FOLK MEDICINE FOR YAKRIT VIKAARA (LIVER DISORDER) - A SCIENTIFIC REVIEW

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INTRODUCTION

Medicinal plants have been used in India since the time immemorial for curing diseases of man and his domestic animals. To a certain extent of period the use of medicinal plants for curing disease was a family profession. The well-known, unrecorded knowledge about medicinal herbs used to be passed from generation to generation in the family. Hence from time to time due to absence of concerned inheritor, the entire information about such healing knowledge was lost¹. Even the written science of Ayurveda suffers from a serious lack of characterization of the medicinal herbs. Hence at this time it becomes obligatory to protect such kind of traditional and National heritage of healing knowledge through documentation. Also detailed investigation and documentation of plants used in local health traditions and pharmacological evaluation of these plants and their taxonomical relatives can lead to the development of invaluable plant drugs for many dreaded diseases². As per WHO, about three quarters of the world’s population currently use herbs and other traditional medicines to cure various diseases, including liver disorders. Several phy-
Tomedicines (medicinal plants or herbal drugs) are now used for the prevention and treatment of liver disorders\(^3\).

Liver is one of the busiest organs of body. Liver has a pivotal role in regulation of physiological processes. From manufacturing of bile for digestion to eliminating toxins from the body, the liver performs more than 500 different functions\(^4\). Furthermore, detoxification of a variety of drugs and xenobiotics occurs in liver. The bile secreted by the liver has an important role in digestion. Unfortunately, with modern-day lifestyle (increased junk food consumption, heavy drinking, incessant smoking, skyrocketing stress levels and self-medication), liver diseases are emerging rapidly\(^5\). Liver diseases can be classified as acute or chronic hepatitis (inflammatory liver diseases), hepatosis (non inflammatory diseases) and cirrhosis (degenerative disorder resulting in fibrosis of the liver). Liver diseases are mainly caused by toxic chemicals (certain antibiotics, chemotherapeutics, peroxidised oil, aflatoxin, carbon-tetrachloride, chlorinated hydrocarbons etc.), excess consumption of alcohol, infections and autoimmune disorder. Most of the hepatotoxic chemicals damage liver cells mainly by inducing lipid peroxidation and other oxidative damages\(^6-10\). Enhanced lipid peroxidation produced during the liver microsomal metabolism of ethanol may result in hepatitis and cirrhosis\(^11-13\). Herbal drugs have gained importance and popularity in recent years because of their safety, efficacy and cost effectiveness. In spite of tremendous strides in modern medicine, there are hardly any drugs that stimulate liver function, offer protection to the liver from damage or help regeneration of hepatic cell. Many formulations containing herbal extracts are sold in the Indian market for liver disorders. But management of liver disorders by a simple and precise herbal drug is still an intriguing problem. Hence, there is an ever increasing need for safe hepatoprotective herbal agent\(^14\). Several Indian medicinal plants have been extensively used in the Indian traditional system of medicine for the management of liver disorder. Some of these plants have already been reported as strong antioxidant agent. Keeping all these facts on the background present study was undertaken to document the folk practices available for liver disorder. All related books; Journal and internet data were analyzed. Study showed some of these practices are scientifically proved and some are yet to be proved.

**METHODOLOGY AND RESULT:** Related books, Journal and internet resources were used for data collection. The folk remedies commonly used by the various communities for liver disorder were documented along with available scientific data of related use.

