



**ORIGINAL RESEARCH PAPER**

**Ayurveda**

**NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD) AN AYURVEDIC APPROACH : A REVIEW**

**KEY WORDS:** Non- Alcoholic Fatty Liver Disease, NAFLD, Sthoulya Yakrut, Santarpanjanya Vyadhi, Yakrita Vikaar

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**ABSTRACT**

Non-alcoholic greasy liver illness (NAFLD) is the most well-known ongoing liver sickness in many regions of the planet. The present globalization and urbanization have affected people's lifestyles and caused metabolic disorders in other diseases. It should be regarded as the role of Ayurvedic therapy in the treatment of NAFLD. Edit classic texts, modern literature, and online resources in Ayurveda and NAFLD. **Discussion:** In addition to side effects, current treatment methods have many limitations. Traditional scientific therapies can effectively treat primary diseases. The term non-alcoholic fatty liver disease (NAFLD) describes a variety of diseases characterized by fatty liver, steatosis, steatohepatitis, and cirrhosis. Some empirical treatment systems, like eating regimen limitation, exercise, and weight reduction, address a first-line treatment with great potential in Ayurveda. In the early stages of NAFLD, Kapha Medo Dushti occurs. When Pitta is involved in the pathogenesis, inflammatory changes occur, leading to the next stage of the disease, namely non-alcoholic steatitis (NASH). When Vata enters the scene, fibrosis will occur, leading to liver cirrhosis. Treatment should eliminate pathological factors such as agni vaigunya, srotorodha and kapha medo dushti. A practical treatment plan that includes cleansing, sedation, and lifestyle changes, taking into account the specific physique of the body can help treat diseases correctly.

**INTRODUCTION -**

The liver is an important organ of the body, comparable to a prominent focus of biochemical research, where essentially the absorption of the large total amount of stimulating substances takes place. Deteriorations in lipid absorption in the liver due to various etiological factors lead to fatty liver. Condition in which the pattern of steatosis causes an enormous amount of fat to accumulate in the liver cells. Exactly when the fatty substance exceeds 5% of the hard and fast weight of the liver or more than 30% of the liver cells are in a lobe of the liver with fat storage, this condition is called fatty liver. The etiology of fatty liver is essentially in decline under two classes. The first group includes the high fat conditions that give the liver an expanded duty to utilize fat. The second arrangement includes liver cell damage conditions in which fat cannot be used due to liver cell damage. In the case of full fat it shows up for the most part as non-alcoholic fatty liver (NAFLD). Approximately 20% to 30% of adults worldwide in western countries have NAFLD and its inevitability increases from 70% to 90% in people who are either robust or NAFLD can advance to cirrhosis and end-stage liver illness and is probably going to be the main source of liver transplantation by 2020. NAFLD is anything associated with an expanded cardiometabolic risk. It has become the most remarkable justification for the tireless liver. (Davidson) NAFLD has been normal for a number of years. In metabolic diseases such as diabetes mellitus, fat, high blood pressure or hyperlipidemia. The gamble of NAFLD was most huge in individuals with a BMI > 25 kg/m<sup>2</sup>. Both greasy liver and NASH were addressed in all friendly events old enough, including kids, with the most elevated significance in the social question of age from 40 years to 49 years, with a comparable repetition in humans and women. Non-alcoholic fatty liver disease (NAFLD) is a common and persistent liver problem. The NAFLD monitors a number of problems, all of which are assumptions and explain the presence of Liver steatosis (smooth liver) in individuals who don't drink or polish off liquor. The pertinence of NAFLD requires that (a) there be proof of liver steatosis, either by imaging or histology, and (b) there be no help with getting liver fat. Together as indispensable brandy In recent times, the measurement of persistent liver disease, including NAFLD, has developed robustly, as demonstrated by the

World Health Organization. The inevitability of NAFLD in Indians ranges from 5 to 28%. Steatohepatitis (NASH), which, like hepatocellular carcinoma, can progress to cirrhosis of the liver; In India it turns out to be a gigantic difficulty for the liver's defense. Epidemiological reviews suggest that the amazing quality of NAFLD is related to 9-32% in normal India. Old Style *Kamala* and *Yakrut* Rogavario Messages These considerations can also be applied to fatty liver. Smooth liver disease can be described as an unconventional vasa (fat) complaint, which is the malabhaga (wasted piece) of the stale *mamsa-dhatu*.

