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# A review on Hepato-Protective Ayurveda Panchakarma Therapy and herbs used in Ayurveda

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## ABSTRACT

Liver is the largest gland and considered to be one of the vital organs which work multidimensional work for our body like digestion, growth and maintaining the health of body. In the Veda *Yakrit* (liver) is being described right from the Vedic period. Modern working culture and lifestyles can cause overstress and make it malfunctioning. There are no specific and safe hepato-protective drugs are available in contemporary medical science. While in Ayurveda, *Panchakarma* and defines herbs has the property to prevent, treat and cure hepatic disturbances with interception of fewer side effects. The purpose of this review is to elucidate the vital role of liver and aimed at compiling data based on reported works on Ayurveda *Panchakarma* procedure and Ayurveda herbs that have been tested in hepato-toxicity models and proved as hepato-protective. Also, the probable mode of action of *Virechan* (*Panchakarma* procedure) and few herbs has been discussed in Ayurvedic and modern aspect.

**Key words:** Liver, Yakrit, Hepato-protective, Panchakarma, Virechana, Herbs.

## INTRODUCTION

Healthy life depends on the liver as it is the largest glandular organ in the body which works all the time to keep the body healthy. Why liver is important? every person is asking this question the simple answer is liver is important because a person's nutritional level is not only determined by what he or she eats, but by what the liver is working processes. The

wonder complexity of liver system and its fundamental role in human physiology is so appealing to modern and Ayurved scholar, that the thought that simple *Panchkarma* procedure and easily available herbs remedies might have something to offer is astonishing and incredible. Liver is considered to be one of the most vital organs that functions as a center of metabolism of nutrients such as carbohydrates, proteins and lipids and excretion of waste metabolites. Additionally, it is also handling the metabolism and excretion of drugs and other xenobiotics from the body thereby providing protection against foreign substances by detoxifying and eliminating them.

In dealing with ailments of the liver, the primary goal is to enhance liver detoxification processes by the Ayurveda *Panchkarma* procedure specially the *Virechan Karma* (Therapeutic Purgation) and to help protect against further liver damage. Significant and safe hepato protective agents are unavailable in

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modern therapeutics. Therefore, due importance has been given globally to develop pure herbs-based hepato protective drugs effective against a variety of liver disorders.

The present review is aimed at compiling data based on reported works on Ayurvedic procedure which detoxify the liver without any chemical application and promising phytochemicals from medicinal herbs that have been tested on hepato-toxicity models.

Ayurveda is generally handy and treating liver illnesses since hundreds of years and the medication harmfulness seems, by all accounts, to be less when contrasted with regular medication. Right now, accessible clinical treatments for liver messes have more foundational poisonousness in this manner doctors delay to administrate present day medication for long haul use. Clinical furthermore, creature research in this century has affirmed the viability of a few restorative plants and herbo-mineral mixtures depicted in Ayurveda in the treatment of liver illness, it very well might be cause for patients with persistent liver infection look for essential or adjunctive natural treatment and it is a typical event noticed everywhere on the globe. Hepato biliary illnesses are the genuine diseases and the clinical treatment situation is deteriorated step by step for absence of demonstrated exact remedial regimens. There are numerous plants and their concentrates that have been displayed to have hepato-defensive exercises. There is multiple hundred herbo-mineral arrangements in Indian framework of medication for the therapy of jaundice and ongoing liver infections. Over half individuals of our nation hand-off on Ayurveda and home-grown medication for liver infections. Undoubtly Ayurveda spices and items having characterized biochemical dynamic part can shield liver from oxidative pressure, advance infection disposal, block fibrogenesis, mitigating, resistant adjusting, liver recovering and hinder tumor development in vitro and in vivo examines. Various Ayurveda liver preliminary drugs are accessible in market yet their viability was lauded by different creators for absence of proof and appropriate drug. Some Ayurveda drugs are accounted for as

hepatotoxic likewise. The viability and security of at present accessible medicines is still inadmissible, much exertion has been spent looking through a superior treatment technique in the present scenario.

