HEPATOPROTECTIVE PLANTS USED BY THE TRIBALS OF WYNADU, MALAPPURAM AND PALGHAT DISTRICTS OF KERALA, INDIA.

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ABSTRACT: An intensive survey was carried out in Wynadu, Palghat and malappuram districts of Kerala to identify plants used by the tribals were identified in the survey. A brief account of 15 plant species used as single plant remedy for alleviating liver ailments by the tribals is given in this report. This ethnomedical information can lead the development of useful drugs against liver diseases.

INTRODUCTION

Traditional herbal medicine is becoming popular in Kerala for the treatment of several diseases¹. In general the use of herbal drugs is recognized by the keralites as being safer than the modern allopathic ones. In Kerala numerous plants are used to treat various diseases in ethnomedical practices in remote villages and tribal pockets¹,². These plants, to a large extent, are not known to the mainstream population. Herbal medicines play a prominent role in the treatment of liver diseases throughout the world, including India ³,⁴. Drugs are not available in allopathy to treat severe liver disorders⁴. A search for hepatoprotective plants among tribals an villagers could bring to light noael and effective plant drugs⁴,⁵. Therefore, an ethnomedical survey ;and investigation was carried out in selected areas in three districts (Wynadu, Palghat and Malappuram) of Kerala with reference to the treatment of liver diseases with plant drugs by the tribals. Twenty five plant species used by them for this purpose were identified in the survey. Relevant information of 15 of these plants and the methods of treatment followed by the tribal healers are presented.

MATERIALS AND METHODS

Data presented here is based on the outcome of field collection trips conducted during the period of 1991-1994, in tribal domination forest areas. At least 3 collection trips were made to each tribal pockets in three different seasons. Information on the plant species was gathered from village headmen, knowledgeable informants and traditional healers. Interpreters were sought to facilitate conversation.

Plant specimens were collected in the company of local informants to ensure that the proper plant had been obtained. The collected plants were correctly identified at tropical Botanic Garden and research Institute, Palode. All voucher specimens are deposited in the herbarium of the Institute.

RESULTS

The information gathered indicated that at least 25 medicinal plants are in use among the tribals of Wynadu, Palghat and Mallappuram Districts, (Table 1). Out of
these, 15 plants enumerated below are used predominantly as single plant remedies (Table 2).

The Medicinal plants enumerated below are arranged by scientific name, followed by family, local name, habit (H) and the method of treatment (MOT). Data on chemical constituents and pharmacological properties are also given where available.

1. *Areca catechu* Linn. (Arecaceae); Adakkamaram.  
H: A slender tall palm (cultivated); MOT: The pounded mass of young inflorescence about 5-10 gm mixed in goat’s milk is given orally twice daily for 7 days to treat jaundice. The nuts contains several alkaloids belonging to pyridine group, the most important being coline, areacaidine, guavacine, isoguavacine etc. The most active is arecoline. Isoguvacine produces hypotension when administered in cumulative doses.

2. *Arenga Wightii* Griff. (Arecaceae); Ayasthingu, Kudappana; H: Slender medium sized palm (wild); MOTY: Fresh toddy obtained form the young inflorescence is given internally for jaundice, Expressed juice of the fruit husk is also given to treat jaundice. It contains saponins like shatavarin I and IV. Shatavarin IV is a glycoside of Sarsasapogenin with 2 molecules of rhamnose and one molecule of glucose. Shatavarin I has an additional glucose molecule.

3. *Aristolochia indica* Linn. (Aristolochiaceae); Kattukkamooli, Garudakodi, Cheriya arayen; H: Climbing herb; MOT: Paste of tender roots along with cow’s milk administered internally for 5 days to treat jaundice. Roots contain an essential oil and possess bitter taste due to the presence of aristolochic acid. Basides aristolochic acid, roots also yield other phenanthrene derivative, alkaloids, many sesquiterpene derivatives, coumarins etc.

4. *Asparagus racemosus* Willd (Liliaceae); Sathavari, Kilavari. H: A slender straggling shrub with reflexed spine (both cultivated and wild); MOT: Expressed juice of fresh root (20-30 ml) given internally twice daily for 7 days to treat jaundice. Roots roasted and taken on an empty stomach in the morning to treat liver disorders.

5. *Centella asiatica* Urban (Apiaceae); kudagan, Kumara, Varambil, Kodakan, H: A herb with long creeping stem, MOT: Expressed juice of fresh leaves (20-30ml) given internally twice daily for seven days to treat jaundice. There several chemical constituents reported in this species. Asiatic acid is reported from the Indian varieties. A glycoside, asiaticoside shown to be active in the treatment of jaundice has been isolated.

