Therapeutic appraisal of Phalatrikadi Kwatha with special reference to hepatitis

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ABSTRACT

Hepatitis is an inflammation of hepatic tissue. It may be acute or chronic, viral, alcoholic or non-alcoholic. With some constitutional symptoms its major effect is jaundice. Drugs with hepatoprotective property are effective in the treatment of hepatitis. So many hepatoprotective drugs have been described in ayurvedic texts for the treatment of liver diseases with reference to kamala. Clinically kamala is correlated with jaundice. ‘Phalatrikadi kwatha’- decoction of eight ingredients has been described by Chakrapanidutta for the treatment of kamala in his book on medicine- Chakradutta. Its ingredients have cholagogue, cholerectic and anti-oxidant property. It strengthens liver tissue. Kwatha is prepared by boiling crude drugs in water in ratio of 1:16 and reducing to one eighth of original quantity.

Keywords: hepatitis, kamala, hepatoprotective drugs.

INTRODUCTION

Liver is an important organ for metabolism and excretion of xenobiotics from the body. It is considered the key organ in detoxification and secretary functions in the body.

Urbanization and changes linked with it like sedentary lifestyle, fatty food, uncontrolled blood sugar, obesity, smoking and high alcohol intake is leading Indians towards higher incidence of fatty liver disease and contributing towards making India the world capital of liver diseases. According to latest WHO data published in May 2014, deaths due to liver disease in India reached 216,865 or 2.44% of total deaths. In ayurveda liver diseases are described elaborately by almost all the scholar viz. kamala, halimaka, pataki, lagharak, lodhara etc. Unfortunately, conventional or synthetic drugs used in the treatment of liver diseases are inadequate and sometimes can have serious side effects. The Indian traditional system of medicine, especially ayurveda have put forward a number of medicinal plants and their formulations for liver disorders. Phalatrikadi kwatha is one of such useful formulation. It has been mentioned by different scholars by different name. Charaka has described phalatrikadi kwath in treatment of prameha[1](diseases of urine and diabetes mellitus) but with different ingredients. Later on, in 11th century Chakrapanidutta in his book Chakradutta (a book on therapeutics) described this formulation in the treatment of anemia and jaundice.[2] In Ashtangahrdayam, it has been mentioned by the name of vasaguduchyadi kwath.[3] Other books of ayurvedic therapies Bhaisajyaratnavali[4], Yogaratnakar[5] have also mentioned this formulation. Phalatrikadi has 8 ingredients: (table) All ingredients are dried and their decoction is made by boiling in water in ratio of 1:16 & reduced to one eighth of original volume.

DISCUSSION

For the management of kamala (Jaundice) Charaka has said virechana (purgation therapy) procedure to remove excess pitta (hyperbilirubinemia) and indicated drugs which are katu (pungent), & tikta(bitter) in nature.[6] Ingredients of phalatrikadi kwath are pitta-rechaka (cholerectic) and pittasarak (cholagogue), yakriduttejaka, dipana, recana, kamala-hara, pandu-hara, kapha-pitta shama, tridoshahara, rasayana.[7-13] These properties are helpful in stimulating and strengthening the hepatic tissue. Prof. R.H. Singh suggested that hepatoprotective drugs should have following properties:[14]

- Capacity of hepatocellular regeneration
- Cholagogue and choleric activity
- Membrane stabilizing effect
- Antiviral and antioxidant effect
Molecular nutrient effect
Enzyme and metabolic corrections

Triphala: Triphala is an ayurvedic formula consisting equal amount of three fruits viz. amalaki, haritaki and vibhiti. It is a well-known phytomedicine that promotes health, immunity and longevity. All three constituents of triphala are used in preparation of many hepatoprotective drugs. Aqueous extract of Triphala at 100 mg/kg body weight inhibits paracetamol at 900 mg/kg b.w. induced hepatotoxicity in mice as indicated by the decrease in liver enzymes and inflammatory mediator TNF-α and liver lipid peroxidase (LPO). Levels of antioxidant enzymes superoxide dismutase (SOD), catalase (CAT), glutathione reductase (GR), glutathione S-transferase (GST) were found to be decreased when compared with the control group. Aqueous extract of Triphala reversed the changes produced by these antioxidants and antioxidant enzymes to nearly that of normal levels. Triphala inhibits lipid peroxidase and prevents oxidative stress.\(^{[15]}\)