The pathophysiology of NAFLD remains unclear. A better understanding of the pathophysiology would help understand possible therapies. Patients with NAFLD often remain asymptomatic. Therefore, most of them go undiagnosed for several years until they progress to fibrosis or advanced cirrhosis and Weight loss. Given the complex pathophysiology with a heterogeneous patient population and difficulties in diagnosis and therapy monitoring, drug development presents challenges. Some drugs currently approved for other indications appear effective and can be used, but new treatments are eagerly awaited. In Ayurveda, the traditional medicine system of India, various herbs for the treatment of fatty liver diseases are described. A polyherbal formulation with a useful combination of these herbs has been tested for the treatment of liver disease. This manuscript sheds light on the current evidence on pharmacological and non-pharmacological treatment options for NAFLD<sup>1</sup>.

**Aims And Objectives -**

To investigate the job of Ayurvedic treatment in administration of Nonalcoholic fatty liver disease.

**MATERIALS AND METHODS -**

Since the review is a survey study, the writing is looked for as Samhitas and other present day writing, books for the sickness; All important substance is thought of and examined to acquire an extensive idea in the administration of NAFLD. *Ayurvedic* classics, compendia, clinical medical texts and related websites were consulted and revised for the present work.

**Etiopathogenesis:-**

Pathogenesis of NAFLD, including the improvement of hepatic macrosteatosis because of expanded lipolysis and free unsaturated fats, the subsequent explanation being oxidative pressure, the presence of endotoxins, cytokines, adipokines and natural elements. These complicated communications of different variables lead to insulin opposition, serum and liver iron over-burden, and oxidative pressure, which prompts macro inflammation and fibrosis. *Yakrit* is a substantial *Koshhanga* firmly recognized with *Rasa, Rakta* and *Mamsa Dhatus* and assumes a substantial component in *Dhatu Parinama*. The etiology of greasy liver became examined. As indicated with the aid of using the Ayurvedic idea, a high-fats ingesting regimen, soda pops and an inactive manner of lifestyles are accountable for the *dushti* of *rasa, mamsa, medo dhatu* and *Prameha* taking place due to the indecencies of *Annavaha, Rasavaha* and *Medovaha Srotas* move approximately as *Nidanarthakara rogas* (illnesses that motive unique illnesses), that could set off the signal of greasy liver. Several structures were hypothesized to make clear the microorganism. The contemporary two-end result idea clarifies why now no longer all people with greasy liver foster liver fibrosis. The "number one hit" makes steatosis (greasy liver), that's simply exacerbated with the aid of using an inflammation with a "2d hit". The fibrogenic and yearning suppressant effects of leptin *in vitro* are in all likelihood essential to motive liver fibrosis. Notwithstanding insulin, segments of the main hit are the appearance of loose unsaturated fat from the focal fats tissue and adipokines, which then, at that factor circulation into the doorway vein, which activates an abatement in unsaturated fats oxidation within the liver and an growth in unsaturated fats synthesis. Fat import into the hepatocytes and reduced fats fare, which moreover continues up insulin safety from fibrosis. Components like leptin are in all likelihood wanted for fibrosis NAFLD is a *santarpana janya vyadhi* (contamination introduced approximately with the aid of using gorging) with *nidana* (etiology) and *samprapti* (pathogenesis) like *sthaulya*. The starting pathology is that *agni vikruti* (extrade in belly associated system) activates the association of *apakva anna rasa* (ineffectively molded belly associated parcel), which as a consequence activates *kapha dosha* terrible addiction and the improvement and lopsided assertion of *meda* (greasy tissue) within the *yakrit*. This situation is referred to as greasy liver. The essential variables accountable for the etiopathogenesis of NAFLD include the indecencies of *Samanavayu, Apana Vayu, Pachaka pitta, Ranjaka Pitta, Kledaka Kapha, Rasa Rakta Medo Dhatu, and Purisha*<sup>2</sup>.

**Clinical Presentation**

The investigation is as often as possible made after the coincidental identification of duplicated liver compounds or greasy liver on ultrasound. These irregularities are commonly identified while going for dyspepsia, discomfort, or exhaustion sooner than clinical techniques which incorporate organ gift or a routine wellness examination. The improvement of ascites, *anasakra*, variceal bleeding, or signs of hepatic encephalopathy suggest decompensated cirrhosis. Mainly NAFLD has styles of displays Obesity NAFLD: Fatty liver in overweight people, that is greater not unusual place and has a higher analysis NAFLD lean: Fatty liver in lean people, much less not unusual place, however relatively poorer analysis Most sufferers are asymptomatic The analysis frequently follows randomly typically selected evaluation of dyspepsia, disquietude, and weakness. NASH/NAFLD can bring about cirrhosis and end-level liver issues and is thought about the fundamental rationale of liver transfers. Most victims with NAFLD are asymptomatic<sup>3</sup>.