6. *Ceratopteris siliquosa* (L) Copel. (Ceratoptendaceae); Shirunagal, H: An aquatic fern common in fresh water tanks, ponds, marshes and lakes; MOT: Decoction of the whole plant taken internally (25-30ml) twice daily to treat jaundice and other ailments.

7. *Cumunum cyminum* Linn. (Apiaceae); Jera Jeerakom, Cheerakam, H: Annual herb cultivated; MOT: Decoction of the fruit is given in jaundice to purify blood and as diuretic. Fruits contains cumin, volatile oil,
fixed oil, proteins, and flavanoids like glucopyranosides, luteolin and apigenin9.

8. *Curcuma domestica* Valeton (Zingiberaceae); Manjal, H: A rhizomatous herb, Cultivated; MOT: Pounded mass of fresh rhizome, equal to the size of the fruit of *Emblica officinalis* is mixed with calcium hydroxide (equal to the size of the deed of adenanthera pavonia Linn), diluted with water and kept overnight in an airtight bottle. There ounces of the liquid portion from this preparation is given on an empty stomach in the morning for seven days to treat jaundice and other chronic liver disorders. Daily bath is recommended when this drug is administered.

The rhizome is an ingredient in many ayurvedic, Siddha and Unani medicinal formulations particularly for sprains, bruises and respiratory infections. The active ingredient is curcumin. An assymetrical heptanoid obtained on oxidation of curcumin with great biogenetic significance has been reported9.

9. *Desmodium biflorum* Linn. DC (Fabaceae); Cheupulladri, Nilampullari, H: A small erect undershrub covered with fine spreading hairs: MOT: The whole plant is pounded well and 10 gm of this is mixed with goat’s milk, given on an empty stomach in the morning and evening for five days to treat jaundice and other liver complaints.

10. *Ficus racemosa* Linn. (Moraceae); Athi, H: Tree (Wild); MOT: Tender roots and leaves are powdered to make a paste and 5-6 gm taken daily 5 days to treat jaundice. Tender roots powdered well and boiled in Goat’s milk and given for liver complaints.

11. *Hibisucs lampas* Cav. (Malvaceae); Kolukatta, H: Undershrub.; MOT: The expressed juice of the fresh roots (10-15ml) is administered internally for 7 days for treating jaundice.

12. *Impatiens henslowiana* Arn (Balsaminaceae); perumthumba); H: undershrub, wild; MOT: Expressed juice of flowers and tender leaves is used as nasal drops in severe conditions of jaundice.

13. *Ixora coccinea* Linn. (Rubiaceae); manja thetchi, Nedimoorkhan, H: A shrub, wild as well as cultivated. MOT: Powdered mass of fresh roots (10-15gm) in clod water is given for 7 days (thrice daily) to treat jaundice.

14. *Momordica subangulata* Bl.(Cucurbitaceae); Kattupaval, H: Climber, Wild; MOT: fresh juice of tender fruits used for jaundice.

15. *Naregamia alata*. W.&A. (Meliaceae) Nilachara, Nilavepu, H: Undershrub. Wild; MOT: whole plant extract is used for jaundice.

**DISCUSSION**

The present study identified fifteen single drug preparations used by the tribals for liver disorders. Although *A. indica*, *A. racemosus*, *C. asiatica*, *C.cyminum* and *C. domestica* are well known medicinal plants, they are not used for liver disorders in Indian systems of medicine or by main stream population *C. Siliquosa*, *F.racemosa*, *H.lampus* and *I coccinea* are also little known as hepatoprotective plants. *M.Subangulata*, *N.alata* and *I henslowiana* are very attractive novel hepatoprotective plants identified in the present survey which warrant urgent pharmacological evaluation. The efficacy and safety of these plant drugs can be determined using experimental animal models. This should be followed by clinical trials of these drugs. Clinical trials
could establish therapeutic properties. Some of these remedies depending on results of clinical trials could be incorporated in an organized system of Medicare for rural and tribal areas.

