

**LITERARY REVIEW OF YAKRITDALYODARA W.S.R. TO FATTY LIVER AND ITS AYURVEDIC MANAGEMENT****Mamta Sirvi<sup>1\*</sup> and Ravi Sharma<sup>2</sup>**

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**ABSTRACT**

Fatty liver disease, encompassing both alcoholic liver disease (ALD) and non-alcoholic fatty liver disease (NAFLD), has emerged as a significant public health concern globally. NAFLD, characterized by the accumulation of lipids in hepatocytes in individuals with minimal or no alcohol consumption, is associated with obesity, insulin resistance, and metabolic syndrome. This condition can progress to non-alcoholic steatohepatitis (NASH), cirrhosis, and hepatocellular carcinoma (HCC).<sup>[1]</sup> There are various symptoms such as confusion, fatigue, weakness etc. Fatty liver disease's main lifestyle factor is overeating. Alcohol intake causes alcoholic fatty liver disease. *Ajirna* (indigestion), *Sthaulya* (obesity) and *Prameha* (diabetes mellitus), which is caused by *Annavaha's* vitiation. *Rasavaha* and *Medovaha Srotas* acts as *Nidanarthakara* Rogas (diseases that cause other diseases), which may cause non-alcoholic fatty liver disease. Recent

studies indicate that the global prevalence of NAFLD is increasing, affecting approximately 25% of the population, with variations across different regions.<sup>[2]</sup> The pathogenesis of fatty liver disease involves complex interactions between genetic, environmental, and metabolic factors. Insulin resistance plays a crucial role in the development of hepatic steatosis, while oxidative stress and inflammation contribute to the progression from simple steatosis to NASH. Management strategies for fatty liver disease primarily focus on lifestyle modifications, including diet and exercise, and pharmacological interventions in more advanced cases.<sup>[3]</sup> Ayurvedic literature states that *Panchakarma* (*Virechana*) and herbs like *Bhumiamalaki*, *Guduchi* and *Rohitaka* etc. protect the liver and improve its functioning.)

**KEYWORD:** Fatty liver, *Sthaulya*, *Prameha Roga*, *Yakritdalyodara*.

## INTRODUCTION

Ayurveda is a traditional medicine that predates humankind.

A balanced state of the senses, mind, and spirit results in *Swasthya*, which is determined by the balance of *Dosha*, *Agni*, *Dhatu*, and *Mala*.<sup>[4]</sup>

*Yakrit* is connected to the *Raktavahi* and *Mamsavahi Dhamani* in *Ayurveda* and is regarded as the *Moola Sthana* of *Raktavaha Strotas*. Since *Ranjaka Pitta* lives in *Yakrit*, *Rasa Dhatu* becomes *Rakta Dhatu*. The *Yakrit* is comparable to liver in Modern science.<sup>[5]</sup>

Fatty liver disease, particularly non-alcoholic fatty liver disease (NAFLD), is a growing global health concern, characterized by excessive fat accumulation in liver cells. In traditional Ayurvedic medicine, this condition is closely associated with *Yakritdalyodara*, which refers to the enlargement of the liver and is often linked to poor dietary habits and lifestyle factors. According to Ayurvedic texts, the liver (*Yakrit*) plays a vital role in metabolism, digestion, and detoxification, and its dysfunction can lead to systemic imbalances. NAFLD can be precipitated by metabolic syndrome, obesity, and insulin resistance, which disrupt the balance of fat metabolism in the liver.<sup>[2]</sup> Fatty liver is a common and generally benign condition. In general, the lipid accumulation is characterized by macro vesicular steatosis. In a minority of cases hepatic steatosis is associated with an inflammatory infiltrate. This histological appearance, described as steatosis hepatitis, may be caused by alcohol misuse; however, in some patients with other causes there is no history of excessive alcohol consumption. This is known as non-alcoholic steatohepatitis (NASH), and may progress to cirrhosis in a small proportion of patients. With the increasing frequency of obesity in the Western population it is likely that this clinical condition will become much more common. Micro vesicular steatosis occurs in more serious conditions and can be associated with mitochondrial damage. Which causes impaired fatty acid beta-oxidative metabolism.<sup>[6]</sup>

Ayurvedic principles suggest that an imbalance in *Pitta dosha*, responsible for metabolism, can lead to liver disorders, highlighting the need for holistic management approaches.