**Table-1, Folk medicine for liver disorder used by the various tribal communities:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the plant</th>
<th>Local or Ayurvedic Name</th>
<th>Traditional uses</th>
<th>Scientific analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Acacia catechu</em> (L.f.) <em>Khadira</em> (Ay)</td>
<td>Heart wood decoction used for liver disorder(^1).</td>
<td>Ethyl acetate extract exhibited significant hepatoprotective activity(^52).</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td><em>Abrus precatorius</em> <em>Gunja</em> (Ay)</td>
<td>Decoction of plant</td>
<td>Hydroalcoholic extract possesses significant hepatoprotective activity(^53).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Species</td>
<td>Common Name</td>
<td>Method of Consumption</td>
<td>Description</td>
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<tr>
<td>3.</td>
<td><em>Acacia leucophloea</em> (Roxb.) Willd.</td>
<td>Kadara (Ay)</td>
<td>One teaspoonful root-powder is taken with a cup of water to cure jaundice.</td>
<td>Hydro alcoholic extract showed significant hepatoprotective activity.</td>
</tr>
<tr>
<td>4.</td>
<td><em>Achyranthes aspera</em> L. (Amaranthaceae)</td>
<td>Apamarga (Ay)</td>
<td>Powder from dried seeds with some sugar crystals is dissolved in water and given twice daily to cure jaundice.</td>
<td>Methanol extract from aerial parts of plant exhibited significant hepatoprotective effect.</td>
</tr>
<tr>
<td>5.</td>
<td><em>Aegle marmelos</em> (L.) corrêa. (Rutaceae)</td>
<td>Vilva (Ay)</td>
<td>Pulp of unripe fruit is mixed with pickled mango (<em>Mangifera indica</em> L.) and lemon (<em>Citrus aruntifolia</em> S.W) given orally for jaundice.</td>
<td>Aqueous extracts of <em>Vilva</em> fruits pulp and seeds are effective in the treatment and prevention of CCl₄-induced hepatic cytotoxicity.</td>
</tr>
<tr>
<td>6.</td>
<td><em>Aloe barbadensis</em> Mill. (Liliaceae)</td>
<td>Kumari (Ay)</td>
<td>Kumari pulp mixed with zinger and black salt used for liver disorder.</td>
<td>Aqueous extract of <em>Aloe barbadensis</em> is significantly capable of restoring integrity of hepatocytes.</td>
</tr>
<tr>
<td>7.</td>
<td><em>Andrographis echioides</em> (L.) Nees</td>
<td>Dontarala-aku (AP)</td>
<td>Whole plant decoction used to cure Liver disease.</td>
<td>No studies are available regarding this use.</td>
</tr>
<tr>
<td>8.</td>
<td><em>Andrographis paniculata</em> (Burm.f.) Nees (Acanthaceae)</td>
<td>Bhunimba (Ay)</td>
<td>Leaf or root decoction filtered and administered for</td>
<td>Aqueous leaf extract showed significant hepatoprotective effects.</td>
</tr>
<tr>
<td>No.</td>
<td>Plant Name</td>
<td>Ayurvedic Name</td>
<td>Description</td>
<td>Studies/Activities</td>
</tr>
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<tr>
<td>9</td>
<td><em>Apium graveolens</em> L. (Apiaceae)</td>
<td>Ajamoda (Ay)</td>
<td>Seeds of <em>A. graveolens</em> used for the treatment of liver and spleen disorders, jaundice. Study reported, the significant hepatoprotective activity of methanolic extract of seeds.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><em>Argemone Mexicana</em> L. (Papaveraceae)</td>
<td>Svarnakshiri (Ay)</td>
<td>Decoction of the leaves is taken internally to cure Hepatitis. Aqueous extract of whole plant possesses significant hepatoprotective activity.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><em>Asparagus racemosus</em> Willd. (Liliaceae)</td>
