

Ethnobotanical survey regarding the management of liver disorders by Traditional healers of Vellore district, Tamil Nadu, India

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ABSTRACT

Background: The present study was based upon the ethnomedico-botanical survey on health practices by the tribal and non tribal village vaidyas (healers).

Objectives: Present paper reports inventory of health practices on liver disorders used by vaidyas of Vellore district, Tamil Nadu, India.

Materials and methods: A structured interview was conducted for 64 vaidyas covering areas like understanding the disease, perception about cause, symptoms, classification of this disease, diagnostic and prognostic methods used, treatment given, sources of plant materials used, process methods adopted, dosage, dietary practices followed and referral for further treatment.

Results: More than 60% of the village vaidyas had clear understanding regarding the various aspects of liver diseases. The study identified 47 species of medicinal plants, 30 formulations and various dietary practices used by the vaidyas in the management of liver disorders.

Conclusion: This study documents treatment and practices followed by vaidyas. Scientific studies done using these formulations/practices may help health practioners to practice evidence based medicine.

Key words: Medicinal plants, Vellore district, tribals, Tamil Nadu, Traditional healers, Siddha

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INTRODUCTION

Local health traditions have traditionally played an important role in supporting the primary health care needs of rural community in India. They have symbiotic relationship with codified systems like Ayurveda and Siddha systems of medicine. Liver disorders are one of the common health problems for which public seek the help of traditional healers even today and it is almost a pan-Indian phenomena.

The classics of Indian Traditional Medicine, Siddha describes a number of acute and chronic diseases affecting liver, which manifest as varying degrees of jaundice. Jaundice (Siddha term - *Kamalai*) is one of the foremost conditions described in this context which essentially represent acute nonobstructive and obstructive jaundice. The texts also describe chronic liver disorders with jaundice associated with symptoms like edema, fever and diarrhea.

There are also descriptions of certain other clinical conditions of the liver where jaundice is not the main manifestation, rather there is appetite suppression, anemia - *Udhu kamalai*, *Vellai kamalai* or *Paandu* and some other conditions where liver is found enlarged or inflamed which is classified as *Kalleeral veekkam* or *Yakrit vidradhi* in Ayurveda.

The classical texts approach of the treatment of *kamalai* is the removal of the cause, which is primarily balancing the vitiated *Pita dosha*, removal of the obstructive pathology of biliary tract besides detailed palliative care.^[1]

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The treatment of *kamalai* involves the use of various hepato-protective remedies including suitable dietary management. Various medicinal herbs such as *Phyllanthus amarus*, *Emblica officinalis*, *Curcuma longa*, *Glycyrrhiza glabra*, *Eclipta alba*, *Picrorrhiza kurroo*, *Boerhavia diffusa*, *Indigofera tinctoria*, *Aloe vera*, *Andrographis paniculata*, *Tinospora cordifolia*, and *Aegle marmelos* are very effective in the Management of liver disorders.^[2]

This article documents the management of liver disorders using locally available plant resources, some dietary advice and sources of support and information about this much feared and misunderstood condition, by the traditional healers in Vellore district.

