamomum camphora* is mixed with 3 teaspoonfuls of juice obtained from macerated leaves of *Piper betle* or macerated leaves of *Tinospora cordifolia* and taken 2-3 times daily.
51	*Piper cubeba* L.f.	Piperaceae	Kabab chini, Kop chini	Fruit	Sexual stimulant, promeho (local name by the Kavirajes for gonorrhea), headache, to maintain healthy functions of kidneys and reproductive organs. Tablets made from fruits of *Piper cubeba*, bark of *Cinnamomum verum*, wood distillate of *Aquilaria agallocha* and honey are taken as sex stimulant. 2g of powdered fruit of *Piper cubeba* is taken with 1g shora (unidentified) thrice daily for gonorrhea. 3g powdered fruit of *Piper cubeba* is mixed with 3g seeds of *Foeniculum vulgare*, boiled in water and taken twice daily for 7 days for headache, and to maintain healthy functions of kidneys and reproductive organs.
52	*Piper longum* L.	Piperaceae	Pipul	Root, flower, fruit, sap	To improve functions of stomach, spleen and liver, swellings of liver or spleen, cough, mucus, asthma, rheumatic pain, night blindness, snake bite, beri beri.
53	*Piper nigrum* L.	Piperaceae	Gol morich	Flower, fruit	To improve functions of stomach, liver and heart, digestive aid, carminative. Fruits are taken. Body ache or puerperal fever in new mother. Dried and powdered fruits are orally taken. Baldness. Dried and powdered fruits are mixed with powdered sea salt and juice from a small onion and applied to the scalp for a few days. Excessive thirst, body ache, weakness, spermatorrhea, low heart beat, cardiovascular disorders. Juice from macerated flower is taken with sugar. Cholera. Equal amounts of powdered bark of *Calotropis gigantea* and black peppers (fruits of *Piper nigrum*) are orally taken. Gonorrhea. Seeds of *Tephrosia purpurea* are taken with fruits of *Piper nigrum*. Severe stomach pain. Pills made from bark of root of *Tephrosia purpurea* are taken with fruits of *Piper nigrum*.
54	*Plumbago zeylanica* L.	Plumbaginaceae	Rokto chita, Shet chita	Root	Gastric and peptic ulcer. 200 mg of dried and powdered root is mixed with 25-30 mg of sweet yoghurt and taken twice daily after meals for 1-2 months. Hemorrhoids (piles). 200 mg of dried and powdered root is mixed with butter, mishri (crystalline sugar) or ghol (local term for residual portion of milk from which butter has been extracted) and taken twice daily for 1-2 months. Obesity. 100 mg of dried and powdered roots is mixed with 300 mg purified gulgul (unidentified) and taken with warm water for 1-2 months.
55	*Nigella sativa* L.	Ranunculaceae	Gol morich	Seed	Malaria. Juice obtained from macerated leaf of *Ocimum sanctum* is taken with seeds of *Nigella sativa* as treatment for malaria.
56	*Rosa damascena* Mill.	Rosaceae	Golap	Flower	To strengthen heart. Distillate of leaves of *Tinospora cordifolia* are mixed with roots of *Glycyrrhiza glabra*, flowers of *Rosa damascena*, gao joban (unidentified), niluf (unidentified), and shahtara (Unani medicinal ingredient usually used for removing foul odor from nose).