<td>Shatavari (Ay)</td>
<td>Root extract mixed with milk after boiling it, one spoonful of this consumed with honey per day to cure jaundice. Hepatoprotective activity of ethanol extract of plant against paracetamol induced hepatic damage in albino rats was observed.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td><em>Bacopa monnieri</em> (L.) Wettst. (Scrophulariaceae)</td>
<td>Brahmi (Ay)</td>
<td>Whole plant is used for the treatment of jaundice, liver diseases, spleen disorders, and digestive problems. Methanolic extract of leaves possesses hepatoprotective activity and can render protection against alcohol-CCl4 induced toxicity.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td><em>Balanites aegyptiaca</em> (L.) Delile (Zygophyllaceae)</td>
<td>Ingudi (Ay)</td>
<td>The bark, unripe fruits, and leaves of the <em>B. aegyptiaca</em> are used in folk medicine for the treatment of jaundice, liver disorder. Alcohol extract of B. aegyptiaca bark possesses hepatoprotective activity and can render protection against alcohol-CCl4 induced toxicity.</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Plant Name</td>
<td>Part Used</td>
<td>Preparation and Use</td>
<td>Scientific Report</td>
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<tr>
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<tr>
<td>14.</td>
<td>Benincasa hispida (Thunb.) Cogn.</td>
<td>Kushmanda (Ay)</td>
<td>Water boiled fruit extract is taken orally for curing hepatitis^31.</td>
<td>The hepatoprotective action of aqueous extract has reported^64.</td>
</tr>
<tr>
<td>15.</td>
<td>Beta vulgaris L. (Chenopodiaceae)</td>
<td>Beet root</td>
<td>Root used in traditional medicine for a wide range of diseases including spleen and liver problems and inflammatory disorders^22,^23.</td>
<td>Ethanolic extract of root showed hepatoprotective action against CCl4-induced hepatic damage in rats^65.</td>
</tr>
<tr>
<td>16.</td>
<td>Boerhavia diffusa L. (Nyctaginaceae)</td>
<td>Punarnava (Ay)</td>
<td>Root paste mixed with water used in Liver diseases. About one cup of decoction of leaves is given twice a day to cure Jaundice till cure^45.</td>
<td>Alcoholic extract of whole plant exhibited hepatoprotective activity against CCl4 hepatotoxicity in rats and mice^66.</td>
</tr>
<tr>
<td>17.</td>
<td>Bridelia stipularis (L.) Blume (Euphorbiaceae)</td>
<td>Leikongron (Manipuri)</td>
<td>Leaf juice is applied internally to cure hepatitis^51.</td>
<td>No scientific data available regarding this use.</td>
</tr>
<tr>
<td>18.</td>
<td>Cajanus cajan (L.) Millsp. (Fabaceae)</td>
<td>Kesar (Ay)</td>
<td>Leaf extract is taken as raw internally against hepatitis^51.</td>
<td>Hydroalcoholic extract of the aerial part of plant exhibited hepatoprotective action^67.</td>
</tr>
<tr>
<td>19.</td>
<td>Camellia sinensis (L.) Kuntze (Theaceae)</td>
<td>Shyamaparni (Ay)</td>
<td>Aqueous extract of leaves protects the liver from carbon-tetrachloride-induced damage^68.</td>
<td>Camellia sinensis Linn. is the second most commonly used herb</td>
</tr>
</tbody>
</table>
20. *Canavalia gladiata* (Jacq.) DC. *(Fabaceae)*  
*Adavithamba (AP)*  
Root paste (20 gm) given along with rice gravel for 2 to 3 days to cure enlargement of liver. Root extract protects the liver from severe damage caused by D-GalN<sup>69</sup>.