MATERIALS AND METHODS

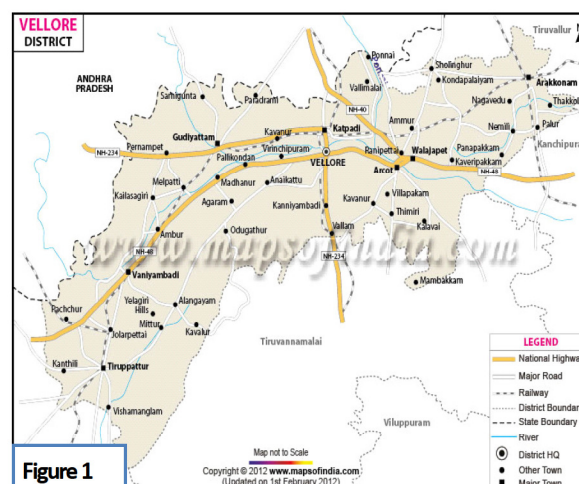
Data Collection

A study was carried out between May 2011 and Dec 2011 in Vellore district, Tamilnadu, India to document and evaluate the knowledge and practice of Traditional healers in the management of liver disorders as a part of the Revitalization of Local health Tradition Project being carried out by Centre for Traditional Medicine & Research, Chennai supported by the Department of AYUSH. The healers were identified through the healers association and grass root field personnel of forest and health department. The authors used a structured interview format covering areas like understanding the disease, perception about cause, symptoms, classification of this disease, diagnostic and prognostic methods, treatment, source of plant material, process methods, dosage, diet and regimen and treatment cost. The interview also covered danger signs and referral to higher medical facilities. 64 healers across the district including those in the forest, hilly region were interviewed at their respective locations. The healers also displayed the plants used which were authenticated by Vd. S. Usman Ali, Pharmacognosist from Center for Traditional Medicine & Research, Chennai, India.

Study Area

According to the district geographical profile published by the District administration of

vellore in the National Information Centre website^[3], Vellore district has an area of 6077 km². Vellore district lies between 12° 15' to 13° 15' North latitudes and 78° 20' to 79° 50' East longitudes in Tamil Nadu State. The district is bound on the northeast by Thiruvallur District, southeast by Kanchipuram District, on the south by Thiruvannamali, on the southwest by Krishnagiri District and on the northwest and north by Andrapradesh state (Figure 1). The average maximum temperature experienced in the plains is 39.5 °C and the average minimum temperature experienced is 15.6 °C. The region experiences an average annual rainfall of 795 mm, out of which North East Monsoon contributes to 535 mm and the South West Monsoon contributed to 442 mm. The district is home to many leather and allied chemical industry, with high degree of ground water contamination and source of potable drinking water is a challenge.



The district is the third largest in population in Tamilnadu, next only to Chennai and Kanchipuram districts, with a population of 39, 28,106 (Census data 2011) with a density 646 /km² (1,673 /sq mi) with a sex ratio M-50.06%, F-49.94% and literacy rate of Male 73.06%, Female 81.98%. Yealagiri hills, part of Jawadth hills fall in the district and also have a tribal population of Irulas and Kurumbas. The infant mortality rate is 24/1000 live birth. The district has a good health infrastructure with two medical college hospitals (Christian Medical College Vellore and Govt. Medical College) and has a network of Govt. Hospitals and Primary health centers.

RESULTS

Profile of the healers

Fifty nine of the sixty four healers studied were males and five were females. Eight of them were tribal vaidyas from Irulas and Kurumbas. The healers had a minimum of ten years of experience while the oldest had fifty years of experience and they belonged to the age group of thirty years to seventy five years. Vast majority of them had acquired the knowledge from gurus not belonging to the family and only 16 were trained directly by their parents. All healers had functional literacy and few of them were Graduates. All healers collected their own herbs and were able to identify the herbs in the wild.

Cause of liver disorders as perceived by the healers

Most healers were aware of the cause of liver disorders not only based on traditional wisdom but also had an understanding of contamination, infection and unhygienic practices. Many opined the food which aggravates *pitta* as the primary cause, followed by contaminated food and water, stale refrigerated food, alcoholism, intake of poisonous material, prolonged intake of medicines, iron deficiency, blood transfusion, sexual transmission including by sweat, saliva, and nutritional deficiency particularly for vellai kamalai (can be equated as anemia). Stone in gall bladder, kidney, and tumor were also mentioned.

Diagnostic and prognostic methods used by the healers

The symptoms of loss of appetite, nausea, vomiting, weakness, sleepy feel, abdominal pain, fever were the symptoms by which healers suspect jaundice. Abdominal distension, itching, generalized edema were the other symptoms by which healers identify chronic liver diseases. Pallor and pedal edema were the indications for *Vellai kamalai* akin to the condition jaundice with anemia. A vast majority of the healers diagnosed primarily by the yellowish discoloration of the conjunctiva, skin and urine, about a third of the healers used pulse diagnosis where *Pitta nadi* being irregular. Eighty percent of the healers diagnosed by soaking boiled rice in

patient's urine and observing the color change. Reversal of symptoms including the yellowish discoloration was taken as positive prognosis. Severe abdominal distension, high colored urine with blood and pale stools were considered poor prognosis and the healer referred the patient to tertiary hospitals. About 20% of the healers had reservation in referring the patients and tried to treat all types of jaundice. A small percentage of healers used biochemical tests including liver function tests and ultrasonogram of the abdomen. However over about 40% healers were aware of the normal value of serum bilirubin and hemoglobin.