Table 1: Continue

57	*Aegle marmelos* (L.) Corr.	Rutaceae	Bel	Leaf, bark, root, flower, fruit,	Blood dysentery. 1g of dried and powdered leaves and stems of *Tylophora indica* is mixed with equal amount of powdered pulp of young fruit of *Aegle marmelos* and taken with water 3-4 times daily for 7-10 days. Juice obtained from macerated bark of *Aegle marmelos* is taken with 25g milk and cumin for treatment of spermatorrhea. Root is used as antidote to poisoning during snake bite. Pulp of fruit is taken orally to increase functions of brain, stomach, heart, and liver. Powdered fruit is taken with josanda (unidentified) for diarrhea and dysentery. Bark of tree and roor of tress is orally taken as treatment for low density of semen, insomnia, and weakness of heart. Leaves are orally taken for mucus and fever with mucus. Flowers are orally taken to relieve excessive thirst, vomiting, and diarrhea. Sherbet prepared from fruit pulp relieves constipation and is nutritious.
58	*Santalum album* L.	Santalaceae	Chondon	Wood, essential oil	Headache, chronic coughs, discoloration of facial skin, gonorrhea. Powdered wood is soaked in water and applied as poultice to forehead for treatment of headache. Essential oil is taken for chronic coughs. Powdered wood soaked in water is applied to face to remove spots and skin discoloration. 5-10 drops of essential oil is taken with sugar for gonorrhea. Essential oil is also taken to strengthen heart, stop abnormal palpitations of heart, hypertension, and as a blood purifier.
59	*Madhuca indica* J.F. Gmel.	Sapotaceae	Mohua	Leaf	To increase strength, sex stimulant; burning sensations, infections.
60	*Withania somnifera* (L.) Dunal	Solanaceae	Ashwogondha	Whole plant, leaf, root, seed	Mental and physical weakness. 1g of powdered seeds of *Abrus precatorius* is added to equal amounts of dried and powdered whole plants of *Withania somnifera* and *Asparagus racemosus* and taken twice daily with milk for 20-25 days. Nerve weakness, sexual weakness. 1g dried and powdered flower of *Syzygium aromaticum* is mixed with equal amounts of dried and powdered whole plants of *Asparagus racemosus* and *Withania somnifera* and taken with 1 glass of milk twice daily for 1-2 months. Acne on the back, infections in organs like throat, rectum, painful swellings. A poultice of macerated leaves and roots is applied. Infrequent urination, to induce sleep, fever, blood purifier, vitiligo, to improve color and texture of skin. Seeds are taken.
61	*Aquilaria agallocha* Roxb.	Thymeliaceae	Agor	Wood, resin within the trunk	Increased heart palpitations due to cold, mucus, coughs, asthma, epilepsy, foul odor within mouth, diuretic, body weakness. Resin within the trunk is taken for the afore-mentioned conditions. Pain, rheumatic pain, joint pain, paralysis, to strengthen gums, to increase blood flow to the brain, insect repellent. Ash from burnt wood is applied to gums for strengthening. Distillate prepared from wood is used for the other afore-mentioned purposes. Sex stimulant. Tablets made from fruits of *Piper cubeba*, bark of *Cinnamomum verum*, wood distillate of *Aquilaria agallocha* and honey are taken as sex stimulant.

Table 1: Continue

62	*Nyctanthes arbor tristis* L.	Verbenaceae	Sheuli, Shipilika	Leaf, root	Fever, helminthiasis, pain.
63	*Vitex negundo* L.	Verbenaceae	Nishinda	Leaf, seed	Pain, joint pain, inflammation. 1.5 – 4g macerated leaf is applied topically. To reduce semen volume, to reduce sexual impulse. 2-3g seed is taken.
64	*Amomum aromaticum* Roxb.	Zingiberaceae	Elach	Fruit	To induce a pleasant state of mind, stomach, liver, kidney, mental and nervous disorders, to increase stomach functions, digestive aid, dysentery, diarrhea, headache, epilepsy, heart palpitations, mucus, coughs, rheumatism. Fruits are taken.
65	*Elettaria cardamomum* (L.) Maton	Zingiberaceae	Choto elach	Fruit	Chronic fever, malarial fever. Dried and powdered leaves of *Tinospora cordifolia* are taken with bongsholochon (unidentified) and powdered fruits of *Elettaria cardamomum*.
66	*Curcuma longa* L.	Zingiberaceae	Holud	Rhizome	Edema. Pills made from leaves of *Calotropis gigantea* and rhizomes of *Curcuma longa* are taken for edema (termed by the Kavirajes as shoth rogh).
67	*Zingiber officinale* Roscoe	Zingiberaceae	Ada	Rhizome (dried powdered rhizome known locally as ada shoont)	Rheumatic pain, joint pain. 500 mg of dried and powdered roots of *Clitoria ternatea* are added to 1g of dried and powdered rhizomes of *Zingiber officinale* and mixed with slightly warm water. The mixture is taken twice daily for 15-20 days. Throat pain, coughs. 500 mg rhizome of *Acorus calamus* is taken with dried, powdered rhizomes of *Zingiber officinale* and honey 2-3 times daily. Digestive inability, flatulency. 1g of dried flower of *Syzygium aromaticum* is mixed with 1g of dried rhizome of *Zingiber officinale* and 500 mg rock salt, powdered and taken after meals 2-3 times daily for 15-20 days. Intestinal pain in children. Juice obtained from macerated leaf of *Ocimum sanctum* is administered with rhizome of *Zingiber officinale* as treatment of intestinal pain in children.

[1]Hingul. Hingul is a Kannada (south Indian dialect) word and refers to the herb *Balanites aegyptiaca* (L.) Delile, (Family: Balanitaceae). In the Indian traditional system of Ayurvedic medicine, the leaves, seeds and the fruits are used as purgative and anthelmintic. It is also useful in burns, cough, and colic. The plant in the dried and powdered form is imported from India and used by the Kavirajes of Khulna City.

[2]Barasingha is a species of deer (*Rucervus duvaucelii*) native to India and Nepal. The horns of the deer are imported from India and used by the Kavirajes of Khulna City.

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