21. *Carica papaya* L. *(Caricaceae)*  
*Papita (Ay)*  
Ripe fruits prescribed for Hepatitis<sup>51</sup>. Ethanol and aqueous extracts of fruit showed hepatoprotective effect<sup>70</sup>.

22. *Chassalia curviflora* (Wall.) Thwaites *(Rubiaceae)*  
*Vanya sar-pakshi (Ay)*  
Root is used to cure jaundice by Kani tribes of Kerala<sup>45</sup>. No studies are available regarding this use.

23. *Citrus aurantifolia* (Christm.) Swingle *(Rutaceae)*  
*Nimbuka (Ay)*  
Juice of one fruit mixed with sugar, in a glass of water and consumed thrice a day to cure jaundice<sup>15</sup>. Fruit extract proved as hepatoprotective agent against Aflatoxin B1 induced hepatotoxicity.

24. *Clitoria ternatea* L. *(Fabaceae)*  
*Aparajita (Ay)*  
The leaves, seeds, and flowers are used in traditional medicine for liver diseases<sup>25</sup>. Recent study proved the hepatoprotective effect of leaf extract<sup>71</sup>.

25. *Curcuma longa* L. *(Zingiberaceae)*  
*Haridra (Ay)*  
It has been widely used in Asian traditional medicine for loss of appetite, jaundice, liver problems and gall bladder disorders<sup>26</sup>. Ethanol extract showed Hepatoprotective effect against thioacetamide induced liver cirrhosis in rats<sup>72</sup>.
<table>
<thead>
<tr>
<th>No.</th>
<th>Plant Name</th>
<th>Part Used</th>
<th>Description</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.</td>
<td><em>Cuscuta reflexa</em> Roxb. (Ay) (Cuscutaceae)</td>
<td>Decoction of whole plant is taken internally for Hepatitis 51</td>
<td>Ethanol extract of whole plant proved as hepatoprotective drug 73.</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td><em>Dracaena terniflora</em> Roxb. (Agavaceae)</td>
<td>Root used for jaundice 46</td>
<td>No studies are available regarding this use.</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td><em>Eclipta alba</em> L. Hassk. (Ay) (Asteraceae)</td>
<td>Leaf juice mixed in jaggery and 40 gm powder of <em>Piper nigrum</em>, advised to consume with spoonful honey two times daily 15.</td>
<td>As a single drug is already proved as hepatoprotective but no study is available regarding this formulation as hepatoprotective.</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td><em>Ensete superbum</em> (Roxb.) Cheesman (Musaceae)</td>
<td>3 gm of seeds of <em>Brassica juncea</em> (L.) crushed in fruit and consumed a week to cure Jaundice 15.</td>
<td>No study is available on this formulation.</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td><em>Euphorbia nerifolia</em> L. (Euphorbiaceae)</td>
<td>Two drops of latex with jaggery is taken at morning only for few days 15.</td>
<td>Plants having hepatoprotective action but with Jaggery yet to be analyse.</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td><em>Ficus carica</em> L. (Moraceae)</td>
<td>The plant has been widely used for the treatment of liver diseases 28, 29.</td>
<td>Leaves and fruits are already proved as hepatoprotective agent.</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td><em>Gardenia resinifera</em> Roth. (Ay) (Rubiaceae)</td>
<td>A spoonful of powder (Gum exudates)</td>
<td>Study not available</td>
<td></td>
</tr>
</tbody>
</table>
33. *Garcinia pedunculata* (Ay) Brikshamla

Young fruits are taken as raw to get cure from hepatitis. Study on dry fruit for hepatoprotective activity is already documented but effect of young raw fruit yet to be explored.

34. *Gossypium herbaceum* L. (Ay) Karpasam

One spoonful of leaf juice drunk with honey twice a day to cure hepatic disorders. No study is available regarding this use.

35. *Gynura cusimbua* (D.Don.) S.Moore (Asteraceae) Terapaibi (Manipuri)

Juice extracted from succulent stems and leaves are taken orally during Hepatitis. Study yet to be proved.

36. *Hedyotis auricularia* L. (Rubiaceae) Longbankaukha (Manipuri)

Whole plant decoction taken internally for hepatitis. Study yet to be proved.

37. *Juniperus procera* Hochst. Ex Endl. (Cupressaceae) Hapusa (Ay)

The resin of *J. procera* in combination with honey is also used as cure for liver diseases and ulcers. Different fraction obtained from the aerial parts of showed significant activity as hepatoprotective.

38. *Lantana camara* L.(Verbenaceae) Caturangi (Ay)

Decoction of flowering tips taken internally during hepatitis. Several studies have documented this plant as a hepatotoxic agent but effect of flowering tips yet to be proved.

39. *Lawsonia inermis* L. (Ly-Madayantika) (Ay)

A spoonful of leaf juice Water extract of the plant proved as hepatoprotective.
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### 40. *Lepidium sativum* L. (Cruciferae) **Chandrashur** (Ay)

Various parts of plant have been used for the treatment of jaundice, liver problems and spleen diseases. Seed extract proved as hepatoprotective agent.

### 41. *Leucas aspera* (Willd.) Link **Dronapuspi** (Ay)

Decoction of whole plant is taken internally in Hepatitis. Study proved whole plant and leaf separately as hepatoprotective.

### 42. *Luffa acutangula* (L.) Roxb. (Cucurbitace) **Koshataki** (Ay)

Powdered fruit is smelled as snuff to cure the jaundice. Study yet to be proved.

### 43. *Moringa oleifera* Lam. (Morin-gaceae) **Shigru**(Ay)

The leaves, flowers, root, gums, fruit, and seed used for the treatment of liver disease. Almost all part has already proved but effect of gum yet to be explored.