Recent research supports the notion that dietary modifications, physical activity, and herbal treatments, which are emphasized in *Ayurveda*, can effectively manage NAFLD.

### Prevalance

Fatty liver disease is increasingly common worldwide, affecting a significant portion of the population, including children. NAFLD is the most common cause of liver disease worldwide. The global prevalence of NAFLD is estimated as high as one billion. Research estimates that NAFLD is present in up to 75% of overweight people and in more than 90% of people with severe obesity. The estimated global incidence of NAFLD is 47 cases per 1,000 population and is higher among males than females. The estimated global prevalence of NAFLD among adults is 32% and is higher among males (40%) compared to females (26%). The majority of obese patients (60-90%) and up to 50% of type II diabetics have fatty liver.

### Pathogenesis

The most common cause of liver injury is NAFLD, which starts with simple fat accumulation in the hepatocytes, progresses to NASH, ballooning of the hepatocytes, inflammation, fibrosis, and cirrhosis that leads to hepatocellular carcinoma.

Three mechanisms have been identified for fat deposit in the liver as the first step in this direction:

- a) Increased lipolysis in visceral adipose tissue is responsible for approximately 59% of liver fat,
- b) Hepatic de novo lipogenesis is responsible for approximately 26% of liver fat accumulation, and
- c) A high-calorie or fat-rich diet is responsible for approximately 15% of liver fat accumulation.

Fat deposit is considered a minor condition; But its path to NASH is complicated and is due to the interaction of the liver and many other organs. It uses parenchymal and nonparenchymal liver cells as well as signals from organs like gut, adipose tissue, and muscles. Dysbiosis and intestine microbiota, is responsible for liver fibrosis, inflammation, and fat genesis. Finally, the hepatic stellate cells are activated, which leads to a lot of extracellular matrix synthesis and deposition. It plays a vital role in this process because it protects adipose tissue from insulin's antilipolytic effects, which leads to the breakdown of triglyceride and the formation of free fatty acid and glycerol. Liver takes these and saves them as triglycerides. Liver fat (NAFLD), cardiovascular disease, and metabolic syndrome or metabolic diseases are all caused by Western diets and a high intake of fat and sugar. High-fat

accumulation in the liver changes the liver lipid environment, causes NASH development, cell organelle dysfunction, and cell injury that leads to death.

### Sign and Symptoms

1. *Ajirna* (Indigestion)
2. *Shoola* (Right Upper Quadrant pain)
3. *Chhardi* (Nausea/ vomiting)
4. *Aruchi* (Loss of appetite)
5. *Gauravata* (Abdominal heaviness)
6. *Daurbalya* (Weakness)
7. *Vibandha* (Constipation)

### Diagnosis

Elevated aminotransferase (ALT>AST)

Liver Biopsy showing

1. Macro vesicular steatosis
2. Mallory hyaline changes
3. Perivenular and Perisinusoidal fibrosis.

**Principles of ayurvedic management for non-alcoholic fatty liver disease:** *Ayurveda* has its own theories on how diseases arise, how to cure them, and their etiopathology. Non-alcoholic fatty liver disease (NAFLD) is a liver disorder that can lead to disorders like *yakritdalyodara*, but it is also associated with *agnimandya* because of *pragyapradha* and *mithya-aharavihara*. *Agnimandya* includes issues with metabolism, excretory mechanism, inadequate or disrupted absorption, and poor digestion. *Pitta dosha* has its seat in *Yakrit*, which is also the site of numerous other metabolic functions. The *agni* (*jathragni*, *dhatwagni*, and *bhutagni*) becomes disturbed when *yakrit* is impacted, leading to a variety of illnesses that are commonly referred to as noncommunicable diseases (NCDs). Therefore, NAFLD therapy is crucial for preventing NCDs. *Ayurveda* may be able to treat non-alcoholic fatty liver disease (NAFLD) as well as reverse it and return the liver to normal. To control NAFLD, the *Santarpanotha* disease protocol with the necessary modifications is helpful.

### The preventive elements

The following must be stayed away from.