### **Bio-purification of the Liver – Ayurveda Panchakarma (Virechana)**

According to Ayurveda Samhitas, *Yakrit* is the place of *Raktawaha Srotas*.<sup>[1,2]</sup> So the disease of the liver is considered under the *Raktawah Srotas Vyadhi*. *Yakrit* is also the site of *Pitta Dosha*.<sup>[3]</sup> In this view the *Shodhana Chikitsa* i.e., *Virechana Karma*<sup>[4]</sup> will be useful this disease state along with the *Shamana Chikitsa*. Keep all things in this mind after consideration of the *Dosha*, *Dushya* and all the parameter. There is no specific description in ayurvedic text about hepatomegaly. It is compared with *Yakrit Virddhi or Yakritdaludar*.<sup>[5]</sup> The primarily treatment of *Pitta Dosha* is *Shodhana Chikitsa (Virechana)*.

### **Probable Mode of Action**

*Virechana* drugs carry out the therapeutic purgation due to their *Prabhava* (potency). As these drugs are having *Jala* and *Prithvi Mahabhuta* dominancy, they have a natural tendency to go downward and thus they can help in induction of purgation. It has already been described that the waste products wherever present in the body, in extracellular, intracellular, or in plasma, can be brought into intestine to maintain the homogeneity from where it can be eliminated out of body by the action of intestine, which is induced by *Virechana* drug. Castor oil used in the *Virechana Karma* gets hydrolyzed in small intestine by lipase to give ricinoleic acid, which irritates and requires bile for hydrolysis. Bile serves as a means for excretion of several important waste products from the body. These include bilirubin, an end product of hemoglobin destruction and excesses of cholesterol synthesized by the liver cells.<sup>[6,7]</sup>

### **Shaman Aoushadi (Preparation of Ayurveda for Hepatoprotective Disease)**

#### **Kutaki (Picrorrhiza kurroa)**

As per ayurveda description about *Kutaki* is *Rasa-Tikta, Guna- Laghu, Veerya- Sheeta, Vipaka- Katu*

*Prabhav- Kaphavaatahara*. Numerous animal studies demonstrated the active constituents of *Picrorrhiza kurroa* effective in preventing liver toxicity and improve hepatic glycogen preservation. It is effective in hepatitis B infection and promising effect on bilirubin, SGOT, SGPT. It has also cytotoxic activities against human breast, liver and prostate carcinoma cell line. It also promotes liver regenerating activities by restoring cytochrome. *Picrorrhiza kurroa* is a renowned herb in the Ayurvedic system of medicine and has traditionally been used to treat disorders of the liver, upper respiratory tract, reduce fevers, and treat dyspepsia, chronic diarrhoea, and scorpion sting. Kutkin, the active principal of *Kutki* is comprised of kutkoside and iridoid glycosides like picosides I, II, and III. The hepato-protective action of *Kutki* may be attributed to its ability to inhibit the generation of oxygen anions and to scavenge free radicals. *Picrorrhiza's* antioxidant effect has been shown to be similar to that of superoxide dismutase, metal-ion chelators and xanthine oxidase inhibitors. Animal studies indicate that *Picrorrhiza's* constituents exhibit a strong anti-cholestatic activity against a variety of liver-toxic substances, appearing to be even more potent than silymarin. *Picrorrhiza* also exhibits a dose-dependent choleric activity, evidenced by an increase in bile salts and acids, and bile flow.