Management protocol followed by healers

Dosage form

The healers mostly gave their medicines as a fine paste, juice, decoction or a fine powder. Some plant juices were also used as nasal drops or eye drops. Medicated oil for bath was also recommended after the period the herbal treatment and dietary regimen. They used few of the herbomineral drugs particularly the ones containing iron as *Parpam (Bhasma)* or *Chenduram*.

Ingredients

Though in jaundice it is generally perceived single herbal ingredient formulation constitutes the major choice, in the study area poly ingredient formulations were not uncommon. Spices like garlic, cumin seeds, ginger and black pepper were the other ingredients which were used to enhance the primary drug pharmacological action and help stimulate appetite. The choice of ingredients depended upon the additional symptoms present. A combination up to five herbal ingredients was used in the treatment. In all forty seven medicinal plants belonging to twenty seven families and three inorganic ingredients (*mandooram*, *vediuppu* and *annabedhi*) were used. Leaves constituted the most commonly used plant part, followed by root while herbs were used as whole herb (Table 1). Among the herbs, *Phyllanthus amarus* and *Eclipta alba* were the most frequently used as they were freely available locally, while the Kurumba tribes

used the tender leaf of *Thespesia populnea*. The use of Himalayan herb *Picrorhiza kurroa* by a healer in chronic liver disorders showed that the healers not only used local herbs but also herbs from other region probably acquiring the knowledge from books.

Duration of treatment

Most healers recommend a minimum of three days of medication for acute condition while for chronic liver diseases treatment extends up to forty days.

Adjuvant

Butter milk and goat's milk were the main adjuvant recommended by the healers probably because of their low fat content, easily digestible character. Lemon juice, ginger juice, and honey were other preferred adjuvants.

Dietary practices

The traditional healers emphasised on balancing the six tastes - sweet, salt, sour, bitter, astringent and pungent (hot). Healers considered to have an excess or deficiency of these tastes in the diet unwise, but bitter and sweet tastes were given importance in liver diseases. Bitter herbs were prescribed to correct liver sluggishness, and also bitter foods added to the diet to improve digestive function. Bitter vegetables like bitter gourd and the bitter variety of drumsticks were advised to jaundice patient. The most frequently used spices were turmeric, garlic, cumin seeds, black pepper and asafetida. These spices were also included in the drug formulations which were essentially decoctions, plant juices or freshly prepared pastes of leaves.

For easy digestion, sweet foods in liquid form were advised such as sugarcane juice, orange juice and juices of other fresh fruits. Sugar cane juice with lemon and ginger were recommended by the healers to provide instant energy and enhance appetite. Healers also recommended dry grapes and pomegranate as beneficial for jaundice, though it has a slight sour taste. Healers felt that fresh vegetables must be included in the diet. These vegetables

must be cooked in minimum oil and kept as green as possible. The adjuvant for most medicines was goat's milk or butter milk as they have relatively low fat. Healers opined that even curds must not be given to the jaundice patient. Restriction of sour and salt taste food was stressed due to the fact they vitiate *Pitta dosha*. According to healers, other foods to be avoided or taken in moderation included full fat dairy products, fried foods, red meat and vegetable oils. If used, its digestibility was assisted by combining with lemon juice.

Common formulations used by the healers

Formulation- 1

A decoction of *Rheum emodi* (15 g) was used for treating constipation, pruritis and oliguria.

Formulation- 2

A decoction of *Picrorhiza kurroa* (15 g) was used for treating oliguria.

Formulation- 3

Leaf Juice of *Coccinia indica* and *Ricinus communis* was used to relieve constipation.

Formulation- 4

The root of *Citrullus colocynthis* was soaked in goat's milk and used as a nasal drop to reduce the intensity of yellowish discoloration.

Formulation- 5

The juice extracted from the root of *Alangium salviifolium* was used as an ophthalmic application.