Food items that are overly rich, sugary, dense, and viscous; recently harvested grains; wines made from the meat of marsh and marine animals; cow's milk and its byproducts; *Guda* (jaggery) products; and articles made from flour. It is recommended that people who dislike movement or are sedentary stay physically active. Day sleeping and excessive indulgence in soft beds (luxurious and mattress) should also be avoided.<sup>[7]</sup>

### Changes in Lifestyle and Diet

Use of *Haritaki* (*Terminalia chebula*) based recipes is advised; these include *Agastyaharitaki* mixed with honey and *ruksha* (dry) cuisine (without the use of ghee, oil, etc.) [Ch.Su.23/9]

A decoction of the *Triphala* herbs, *Bibhitaki* (*Terminalia bellirica*), *Haritaki* (*Terminalia chebula*), and *Amalaki* (*Emblica officinalis*), along with the herbs, *Aragwadha* (*Cassia fistula*), *Patha* (*Cissampelos pareira*), *Saptaparna* (*Alstonia scholaris*), *Vatsaka* (*Holarrhena antidysenterica*), *Musta* (*Cyperus rotundus*), *Madana* (*Randia dumetorum*), and *Nimba* (*Azadirachta indica*), should be consumed on a regular basis. Using this decoction regularly, at the right dose, and at the right time will help treat *Santarpaniya vyadhi*, including *madhumeha* (diabetes) and other illnesses.<sup>[8]</sup>

Dry foods like *Prasatika*, Italian millet, Sanwa millet, wild barley, horse gram, great millet, common millet, green gram, *Cakramudgaka*, pigeon pea seed along with wild snake gourd, and emblicmyrobalan should make up the majority of the diet. It is recommended to drink hydromel and to take in wines that help eliminate *kapha*, fat, and flesh. Smoking, exercising, fasting, and sudation are all advantageous. Regular exercise, eating just after the previous meal has been fully digested, consuming barley and wheat on a regular basis, and consuming ayurvedic recipes like *Vyoshadisaktu* are all beneficial.<sup>[9]</sup>

### Chikitsa siddhanta of yakritdalyodara

A. *Langhana*

B. *Rukshana*

C. *Shodhana* (Detoxification of body)

Preventive elements and lifestyle adjustment in the form of avoidable and adaptable meals and activities are the two previous subheadings that discuss *langhana* in the form of *lagu-ashana* (light and restricted diet) and *rukshana* procedures.

### Sodhana

*Sodhana* is the handling of choices in a scenario when the characteristics of *bahudosha* are apparent. For the purpose of *sodhana*, *nitya-sodhana* or *vidhivatsodhana* could be used, depending on the circumstances (the patient's *doshavastha* and *bala*). Depending on the patient's health, *Abhaya* (*Chebulic myrobalan*) and *Triphala* can be administered daily for "*Nityasodhana*."<sup>[10]</sup> Patients with good *agnibala* and *sharirbala* could adopt *Snehana* (with *Tikta-ghrita*) *purvakvidhivatsodhana* once a month.

As a purification therapy, emesis, purgation, and bloodletting should be performed based on the patient's condition.<sup>[11]</sup>

### Aushadha yoga (Sanshamana chikitsa)

Buttermilk and *Chebulic myrobalan* or of the three myrobalans or of the medicated wines are to be taken as portions. The decoction of *Chebulic myrobalan* with honey is made by boiling the three myrobalans in water, purging *cassia*, *patha*, and dita bark, along with *kurchi*, nutgrass, emetic nut, and neem.<sup>[12]</sup>

*Rohitaka haritaki churna* take it with *gomutra* /*jala*.<sup>[13]</sup>

*Guduchyadi churna*: Take Churna of *Guduchi*, *Ativisha Shunthi*, *Bhuniba*, *Yavtikta*, *Musta*, *Pippali*, *Yavakshara*. *Shudha Kasis Champa* with luke warm water.<sup>[14]</sup>

### Pathya and Apathya

The course of the disease and the evaluation of the risks determine how NAFLD is managed. The following are the primary methods used to manage NAFLD:

1. Dietary changes (calorie-restricted diet; 600 fewer calories per day than needed) Targeted weight loss of >7%—>9% lowers inflammation in the liver, ballooning, and steatosis. Mandate is to aim for >10% body weight loss and maintain that loss; avoid simple carbs, saturated fats, and sweetened drinks.
2. Increasing physical activity and exercising, as well as reducing overall idle time. As a result, the IR is decreased, the liver enzymes are improved, and the liver fat is decreased. The goal should be to walk 10,000 steps a day while doing aerobics.

### Literary review

Ayurveda review: The literature reference will be collected from classical Ayurvedic Samhita, library, internet, related articles, medical journals and research papers.

Modern review: Various texts of Modern Medicine, Research paper and other articles.

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