#### ***Kaalmegha (Andrographis paniculata)***

As per ayurveda description about *Kaalmegha* is *Rasa-Tikta, Guna- Laghu, Ruksha, Veerya - Ushna, Vipaka-Katu Prabhav – Kapha Pittahara*. *Andrographis paniculata* plant extract could repair the hepatic injury and/or restore the cellular permeability, and reducing the toxic effect of ethanol induced liver toxicity and preventing enzymes leakage into the blood circulation. A recent study showed that andrographolide attenuated concanavalin A-induced liver injury and inhibited hepatocyte apoptosis. It has been reported to be efficacious in chronic hepatitis B viral infection. *Andrographis paniculata* Nees. is an ancient Indian medicinal herb, which has been used for centuries in Asia for its effects on various bodily functions and ailments, ranging from degenerative diseases to the common cold. The plant is known as

King of Bitters. Andrographolide is an active constituent extracted and isolated from *Andrographis paniculata* which is very bitter in taste. It significantly increased the percent viability of the hepatocytes as tested by trypan blue exclusion and oxygen uptake tests. It blocked the toxic effects of drug like paracetamol on certain enzymes (GOT, GPT and alkaline phosphates) in serum as well as in isolated hepatic cells. It also stimulated immune system to fight against inflammation, is mediated from the release of cytokinin from immunomodulators.

#### ***Bhumiamalaki (Phyllanthus niruri)***

As per ayurveda description about *Bhumiamalaki* is *Rasa- Tikta, Kashaya, Madhur, Guna - Laghu, Ruksha, Veerya - Sheeta, Vipaka - Katu Prabhav - Kapha Pittahara*. Some species of *Phyllanthus* were found to exhibit hepato protective activity against drugs or toxins and this property was majorly attributed to phyllanthin and hypophyllanthin. Hepatoprotective activity of five different species of *Phyllanthus*, namely, *Phyllanthus amarus*, *Phyllanthus fraternus*, *Phyllanthus aderspatensis*, *Phyllanthus urinaria*, and *Phyllanthus Rotundifolius*. The mechanism of action appears to be related to the suppressive effect of *Phyllanthus* extract on HBsAg secretion and HBsAg mRNA expression and the inhibition of hepatitis B virus polymerase activity. Water extract of *P. urinaria* induces apoptosis by DNA fragmentation and increased caspase-3 activity, reduces the viability of numerous cancer cells lines probably by telomerase suppression activity, and reduces the angiogenesis as suppressing MMP-2 secretion and inhibiting MMP-2 activity through zinc chelation.

#### ***Phala Trikadi Kwatha***

*Phalatrikadi Kwatha* contains eight drugs which are having predominately *Kamalahara* properties like – *Pitta - Kapha Shamaka, Yakriduttejaka, Shothahara, Pandurogahara, recana, Dipana* etc. *Kwatha* of *Triphala (Amalaki, Haritaki and Bibhitaki), Amrita, Vasa, Tikta (Katuka), Bhunimba, and Nimba Tvaka* taken with Honey relieves *Kamala* and *Pandu*. This formulation used for fatty liver.<sup>[8],[9]</sup>



**Amalaki Ghrita**

Administration of medicated ghee in chronic diseases is the one of the treatment principles of Ayurveda. *Amalaki Grita* is administered to chronic liver diseases a patient who has good appetite. It has hepatoprotective property.<sup>[10]</sup>

**Panchagabya Ghrita**

It has wide range of application in Ayurveda. It is used in *Kamala*. It is hepato protective and antioxidant.<sup>[11,12]</sup>

**Rahitaka Grita**

It is good formulation in chronic diseases. It has chemo protective action.<sup>[13]</sup>