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TABLE 1
HEPATOPROTECTIVE PLANTS IDENTIFIED IN A SURVEY CONDUCTED IN
THE TRIBAL POCKETS OF WYNAD, PALGHAT AND MALAPPURAM
DISTRICTS OF KERALA.

| NAME OF THE PLANT        | PARTS USED                  |
|--------------------------|-----------------------------|
| 1. Areca catechu Linn    | Inflorescence               |
| 2. Arenga wightii Griff. | Inflorescence and fruit husk|
| 3. Aristolochia indica Linn | Roots (tender)             |
| 4. Asparagus racemosus Willd. | Roots                      |
| 5. Azadirachta indica A.Juss | Root Bark                  |
| 6. Centella asiatica Urban | Whole Plant                |
| 7. Ceratopteris siliquosa (L) Copel | Whole Plant               |
| 8. Cochlospermum gossypium DC | Root                      |
| 9. Cuminum Cyminum Linn | Fruit                      |
| 10. Curcuma domestica Val. | Fresh rhizome              |
| 11. Desmodium biflorum Linn | Whole plant               |
| 12. Elettaria cardamomum Maton | Seed                     |
| 13. Ficus glomerata Roxb | Fruit                      |
| 14. Ficus racemosa Linn | tender root                |
| 15. Hibiscus lampas Cav  | fresh root                 |
| 16. Ixora coccinea Linn | fresh root                 |
| 17. Impatiens henslowiana Arn | Flowers and leaves         |
| 18. Momordica subangulata Bl. | Fruits (tenders)         |
| 19. Moringa oleifera Lam | Stem bark                  |
| 20. Myristica fragrans Houtt. | Fruit                    |
| 21. Naregamia alata W.&A. | Whole plant                |
| 22. Phyllanthus fraternus Webst. | Whole plant              |
| 23. Piper longum Linn    | Stem                       |
| 24. Ricinus communis Linn | Tender Leaves             |
| 25. Terminalia chebula Retz. | Fruit                    |
| Plant Name                  | Name of tribals                                                                 | District         |
|----------------------------|---------------------------------------------------------------------------------|------------------|
| 1. *Areca catechu* Linn    | Kani, Kurumar, Kurumbar, Paniyan (Adakkamaram)                                  | Wynadu, Palakkad, Malappuram |
| 2. *Arega wightii* Griff.  | Paniyan (Ayasthingu), Kani (Kudappana)                                          | Wynadu, Malappuram |
| 3. *Aristolochia indica* Linn | Kani (Kattukka Mooli), Kurumbar (Garudakodi), Muthuvan (Cheriya arayan)     | Palakkad         |
| 4. *Asparagus racemosus* Willd. | Kani (Shathavai), Kurumbar, Mannan (Kilavari)                                | Palakkad         |
| 5. *Centella asiatica* Urban | Koragar (Kudagon), Kurumbar (Kumara), Kani (Varambil), Hill Pulayar Kodakan | Palakkad         |
| 6. *Ceratopteris siliquosa* (L) Copel | Muthuvan and Kani (Shirunagal)                                                | Palakkad         |
| 7. *Cuminum Cyminum* Linn  | Kani and Kurumbar (Jera), Kani, Paniyan, Irular, Kurumar, Kurichar (Jeeragam). | Wynadu, Malappuram |
| 8. *Curcuma domestica* Valeton. | Kani, Kurichar, Paniyan Kattunaikan, Koragar, Hill Pulayar (Manjal) | Wynadu, Malappuram |
| 9. *Desmodium biflorum* Linn | Kurichar and Kurumbar, Hill Pularyar (Cherupullari) Kani (Nilampullari) | Palakkad         |
| 10. *Ficus racemosa* Linn | Kani, Kurichar, Mannan (Athi)                                                 |                  |
| No.  | Species                                      | Local Names and Locations                                      | Districts          |
|------|---------------------------------------------|----------------------------------------------------------------|-------------------|
| 11.  | *Hibiscus lampas* Cav                       | Kani, Kurumbar, Kuruchar (kolukatta)                            | Palakkad          |
| 12.  | *Ixora coccinea* Linn                      | Kani, Mannan (Manja thetchi), Kurichar, Paniyan, Muthuvan (Nedimoorkhan) | Wynadu, Malappuram |
| 13.  | *Impatiens henslowiana* Arn                | Many Kerala tribes (perumthumba)                               | Wynadu, Palakkad,  |
|      |                                             |                                                                  | Malappuram        |
| 14.  | *Momordica subangulata* Bl.                | Muthuvan Kurichar, Kani and Paniyan (kattupaval)               | Wynadu, Malappuram |
| 15.  | *Naregamia alata* W.&A.                    | Kurumbar, Kani, paniyan, (Nilachar) Mannan, Kurumar, Muthuvan (Nilavepu) | Palakkad          |