The aqueous and methanolic extracts showed significant activity against liver damage when compared with standard drug silymarin.\(^{[16]}\) It is reported that D-galactosamine induced hepatic damage resulted in a significant increase in the levels of ALT, AST, ALP, bilirubin, LPO and TNF-α with a decrease in the levels of anti-oxidant enzymes such as SOD, CAT, GR, GST and which attained normal levels after the treatment with aqueous triphala extract at 1000 mg/kg body weight. Pre-treatment of triphala inhibited LPO, suggesting that triphala may exert a stabilizing action on liver cell membranes.\(^{[17]}\) All the three ingredients of triphala has shown very effective role in reducing increased liver enzymes, reactive oxygen species and tumour necrotic factors and have membrane stabilizing effect.\(^{[18-21]}\)

Nimba: The pharmacological assay shows that fresh juice of young stem bark extract of A. indica was good hepatoprotective agent at a dose level of 500mg/kg. The plant extract has decreased the enzyme level of SGOT, SGPT, ALP, bilirubin by the dose of 500mg/kg and these results are statistically significant \(P < 0.01\) when compared with CCI4 group, while juice extract increases the proteins serum level too. The results suggest that antioxidant and hepatoprotective effect of fresh juice of A. Indica is possibly related to the free radical scavenging activity.\(^{[22]}\) A study also revealed marked protective effect of neem leaf extract in paracetamol induced liver damage in rats. Simultaneously it also has shown antioxidant property on liver tissue as evident by anti lipoperoxidase activity.\(^{[22]}\) Administration of A. indica leaf extract significantly enhanced the hepatic level of glutathione dependent enzymes and superoxide dismutase and catalase activity, suggesting that the hepatoprotective effect of the extract on paracetamol induced hepatotoxicity is due to its antioxidant activity. It is presumed that the quercetin and rutin compounds of Azadirachta indica leaf extract may be responsible for its hepatoprotective activity.\(^{[24]}\)

Kutki: Kutkin is the active principal of Picrorhiza kurroa and is composed of kutsocide and the iridoid glycoside kutosides I, II, and III. CDRI (Central Drug Research Institute) has named ‘picroliv’ a mixture of 60% picroside I and kutoside in the ratio of 1:1.5 obtained from the plant P.kurroa. Picrorhiza’s antioxidant effect has been shown to be similar to that of superoxide dismutase, metal-ion chelators, and xanthine oxidase inhibitors.\(^{[25]}\)

In rats infected with malaria, picrorhiza restored depleted glutathione levels, thereby enhancing detoxification and antioxidation, and helping to maintain a normal oxidation-reduction balance.\(^{[26]}\) Picrorhiza also demonstrated an anti-lipid peroxidative effect.\(^{[27]}\) Animal studies indicate picrorhiza’s constituents exhibit a strong anticholestatic activity against a variety of liver toxic substances, appearing to be even more potent than silymarin. Picrorhiza also exhibits a dose-dependent choleretic activity, evidenced by an increase in bile salts and acids, and bile flow.\(^{[28]}\)

Hepatocytes damaged by exposure to galactosamine, thiacetamid and carbon tetrachloride were incubated with picrorhiza constituents. A concentration-dependent restorative effect was observed in regard to normal hepatocyte function.\(^{[29]}\) Picrorhiza treatment reduced the cellular damage caused by hypoxia, indicating picrorhiza constituents may protect against hypoxia/reoxygenation-induced injuries.\(^{[30]}\) An in vitro study has proved to be anti-hepatitis B-like activity of kutki and found it to have anti hepatitis B surface antigen activity.\(^{[31]}\) In a randomized, double-blind, placebo-controlled trial of 33 patients diagnosed with acute viral hepatitis, 375 mg picrorhiza root powder was given three times per day for two weeks. Values of bilirubin and other liver enzymes were significantly lowered in the treatment group.\(^{[32]}\)

Guduchi: In a study, free radical scavenging activity has been proved using phenolic extract of Tinospora.\(^{[33]}\) It is a very good hepatoprotective and immuno-modulatory agent.\(^{[34-35]}\) It has anti-hepatotoxic activity in carbon tetra chloride (CCL4) induced liver damage, normalizing liver function in
Also it is effective in anti-tubercular drug induced hepatic damage. It has also shown anti-viral property in viral hepatitis B & E. T. cordifolia has mainly alkaloids, diterpenoid lactones, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds and polysaccharides as active principle.

**Bhunimba:** Also called as kalmegha, it has shown hepatoprotective and antioxidant property in BHC (benzene-hexa-chloride) and CCl₄ induced liver damage in mice.

**Vasaka:** A study conducted on rats using aqueous leaf extract of *Adhatoda vasica* has shown significant improvement on CCl₄ induced hepatocellular damage. There was quite improvement in total bilirubin, protein and liver enzymes (AST, ALT).

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**REFERENCES**