### 44. *Mentha spicata* L. (Lamiaceae) **Pudina** (Ay)

Leaf juice about half Cup, is given at morning and evening for hepatic disorder. Study yet to be proved.

### 45. *Mimosa pudica* L. (Mimosaceae) **Lajjalu** (Ay)

Decoction of root (3 to 4 gm) given along with honey in chronic liver prob-

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thracea) is consumed daily till cure the jaundice\(^{15}\).

40. *Lepidium sa-tivum* L. **Chandrashur** (Ay)

Various parts of plant have been used for the treatment of jaundice, liver problems and spleen diseases.\(^{40}\).

41. *Leucas aspera* **Dronapuspi** (Ay)

Decoction of whole plant is taken internally in Hepatitis.\(^{51}\).

42. *Luffa acutangula* **Koshataki** (Ay)

Powdered fruit is smelled as snuff to cure the jaundice.\(^{15}\).

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The leaves, flowers, root, gums, fruit, and seed used for the treatment of liver disease.\(^{31}\).

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Leaf juice about half Cup, is given at morning and evening for hepatic disorder.\(^{15}\).

45. *Mimosa pudica* **Lajjalu** (Ay)

Decoction of root (3 to 4 gm) given along with honey in chronic liver prob-

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<table>
<thead>
<tr>
<th></th>
<th>Plant Name</th>
<th>Common Name</th>
<th>Description</th>
<th>Medicinal Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.</td>
<td>Musa paradisiaca</td>
<td>Kadali (Ay)</td>
<td>Extract of stem parts is taken orally during Hepatitis.</td>
<td>Leaves and stem extracts proved as hepatoprotective agent.</td>
</tr>
<tr>
<td>47.</td>
<td>Mussaenda glabrata</td>
<td>Shriparni (Ay)</td>
<td>Juice of fresh leaves is taken internally during Hepatitis.</td>
<td>Various leaves extracts has proved as hepatoprotective action in animal study.</td>
</tr>
<tr>
<td>48.</td>
<td>Nigella sativa</td>
<td>Krishna-jeeraka (Ay)</td>
<td>According to Islamic and Arab literature, black seed is one of the most powerful herbal drugs used as liver tonics and remedy for jaundice.</td>
<td>Various recent studies have proved its seed extract and seed oil effected against hepatotoxicity.</td>
</tr>
<tr>
<td>49.</td>
<td>Nyctanthes arbour-tristris</td>
<td>Parijata (Ay)</td>
<td>Decoction of root given internally in Hepatitis.</td>
<td>Study yet to be explored. (Bark and leaf already proved)</td>
</tr>
<tr>
<td>50.</td>
<td>Nymphoides indica</td>
<td>Neyaambel (M)</td>
<td>Paste of whole plant is used in Hepatitis.</td>
<td>Study not available</td>
</tr>
<tr>
<td>51.</td>
<td>Ocimum sanctum</td>
<td>Tulashi (Ay)</td>
<td>Juice of fresh leaves about one spoonful is given twice daily for a 10 days in chronic liver problem.</td>
<td>Alcoholic leaves extracts has proved as hepatoprotective agent.</td>
</tr>
<tr>
<td>52.</td>
<td>Paspalum scrobiculatum</td>
<td>Kaudravam (Ay)</td>
<td>Plant is used for inflammation and disorder of liver.</td>
<td>Several studies have proved the plant as a hepatoprotective.</td>
</tr>
<tr>
<td>53.</td>
<td>Pergularia Uttamarani</td>
<td>In tradition</td>
<td>Aqueous and ethanolic extract of the</td>
<td></td>
</tr>
</tbody>
</table>
daemia (Forssk.) Chiov. (Apocynaceae) tional system of medicine the whole aerial part of the plant is extensively used for the treatment of jaundice, liver diseases.\(^{33,34}\)

54. *Pimpinella anisum* L. (Umbelliferae) Sweet cumin The plant is used as digestive, carminative, antispasmodic, and liver disorders.\(^{35}\) Various studies have proved its seeds extract as hepatoprotective.