**Ayurveda Literature about Hepatic Disorders**

Ayurveda is an entire clinical framework that depends on different speculations about wellbeing and ailment and on approaches to forestall, oversee, or treat medical conditions. The liver is a notable organ for Ayurveda. In *Vedas*, "*Takima*" or "*Yakna*" words are utilized for liver. The equivalents words like-*Kalakhanda*, *Jyotisthana*, *Yakritkhanda*, *Yakritpinda*, *Raktadhara* and *Raktashaya* are found in the antiquated writing for liver. *Yakrit* comes from Sanskrit Word i.e., *Yat* (transformation) and *Krit* (to do). It is likewise described as *Yakrit Sabita* (liver is sun) in vedic writing from the liver can be showed as hypersensitivities, elevated cholesterol, hypoglycemia, stoppage, stomach related issues, or weakness. In the event that the irregularity proceeds for quite a while, genuine illnesses of the liver, including hepatitis, cirrhosis, jaundice and malignancy, could create. *Ayurveda* generally terminology the sicknesses according to practical abnormalities yet *Yakrit Roga*, *Grahani*, and *Hrud Roga* are named according to morphological and anatomical anomalies. *Ayurveda* works of art like-*Caraka Samhita*, *Susruta Samhita*, *Astanga Hrudaya*, *Gada Nigraha*, *Bhavaprakash*, *Madhava Nidana*, *Chikitsa Manjari*, and so forth had depicted the hepato biliary infections either in *kamala* (Jaundice) or in *Udara Roga* (stomach problems) setting. Countless liver infections are portrayed in *Ayurveda* like-*Kamala*,

*Kumbha Kamala*, *Halimaka Pandu*, *Jalodara* (Ascitis), *Yakritdalhadara* (heptomegaly), *Yakritpliha Dara*, *Yakrit Kshaya* (cirrhosis of liver), *Pittasmari* (cholithiasis) and so forth *Ayurveda* doctor transfer the treatment of *Udara Roga* (stomach issue) to treat hepato biliary disorders.<sup>[14]</sup> *Panchakarma* Intervention is prudent in *Shakha Srita Kamala*. *Virechan* (cured purgation) is the awesome all *Sodhana* strategies. Various old-style plan for liver diseses like - *Arogya Vardhini Vati*, *Lokanath Rasa*, *Yakrutdari Lauha*, *Rohitaka Lauha*, *Yakrit Plihadari Lauha*, *Yakrit Plihadara Churna*, *Kumaya Sava*, *Patolakaturohinyadi Kashayam*, *Rohitakarista*, *Punnanvadi Kasaya*, *Kokilashyadi Kasaya*,<sup>[15]</sup> and so on In excess of a little over half of jaundice patients of our nation have the best option to visit to conventional healers for their treatment. Seeff et al. tracked down that 41% of outpatients with determination of liver infection have history of utilization natural medicine.<sup>[16],[17]</sup>

The restorative plants having *Rechana* (laxative), *Mutrala* (diuretics), *Vata Samaka*, *Agnivardhaka* (carminative), *Ama*, *Meda* and *Kapha Nasak* characteristics are best for hepato biliary problems. Picroliv - *Picrorrhiza Kurroa*, *Andrographiloid* - *Andrographis Paniculata*, *Phyllanthin* - *Phyllanthus Niruri*, *Wed elolactone* - *Eclipta Alba*, *Glycyrrhizin* - *Glycyrrhiza glabra*. *Curcuminoids* – *Curcuma longa* are the *Ayurvedic* spices showed potential hepato defensive exercises in creature model. These spices for the most part have solid antioxidative potential and cause enlistment of cancer prevention agent catalysts like superoxide dismutase, decreased glutathione and catalase. The instruments of hepato-assurance incorporate incitement of heme oxygenase-1 movement, hindrance of nitric oxide creation, hepatocyte apoptosis and atomic factor- $\kappa$ B activation.<sup>[18]</sup> *Saman Grita* like *Panchagabya Grita*, *Rohitaka Grita*, *Panchakola Grita*, *Amalaki Grita* are portrayed in *Ayurveda* for treatment of liver sicknesses. *Virechana* (Medicated purgation) is the treatment of decision in liver problem uncommonly *Jalodara*.<sup>[19]</sup> *Vardhama Pippali Yoga* is supposed to be compelling in hepatic cirrhosis which was fluctuated by clinical study.<sup>[20]</sup>

## DISCUSSION

*Yakrit* (liver) is the *Sthana* (seat) of *Pitta Dosha* (useful substance of the body), *Rakta Dhatu* (blood tissue) and *Agni* (force of processing). Treatment of all liver infections in Ayurveda focuses mostly on *Pitta Dosha* instead of the actual organ. The greater part of the hepato-defensive medications is *Kapha Pitta Samaka* (placates *Pitta* and *Kapha* elements). The medications and diets that standardize *Pitta* are regularly utilized for a wide range of liver illnesses.

