

## ROLE OF CHAUSATH PRAHARI PIPPALI IN THE MANAGEMENT OF LIVER CIRRHOSIS: AN ANALYTICAL REVIEW

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### ABSTRACT

Liver Cirrhosis is defined as the histological development of regenerative nodules surrounded by fibrous bands in response to chronic liver injury that leads to portal hypertension and end stage liver disease. The most common causes include chronic hepatitis C and alcohol dependence or alcoholism. Other causes include hepatitis B, autoimmune hepatitis, and hemochromatosis. It tends to progress slowly and often does not cause symptoms in its early stages. In Ayurveda, *Yakrit* is considered as an important organ right from the Vedic period. *Ayurvedic* classical references are available regarding the enlargement of *Yakrit*. The disease *Yakrddalyudara* has been included in eight types of *Udara Roga* in Ayurvedic classics. Specific medical therapies may be applied to many liver diseases in an effort to prevent the development of cirrhosis as there is no specific treatment for cirrhosis. Once cirrhosis develops, treatment is aimed at the management of complications as they arise. Ayurvedic treatment seems to be very specific including pitta pacifying therapy and purificatory therapy. The role of *Chausath Prahari pippali* is one such measure.

**Keywords:** Liver Cirrhosis, *Yakrit*, *Yakrddalyudara*, *Chausath Prahari pippali*

### INTRODUCTION

#### LIVER CIRRHOSIS

Cirrhosis (derived from the Greek word *scirrhos*, which means orange or tawny) is a diffuse process of fibrosis that converts the liver architecture into structurally abnormal nodules<sup>[1,2]</sup>. It is a slowly progressing disease in which healthy liver tissue is replaced with scar tissue, eventually preventing the liver from functioning properly<sup>[3]</sup>. The scar tissue blocks the flow of blood through the liver and slows the processing of nutrients, hormones, drugs, and naturally produced toxins<sup>[4]</sup>. It also slows the production of proteins and other substances made by the liver. Ac-

ording to the National Institutes of Health, cirrhosis is the 12th leading cause of death by disease. Cirrhosis is most commonly caused by alcohol, hepatitis B, hepatitis C, and non-alcoholic fatty liver disease<sup>[5][6]</sup>. Often there are no symptoms until the disorder has progressed like, anorexia, jaundice, weight loss, itchy skin, generalised weakness, and nose bleeding<sup>[7]</sup>. Global prevalence of cirrhosis from autopsy studies ranges from 4.5% to 9.5% of the general population<sup>[8],[9],[10]</sup>. Deaths from cirrhosis have been estimated to increase and would make it as the 12<sup>th</sup> leading cause of death in 2020<sup>[11]</sup>. Cirrhosis may be

caused by viral hepatitis, hemochromatosis, obstructive lesions of the biliary system, congestive heart failure, and chronic alcoholism. It is assumed that most cases of liver cirrhosis are due to alcohol consumption, and rates of prevalence, incidence, and mortality for liver cirrhosis are used as indicators of alcoholic cirrhosis. Early stages of alcoholic liver injury are reversible, but advanced stages are usually relentlessly progressive. The only known prevention for alcoholic cirrhosis is to limit consumption of alcohol. For many years cirrhosis among alcoholics was attributed to nutritional deficiencies associated with alcoholism and not to the direct effects of alcohol on the liver<sup>[12]</sup>.

In Ayurveda liver cirrhosis can be correlated to *Yakraddalyudar*. As mentioned in Ayurvedic texts “*Evavmev yakridapi dakshin parshavastham kuryat...*” The causes, symptoms and treatment of *Yakraddalyudar* is similar to *Pleehodara* except that it is on the right side<sup>[13]</sup>. Acharya Sushrut and Bhavaprakash have also included this disease indirectly in eight types of *Udara roga*. Bhavamishra has mentioned that it is situated right and below to the *Hridaya* and is the *sthan* of *pitta* and *shonita*<sup>[14]</sup>. Sushrut mentioned *Yakrit* as the place of *Ranjaka pitta*<sup>[15]</sup> and *rakta*<sup>[16]</sup> while Charak mentioned *Yakrit* and *pleeha* as the *moola* of *Raktavaha srotas*<sup>[17]</sup>. Madhavkara has mentioned *Yakrit vikaras* separately in *Madhav Nidana*<sup>[18]</sup>.

#### **NIDANA OF YAKRADDYALUDAR:**

In Ayurvedic classics the cause of *Yakraddalyudar* has been described mainly due to excess intake of *vidahi* and *abhishyandhi ahara*.