55. *Piper longum* L. (Piperaceae) *Pippali* (Ay) 1-2 fruits boiled with milk in cirrhosis gradually increased up to 10 then again decreased.\(^{16}\) Hepatoprotective effect of *Piper longum* milk extract was observed in CCl4 induced hepatic damage.\(^{77}\)

56. *Punica granatum* L. (Punicaceae) *Dadimba* Half cup of fruit juice for twice a day given for two weeks to the patients suffering from jaundice.\(^{15}\) Several studies are available indicated its hepatoprotective action in different form and part.

57. *Phyllanthus amarus* Schumach. & Thonn. (Euphorbiaceae) *Thamalaki* (Ay) Leaves mixed with curd given orally for jaundice-3 spoonfuls twice a day for 7 days. A cup of decoction of entire plant is given Efficacy with curd yet to be proved.
<table>
<thead>
<tr>
<th>No.</th>
<th>Plant Name</th>
<th>Use</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>58.</td>
<td><em>Physalis minima</em> L. (Solanaceae) <em>Mrudu kunchika</em> (Ay)</td>
<td>Leaf extract (15-20ml) mixed with buffalo or sheep curd combinations</td>
<td>Leaf extract already proved but study not available with buffalo or sheep curd.</td>
</tr>
<tr>
<td>59.</td>
<td><em>Picrorhiza kurroa</em> Royle ex Benth. (Ay) <em>Katuki</em></td>
<td>One teaspoonful of root powder mixed with honey should be taken thrice daily</td>
<td>Several studies have proved as it is potent hepatoprotective agent.</td>
</tr>
<tr>
<td>60.</td>
<td><em>Portulaca oleracea</em> L. (Portulacaceae) Hog weed</td>
<td>Used for the treatment of gastrointestinal &amp; liver disorders</td>
<td>Several in vivo study proved that efficacy.</td>
</tr>
<tr>
<td>61.</td>
<td><em>Ricinus communis</em> L. (Euphorbiaceae) <em>Eranda</em> (Ay)</td>
<td>Extract of one leaf is added in half cup of fresh unboiled cow milk and given to cure Jaundice</td>
<td>Leaves extracts has documented as hepatoprotective agent through in vivo study.</td>
</tr>
<tr>
<td>62.</td>
<td><em>Saccharum officinarum</em> L. (Poaceae) <em>Ikshu</em> (Ay)</td>
<td>Juice is given twice a day to cure Jaundice</td>
<td>Juice is documented as hepatoprotective agent.</td>
</tr>
<tr>
<td>63.</td>
<td><em>Solanum nigrum</em> L. (Solanaceae) <em>Kakamaci</em> (Ay)</td>
<td>The plant is a household remedy for liver disorders, jaundice and cirrhosis</td>
<td>Aqueous and ethanol extracts proved as hepatoprotective agents.</td>
</tr>
<tr>
<td>64.</td>
<td><em>Tabernae-montana</em> di-varicata (L.) R.Br. ex <em>Nandivirsha</em> (Ay)</td>
<td>Extract of dried roots used for jaundice</td>
<td>Study on other part has already been documented but effect of root yet to be explored.</td>
</tr>
<tr>
<td>No.</td>
<td>Scientific Name</td>
<td>Common Name (Ay)</td>
<td>Description</td>
</tr>
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<tr>
<td>65.</td>
<td><em>Tamarindus indica</em> L. (Casealpiniaceae)</td>
<td>Cincha</td>
<td>Rind of pods is burnt. Then 3-5 gm of ash mixed in one spoonful of cow’s urine and taken orally for three to four times a day to cure jaundice. Study should be done to see the efficacy with cows urine as not yet proved.</td>
</tr>
<tr>
<td>66.</td>
<td><em>Tamarix nilotica</em> (Ehrenb.) Bunge (Tamaricaeae)</td>
<td>Jhauber</td>
<td>Mentioned as “Canon of medicine” for the treatment of liver. Recent studies have proved its efficacy.</td>
</tr>
<tr>
<td>67.</td>
<td><em>Tephrosia purpurea</em> (L.) Pers. (Fabaceae)</td>
<td>Sara-punkha (Ay)</td>
<td>Root extract (10 ml) mixed with a pinch of salt for Liver related stomach pain. Several studies have documented the root as hepatoprotective agent.</td>
</tr>
<tr>
<td>68.</td>
<td><em>Terminalia chebula</em> Retz. (Combretaceae)</td>
<td>Haritaki</td>
<td>Consumption of two fruit boiled in cow urine at morning for three days to cure jaundice. Study yet to be proved regarding the use of this formulation.</td>
</tr>
<tr>
<td>69.</td>
<td><em>Terminalia paniculata</em> Roth [Unsolved Name] (Combretaceae)</td>
<td>Aswakarma</td>
<td>Bark is used for Jaundice. Several studies also proved the efficacy of this drug.</td>
</tr>
<tr>
<td>70.</td>
<td><em>Tribulus terrestris</em> L. (Zygophyllaceae)</td>
<td>Gokshura</td>
<td>The seeds and fruit of this plant are recommended in Various studies are also scientifically proved its efficacy.</td>
</tr>
</tbody>
</table>
Ziziphus mauritiana Lam. [Unsolved Name] (Rhamnaceae) Karkandhu (Ay)