Formulation- 6

Two grams of the seed powder of *Cuminum cyminum* was administered with lemon juice.

Formulation- 7

The following herbs were made into fine powder individually and subsequently all were homogenously mixed and administered twice a day for 40 days. Whole herb of *Phyllanthus amarus*, *Eclipta alba*, Roots of *Aloe vera*, *Glycyrrhiza glabra*, *Azima tetracantha*, flower of *Azadirachta indica*, seed of *Cuminum cyminum*, *Zingiber officinale*, *Piper nigrum*, *Piper longum* were administered in chronic liver diseases.

Formulation- 8

Two gram of powder of *Cynodon dactylon* was given if itching present.

Formulation- 9

Fine paste of the leaves of *Aegle marmelos* - size of lemon was given thrice daily with buttermilk.

Formulation- 10

Fine paste of the leaves of *Citrullus colocynthis* (5 g) was given with buttermilk or goat's milk for jaundice with anasarca.

Formulation- 11

The mixture of the fine powder of bark of *Sterculia foetida*, root of *Toddalia asiatica* and *Phyllanthus amarus* (2 g) twice a day was given with buttermilk.

Formulation- 12

The mixture of fine powder of the shoot of *Musa paradisiaca* and the whole plant of *Enicostemma littorale* (2 g) was given twice a day with buttermilk.

Formulation- 13

The fine paste of the leaves of *Phyllanthus amarus*, *Marsilea quadrifolia* and *Eclipta alba* (1/2 tps) was given with butter milk for 3 days.

Formulation- 14

The following herbs were made into fine powder separately and mixed to homogeneity and administered twice a day with honey for sixty days - whole herb of *Eclipta alba*, *Phyllanthus amarus*, leaves of *Indigofera tinctoria*, *Centella asiatica*, *Mollugo lotoides*, *Solanum nigrum* and *Acalypha indica*.

Formulation- 15

Fine paste of *Terminalia chebula*, *Terminalia belerica*, *Embllica officinalis* soaked in goat's bile juice for 3 hours and administered (5 g) to patients twice daily for 15 days with lemon juice. After 15 days a fine paste of *Eclipta alba* and *Phyllanthus amarus* (5 g) was given twice daily for 15 days with buttermilk.

Formulation- 16

The decoction of *Phyllanthus amarus*,

Glycyrrizha glabra and *Costus speciosus* was mixed with 500 ml of sesame oil and boiled to dehydrate, filtered. This oil was applied to the patients head and given bath for two days a week.

Formulation- 17

The juice of *Saccharum officinarum* was kept open in sunlight in a vessel for three hours without shaking, the impurities which collects on the surface were removed and the juice was transferred in to a bottle and buried in an earthen pit of black soil for 4-8 days and was given to patient (1 ounce) twice daily.

Formulation- 18

The fine paste of the leaves of *Thespesia populnea*, 10 flakes of *Allium sativum* and 10 numbers of *Piper nigrum* (2 g) was mixed with 50 - 100 ml of goats milk, half of the medicine was given internally to the patient and the remaining half was applied on the patient's head followed by bath after ½ hour.

Formulation- 19

The mixture of the following was given to the patient once a day - cows urine 100 ml, 50 ml each of juice of *Allium cepa* (small country variety), goat's milk and juice of the whole herb of *Phyllanthus amarus*.

Formulation- 20

Ten grams of the fine paste of *Phyllanthus amarus* mixed with 100 ml of goat's milk and was given only in the morning for 3 days.

Formulation- 21

One hundred ml of the juice of whole herb of *Eclipta alba* was mixed with 50 g of fine paste of *Piper betel* and kept in sunlight for 5 days till it dried completely. Dose was ½ g twice to children and 1 gm twice to adult. This paste was used within 3 month of preparation.

Formulation- 22

The mixture of fine paste of leaf of *Azima tetracantha* (1/2 inch), one whole herb of *Phyllanthus amarus*, and 1 g of *Allium sativum* was given 5g twice daily with buttermilk for 7 days.

Formulation- 23**Vegunaadhy ennai**

Three grams of rock salt, one gram of *Ferula asafetida* and 50 g of *Allium sativum* were soaked in 100 g of castor oil and an oil formulation was prepared from it. 5 ml of this oil was given with one ounce of cow's milk in the morning in empty stomach to relieve constipation.