#### **SAMPRAPTI OF YAKRADDYALUDAR:**

After intake of the substances which increases *Kapha* and *Pitta dosha* like *Vidahi* and *abhishyandhi ahara* the *bhutaagni* gets *mandya* since the liver is the main seat of *bhutaagni* impaired fatty acid metabolism takes place in the liver. *Kapha* gets accumulated in the *Pitta sthana*, accumulation of fat occurs due to *avarana* causing *Yakrithvridhi*, *Agni-*

*mandhya*, *Balaksheena* etc symptoms thereby producing the disease *Yakraddalyudar*.

#### **SYMPTOMS AND SIGN OF YAKRADDYALUDAR:**

Bhavaprakash has described four types of *Yakrit vridhi* such as *Raktaja Yakrit vridhi*, *Pittaja Yakrit vridhi*, *Kaphaja Yakrit vridhi*, *Vataja Yakrit vridhi*. The patients of *Raktaja Yakrit vridhi* have the symptoms of tiredness, giddiness, burning sensation, discolouration, heaviness, unconsciousness. *Pittaja Yakrit vridhi* patients having the symptoms like fever, thirst, burning sensation, unconsciousness, and yellowishness. The patients of *Kaphaja Yakrit vridhi* having symptoms like thick, hard, and heaviness in the liver with enlargement, mild pain and loss of appetite. *Vataja Yakrit vridhi* patients show the symptoms like pain feeling around the liver area<sup>[19]</sup>.

In modern medicine the main goal to treat liver cirrhosis is to stop or slow down the progression of liver damage and to treat the complications. Specific medical therapies may be applied to many liver diseases in an effort to prevent the development of cirrhosis as there is no specific treatment for cirrhosis. Once cirrhosis develops, treatment is aimed at the management of complications as they arise. Ayurvedic treatment seems to be very specific including *pitta* pacifying therapy and purificatory therapy. The role of *Chausath Prahari pippali* is one such measure.

#### **DISCUSSION**

*Chausath Prahari pippali* is a type of *churna kalpana* which has *pippali* as a principle drug. *Chausath prahari pippali* is prepared from *pippali* by triturating *choti pippali* with juice of *badi pippali* for 64 *Prahar* or 192 hours (*Prahar* is a Sanskrit term for a unit of time and it is approximately three hours long). It has carminative, stimulant, laxative, thermogenic, anti-cough and appetizing properties<sup>[20]</sup>. It is very useful medicine in treatment of both respiratory and digestive diseases.

## **CHAUSATH PRAHARI PIPPALI – INGREDIENTS**

*Choti pippali* powder, *Badi pippali phant*

Preparation of *Chausath Prahari pippali*: *Choti pippali* powder is triturated (*mardana*) with *Badi pippali phant* for constant 192 hours.

### **PIPPALI:**

Species of the genus *Piper* are among the important medicinal plants used in various systems of medicine [21], [22]. *Piper longum* L. (*Piperaceae*), commonly known as "long pepper", is widely distributed in the tropical and subtropical regions of the world, throughout the Indian subcontinent, Sri Lanka, Middle Eastern countries and the Americas.

Vernacular names: English: Long pepper, Hindi: Pippali, Sanskrit: Pipali

Habitat: The native of the plant is considered to be South Asia and is found both wild as well as cultivated, throughout the hotter parts of India from central to the north-eastern Himalayas. The herb also grows wild in Malaysia, Singapore, Bhutan, Myanmar and elsewhere.

### **BOTANICAL DESCRIPTION:**

It is having slender, aromatic, perennial climber, with woody roots and numerous wide-ovate, cordate leaves. The inflorescence is a cylindrical, pedunculate spike, the female flower is up to 2.5 cm long and 4-5 mm in diameter but the male flower is larger and slender. The fruits are small, ovoid berries, shiny blackish green, embedded in fleshy spikes [23].

**DISTRIBUTION:** It occurs in the hotter part of India from the central Himalayas to Assam, Khasi and Mikir hills, lower hills of Bengal and evergreen forest of Western Ghats from Konkan to Travancore [24].