Fruits and leaves decoction with honey taken orally for Hepatitis

Both fruits and leaves are proved as hepatoprotective agent.

Ay-Ayurvedic Name; AP-Andhra Pradesh regional name.

**DISCUSSION**

Due to wide range of climatic condition India holds rich variety of flora. Since ancient times, plants have been widely used as medicine in India. Systematic documentation of folklore medicinal practices has introduced many new medicinal plants to the Modern as well as to the Ayurvedic system of medicine. According to ancient Ayurvedic scholar, there is no such *dravya* (substance) in the Universe, which has no medicinal value. This definition rightly suggests that in principle, all plants have a potential medicinal value. Medicinal plants have been considered as important therapeutic aid for alleviating ailment of humankind. The present review thrashed out different types of medicinal plants restrains hepatoprotective activity or used in liver disorder (Table-1). Some of these plants like Khadira, Apamrnga, Vilva, Punarnava, Kumari, Bhunimba (Table-1) etc. are already been documented in Ayurvedic texts as a remedy for liver disorders. Although the experimental evaluations were carried out on a good number of these plants and formulations, the studies were mostly incomplete and insufficient. A phytotherapeutic approach to modern drug development can provide many invaluable drugs from traditional medicinal plants. Search for pure phytochemicals as drugs is time consuming and expensive. Numerous plants and polyherbal formulations are used for the treatment of liver diseases. However, in most of the severe cases, the treatments are not satisfactory. Numbers of famous medicinal plants are already proverbial to us as a famous liver tonic and references are available in classical Ayurveied texts regarding their pharmacological actions and uses. Some of them are Madhusigru (*Moringa concanensis*), Rohitaka (*Tecoma undulata*), Guduchi (*Tinospora cordifolia*), Daruharidra (*Berberis aristata*), Pareesha (*Thespesia populnea*), Bhumi amalaki (*Phyllanthus niruri*) etc. These plants are extensively used in various Ayurvedic hepatoprotective formulations. Extensive use of certain medicinal plants is responsible for destruction of such plant species. Hence focus can be given on different kinds of formulation based on not commonly used medicinal plants. Such kind of practices may provide vital role in conservation aspect of endangered medicinal plants. Also development of such medicines with standards of safety and efficacy can revitalise treatment of liver disorders and hepato-protective activity. Although the meta-analysis of available scientific literature on hepatoprotective activity of the herbs to a great extent substantiates folkloric claims about the usefulness of these botanicals to treat chronic liver diseases, the data regarding clinical trials, safety studies, and quality control of many of these herbs is far from satisfactory.

**CONCLUSION**

Medicinal plants play a key role in human health care. Numbers of medicinal
plants have been used conventionally by traditional practitioners worldwide for the prevention and treatment of various diseases. Sometimes such unwritten rich sources of knowledge are destroyed due to lack of safeguarding. Thus protecting traditional and National heritage of healing knowledge through documentation becomes obligatory. Also there is enough scope of the amalgamation of these drugs in the main stream of medication after subjected to the phytochemical and biological screening, together with clinical trials. Present study may provide relevant information to the researcher in screening and evaluation of phyto-constituents of various liver diseases.

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