Formulation- 24

A decoction was prepared from rhizome of *Glycyrrhiza glabra*, bulb of *Allium sativum* and seeds of *Cuminum cyminum* and given to the patient to improve appetite.

Formulation- 25

In early stage of Jaundice, *Aloe vera* juice was extracted from the leaf by adding powder of *Terminalia chebula* and 50 ml of the juice was given along with seed powder of *Cuminum cyminum* and root of *Phyllanthus amarus* once in the morning for three days. Rice cooked with milk was the prescribed diet.

Formulation- 26

For early jaundice - rock salt processed in the juice of *Acalypha indica* was given to induce purgation. This was considered to cure jaundice faster.

In slightly advanced stage - a fine paste of *Phyllanthus amarus* and *Eclipta alba* was administered twice a day - about five grams.

A fine paste of leaf of *Flueggea virosa* five grams twice a day was also suggested by healer.

Advanced stage - a fine paste of *Phyllanthus amarus*, *Emblica officinalis*, *Allium sativum* and *Eclipta alba* was given.

Formulation- 27

Ten grams of the fine paste of the leaves of *Aegle marmelos* was given daily with milk to prevent further complication.

Formulation- 28

10 g each of the fine paste of the leaves of *Eclipta alba*, *Pergularia extensa* and *Leucas aspera* was given with buttermilk once a day in the morning for 7 days.

Formulation- 29

The juice extracted from the fistful of the *Moringa oleifera* leaves added to the paste of four flakes of *Allium sativum* and 1 g of *Piper nigrum* was given for three days.

Formulation- 30

An amulet was made with the root of *Crataeva nurvala* and tied around the arm.

Classical medicines were also used by traditional healers such as, vedi annabedhi chendooram, annabedhi chendooram, mandoorathy chendooram (100 - 200 mg) and drakshadi kudineer (30 ml) to be given daily.

DISCUSSION

From the above study it is very clear that more than 60% of the village vaidya community had clear understanding regarding the various aspects of liver diseases like causes of the disease, symptoms, classification of disease, diagnostic methods, disease prognosis, drug administration, diet restrictions and so on. Many associated complications could be identified by the vaidyas like anemia, dropsy, ascites with multi drug delivery system. This clearly confirms the ability of the healers to distinguish different clinical manifestations. But most of them have to be trained for effective referral system in complicated disease manifestation.

Most of the vaidyas used goat's milk as their adjuvant of their drug. This could be because of the easily digestible nature of the goat's milk. It was interesting to note that several spices like turmeric, pepper, ginger were used in the treatment and as culinary advice are scientifically proved for their hepatoprotective properties. It was noteworthy that in liver disease associated with hemolysis, the usage of plant drugs and herbomineral drugs like iron, manduram (cast iron), vediuppu (potassium nitrate) bestow the medicine preparation skills of vaidyas and their deep knowledge in the system they were practicing. Their advice on diet restriction was note worthy. High intake of fresh juices and low or nil fat diet was advised for hepatitis sufferers. This was probably because of their understanding of the functions of the liver and

Table 1: Plants used by the healers in combination or as individual herb.