### **AYURVEDIC PROPERTIES:**

*Rasa: Katu, Guna: Laghu, snigdha, tikshna Virya: Anushnashita, Vipaka: Madhur, Dosha: Kapha and Vata shamaka* [25]

### **ROGAGHNATA:**

Pippali having therapeutic action like *Gulma* (Abdominal tumour), *Udara sula* (Abdominal pain), *Arsha* (Piles), *Pandu* (Anaemia), *Yakrutvikar* (hepatic disorder), *Pleeha vridhi* (Spleen Enlargement), *Krimiroga* (worm), *Hridourbalya* (heart disease), *Raktavikara* (Blood disorder), *Amavata* (Rheumatoid arthritis), *Vata rakta* (Gout), *Kasa* (Cough), *Swasa* (Asthma), *Hikka* (Hiccough), *Yakshma* (Tuberculosis), *Mootravikara* (Urinary track disorder), *Kushtha* (Skin disease), *Jeernajwara* (Chronic fever), *Vishamjwara* (Malaria).

### **BIOAVAILABILITY ENHANCEMENT:**

Piperine was found to enhance the bioavailability of structurally and therapeutically diverse drugs, possibly by modulating membrane dynamics due to its easy partitioning and increase in permeability of other drugs such as vasicine, indomethacin, diclofenac sodium etc. [26], [27]. It was suggested that piperine might be inducing alterations in membrane dynamics and permeation characteristics, along with induction in the synthesis of proteins associated with the cytoskeletal function, resulting in an increase in the small intestine absorptive surface, thus assisting efficient permeation through the epithelial barrier [28], [29]. The study showed that piperine enhances the serum concentration, extent of absorption and bioavailability of curcumin in both rats and humans with no adverse effects [30].

Long pepper (*pippali*) is used in many Ayurvedic medicines to treat various health problems. It is one of the key ingredients of this medicine which is used to treat many diseases. Long pepper is used to treat a variety of conditions like asthma, bronchitis, cough, digestive disorders and enlargement of the spleen. *Pippali* is the main drug of *Chausath prahari pippali*. *Pippali* has *katu rasa, ushna virya, madhur vipaka, tikshna* and *laghu guna*. It acts as *hetu viparit* (against cause), *vyadhi viparit* (against disease i.e. *Yakrit plihagna*), *dosha viparit* (*kaphavatahara, tri-dosh hara, pittavirodhi*) and as *rasayana*.

### PROBABLE MODE OF ACTION OF CHAUSATH PRAHARI PIPPALI

*Yakrit* is the *sthan* of *pitta dosha*, *rakta dhatu* and *Agni*. *Pippali* being *tikta* and *katu rasa pradhan* acts as *deepan* and *paachan aushadhi*. It acts on *jatharagni* as well as *dhatwagni*. *Tikta* and *katu rasa* have properties to increase metabolism. *Laghu guna* helps in increasing *jatharagni* as they are easily digestible and forms less nitrogenous waste products. *Ushna virya* helps in enhancing the *jatharagni* as well *dhatwagni* because *ushna virya* increases metabolism (catabolism).

*Piper longum Linn* belongs to the family *Piperacea*, is a common Indian dietary spice which has been shown to possess a wide range of therapeutic utilities. It has been reported to possess antiasthmatic, anti-inflammatory, hepatoprotective, hypocholesteremic and immunomodulatory activities. It contains various alkaloids like piperine, piperlongumine, piperlonguminine etc which helps in the regeneration of hepatocytes<sup>[31]</sup>.

A study shows significant hepatoprotective effect on *Piper longum Linn*. Milk extract treatment in CCl<sub>4</sub> induced hepatic damage. An evident decrease in level of serum enzymes, total bilirubin and direct bilirubin was observed. Histopathological findings indicated that administration of *piper longum Linn* milk extract offered protection to the hepatocytes from damage induced by CCl<sub>4</sub>, with mild fatty changes in the hepatic parenchymal cells, which corroborated the changes observed in the hepatic enzymes. It also showed regenerating liver cells around the necrotic area<sup>[32]</sup>. *Mardana* process converts the particle size of a substance. Reduction in particle size increases the surface area of the drug which helps in easy digestion and assimilation<sup>[33]</sup>.

### CHAUSATH PRAHARI PIPPALI - USES

Useful in *Vata* and *Kapha* diseases, Cough, asthma, respiratory diseases, Digestive impairment, low appetite, hyperacidity, Hiccups, anemia, piles, pain, Post-partum fever, fever

due to cold & cough, chronic fever, Improves breast milk in lactating mothers. Gives strength to heart<sup>[34]</sup>.

**DOSE OF CHAUSATH PRAHARI PIPPALI:** 250 mg to 500 mg twice daily with honey<sup>[35]</sup>.

### CONCLUSION

Hence, from the above study we can conclude that *Chausath prahari pippali* can play an important role in the management of liver cirrhosis. Studies have already been proved that the principle component *pippali* has hepatoprotective and hepatogenerative properties.

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