A large portion of the hepato-defensive medicines are having prevalently *Tikta-Katu Rasa* (unpleasant and impactful taste) and *Deepana-Pachana Karma* (stomach related energizer and carminative). These spices are mostly *Agni Vardhaka* (builds fire substance in the body) and follow up on *Jatharagni* (stomach related fire) just as *Dhatwagni* (fire dwelling in tissues). These *Rasas* (taste) have the property of expanding digestion (basically improving catabolism), in this way these spices help in absorption of nitrogenous side-effects gathered in body, because of upset digestion. A large portion of the hepato-defensive spices have *Laghu* (simple to process) and *Ruksha* (dry) *Gunas* (quality). *Laghu Guna* (simple to process quality) helps in expanding *Jatharagni* (stomach related shoot) as they are effectively absorbable and they structure less nitrogenous byproducts. *Ushna Virya* (hot intensity) help in improving the *Jatharagni* (stomach related fire) too *Dhatwagni* on the grounds that *Ushna Virya* (hot power) builds digestion (catabolism).

As indicated by present day pharmacology, the primary system associated with the insurance of liver could be related with the solid capacity of hepato-protective medications to diminish the intracellular degrees of receptive oxygen species by improving the degree of both enzymatic and non-enzymatic cancer prevention agents. These medications secure liver tissues against oxidative harm and by one way or assistance in animating the maintenance component of liver.

The method of activity of hepato-protective medicines fluctuates from one spice to another.

Hepatocyte layer balancing out limit is displayed by *Techoma Undulata* G. Wear., in this way keeping poisons from entering the phone through entero-hepatic distribution. *Berberis aristata* DC., *Tephrosia purpurea* Pers. furthermore, *Piper longum* Linn. Help in recovery of liver cells by animating atomic polymerase An and expanding ribosomal protein amalgamation. *Tinospora cordifolia* (Willd.) Miers. improve the action of Kuffer cells which is associated with the creation of substances like interleukins and tumor putrefaction factors which actuate the resistant arrangement of the body and go about as immuno-modulatory. *Phyllanthus niruri* Linn. have antiviral property and help in microsomal acceptance or hindrance. *Boerhavia diffusa* Linn have antifibrinolytic action. *Eclipta alba* Hassk., *Andrographis paniculata* Nees. what's more, *Picrorhiza kurroa* Royle ex Benth. Increment the choleric movement.

Distinctive single spices are a lot of valuable in liver problems as displayed by research considers. A couple of Ayurvedic compound details, for example, *Phalatrikadi Kwatha*, *Vasa Guduchyadi Kashaya*, *Patola Katurohinyadi Kashaya*, *Guda Pippali*, *Arogyavardhini Vati*, *Rohitakarista* referenced in *Sharangadhara Samhitha* (thirteenth Century) are likewise discovered to be promising in hepatopathy.

## CONCLUSION

The test that advanced clinical framework face with liver issues is that such medications would need to be utilized in the liver. Since the actual liver is in jumble, the issue is the means by which to guarantee successful digestion of the medications that have been endorsed. In this unique circumstance, Ayurveda sages have utilized their virtuoso, to form such home grown plans that can be processed even by a lazy liver. The rationale on which such details work is that they initially mend and revive the liver and, in this way, add to the rebuilding of its typical capacities. Saving soundness of the liver means adding better a long time to one's life. Be pleasant to your liver and Keep it Living and Lively!!

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