S.No.	Tamil name	Botanical name	Family	Part used
1.	Karisalai	<i>Eclipta alba</i>	Compositae	Whole plant
2.	Keelanelli	<i>Phyllanthus amarus</i>	Euphorbiaceae	Whole plant
3.	Amanakku	<i>Ricinus communis</i>	Euphorbiaceae	Leaves
4.	Iravel sinni	<i>Garcinia morella</i>	Guttiferae	Root
5.	Kadugarohini	<i>Picrorhiza kurroa</i>	Scrophulariaceae	Root
6.	Kovai	<i>Coccinia indica</i>	Cucurbitaceae	Leaves
7.	Mavilangam	<i>Crataeva nurvala</i>	Cappardiaceae	Bark
8.	Kummati	<i>Citrullus colocynthis</i>	Cucurbitaceae	Root
9.	Azhingil	<i>Alangium salviifolium</i>	Alangiaceae	Root
10.	Seerakam	<i>Cuminum cyminum</i>	Umbelliferae	Fruit
11.	Elumichai	<i>Citrus aurantifolia</i>	Rutaceae	Fruit
12.	Kattrazhai	<i>Aloe vera</i>	Liliaceae	Root, Pulp
13.	Adhimadhuram	<i>Glycyrrhiza glabra</i>	Leguminosae	Rhizome
14.	Changan	<i>Azima tetraacantha</i>	Salvadoraceae	Root
15.	Vembu	<i>Azadirachta indica</i>	Meliaceae	Flower
16.	Chukku	<i>Zingiber officinale</i>	Zingiberaceae	Rhizome
17.	Milagu	<i>Piper nigrum</i>	Piperaceae	Fruit
18.	Thippili	<i>Piper longum</i>	Piperaceae	Fruit
19.	Kadukkaithol	<i>Terminalia chebula</i>	Combretaceae	Fruit
20.	Nellikai	<i>Emblica officinalis</i>	Euphorbiaceae	Fruit
21.	Thandrikai	<i>Terminalia belerica</i>	Combretaceae	Fruit
22.	Arugampul	<i>Cynodon dactylon</i>	Gramineae	Grass
23.	Vilvam	<i>Aegle marmelos</i>	Rutaceae	Leaves
24.	Perumaram	<i>Sterculia foetida</i>	Sterculiaceae	Bark
25.	Milagaranai	<i>Todallia asiatica</i>	Rutaceae	Root
26.	Vaazhaithandu	<i>Musa paradisiaca</i>	Musaceae	Stem
27.	Vellarugu	<i>Enicostemma littorale</i>	Gentianaceae	Whole herb
28.	Aaraikeerai	<i>Marsilea quadrifolia</i>	Marsileaceae	Leaves
29.	Neeli	<i>Indigofera tinctoria</i>	Leguminosae	Leaves
30.	Valaarai	<i>Centella asiatica</i>	Umbelliferae	Whole herb
31.	Siruserupadai	<i>Mollugo lotoides</i>	Ficoidaceae	Whole herb
32.	Manathakaali	<i>Solanum nigrum</i>	Solanaceae	Leaves
33.	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	Leaves

Table 1: Plants used by the healers in combination or as individual herb.

S.No.	Tamil name	Botanical name	Family	Part used
34	Kozhtam	<i>Costus speciosus</i>	zingiberaceae	Root
35	Karumbu	<i>Saccharum officinarum</i>	Gramineae	Juice
36	Poovarasu	<i>Thespesia populnea</i>	Malvaceae	Leaves
37	Poondur	<i>Allium sativum</i>	Liliaceae	Bulb
38	Vengayam	<i>Allium cepa</i>	Liliaceae	Bulb
39	Vettilai	<i>Piper betle</i>	piperaceae	Leaves
40	Pudina	<i>Mentha arvensis</i>	Labiatae	Leaves
41	Inji	<i>Zingiber officinale</i>	Zingiberaceae	Rhizome
42	Perungayam	<i>Ferula azeftida</i>	Umbelliferae	Oleoresin
43	Peisurai	<i>Lagenaria siceraria</i>	Cucurbitaceae	Fruit pulp
44	Vellaipoola	<i>Flueggea virosa</i>	Euphorbiaceae	Leaves
45	Thumbai	<i>Leucas aspera</i>	Labiatae	Leaves
46	Veliparuthi	<i>Pergularia extensa</i>	Asclepiadaceae	Leaves
47	Murungai	<i>Moringa oleifera</i>	Moringaceae	Leaves

the role of the bile in breakdown of fat for digestion and assimilation. The high usage of *Phyllanthus amarus* and *Eclipta alba* by many vaidyas were very well documented, scientifically proved for its efficacy against liver diseases like jaundice.^[4] The unique information on tribal community vaidyas usage of *Thespesia populnea* on jaundice can be prioritized for further research.

In conclusion, the study clearly demonstrated that apart from many conventionally used medicinal plants, the traditional healers used other little known herbs which could be the subject for further studies. The local health traditions explored in this study can significantly contribute for the well being of the mankind with locally available natural resources.

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