**Diagnosis-**

A determination of NAFLD is firmly suggested when metabolic disorder is available and other explicit causes of liver disease and excessive alcohol consumption (> 20 g / day) have been excluded; Asymptomatic elevations in

aminotransferases should be suspected, although it may be present in ordinary or fluctuating aspartate aminotransferases (AST) and alanine aminotransferases (ALT) isolated elevations in gamma-glutamyl transpeptidases (GGT). Unfortunately, there is not a single diagnostic blood test. The ALT is typically higher than the AST. Elevated ALP values are seen in around 30% of the cases; It is vital to recognize NASH, which doesn't need follow-up care, from NASH; Elevated serum transaminases more noteworthy than two times the furthest reaches of ordinary and the presence of the metabolic disorder predictors of NASH are useful. Ultrasound may reveal liver steatosis as a hyperechogenic picture, i.e. H. a "light liver". Radiological techniques used to assess NAFLD include ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), magnetic resonance spectroscopy (MRS) and Fibroscan (tissue elastography). These radiographic modalities are accurate for the detection of moderate to severe liver steatosis and none are ready to recognize basic steatosis from NASH or to decide the phase of liver fibrosis. The biopsy is demonstrative, however may not be needed regularly. Empowers the semi-quantitative appraisal of fat stores and the related necroinflammation and fibrosis. The typical histological characteristics of NAFLD thus predominate in the perivenular regions. Zone 3 and hepatic acini include the presence of macrovesicular steatosis, lobular neutrophil inflammation, presence of Mallory bodies, balloon degeneration, lipogranuloma, and pericellular fibrosis. NAFLD requires the rejection of one more unambiguous etiology of liver sickness and weighty liquor utilization. pected to be the cause of an asymptomatic increase in aminotransferases. In general, the ALT is higher than the AST. Diagnosis is strongly recommended when metabolic syndrome is present and a specific etiology has been excluded. The radiological modalities of ultrasound, CT, MRI, MRS are precise to distinguish liver steatosis; A liver biopsy is analytic, yet may not be needed regularly. There is currently no exact treatment for NAFLD. Currently, the primary methodology is to change diet in light of metabolic profile and get patients to build their actual work level. Small changes in body weight can work on the necroinflammatory movement of the liver. Several other treatment modalities for NAFLD include treating risk factors such as diabetes mellitus, hyperlipidemia, the use of antioxidants, and insulin sensitizers<sup>4</sup>.

**Ayurvedic Point of View: Ayurvedic Point of View:**

NAFLD may be linked with *Santarpana Janya Vyadhi* (glutting affliction) on account that *Nidana* (etiology) and *Samprapti* (pathogenesis) resemble *sthaulya*. The essential pathology in *Agni Vikriti* (poor quirk of the belly associated framework) is the path of motion of *Apakva Anna Rasa* which therefore activates the poor quirk of *Kapha Dosha* and *Medodhatvagni*. *Srotasa, Sthayi Medodhatu* placed on weight oddly or unevenly without certainly managing the going with *dhatu*, for instance, *asthi, majja* and *shukra*. Oily liver: Corrupt *Kapha* and *Meda* cause *Srotorodha* (channel blockage) which causes *Vata*. An imperfect *Vata* activates *agni vikriti* once more and this cycle is going over precisely the equal thing.

**Nidana of NAFLD**

*Aaharaj Nidana* – incorporates excessive utilization of *Lavana* (*harsh*), *Amla Katu* (unpleasant) *Rasa* predominant eating routine, inordinate utilization of *Kshara Sevana*, excessive utilization of *Snigdha* (sleek), *Guru Ushna* (hot) *Sleshmala Ahara* (diet), Excessive utilization of *Navanna* (new collected food), *Mamsa* (meat), *Navamadhya* (recently made alcohol), *Ikshuvikara* (sugar stick items) *Sevana, Kulatha, Masha, Tila Taila, Moolaka, Dadhi* (curd), *Shukta* (pickles), *Sura* (supernatant liquor), *Souveeraka*, shoddy nourishment for example Pizza, use of cold beverages with diet, *Adhyashana* (unnecessary eating), *Vishamashana* (unpredictably propensity for taking food), *Virudha* (having incongruent

food), *Vidahi* (hot), *Akalabhojana* (not follow appropriate opportunity to take supper), *Abhojana* (fasting) and so on are etiological variables to aggravated the pathogenesis of NAFLD. *Viharaj Nidana* incorporates less exercise or sluggish to work out, sedentary way of life, abnormalities in dozing design, excessive indignance, *Diwasvapna* (day rest), *Vegadharana* (concealment of regular desire), *Vireka Vamana Sneha Vibhrama*.

#### Fatty liver as a *Nidanarthakara Roga*

*Dalhana* has cited that *Vata Vikara* could happen because of *Avarana* (detailing) from *Marga* of *Medo Dhatu*. These are auxiliary infections that lead to greasy liver illness, like corpulence, diabetes mellitus, hypothyroidism, and so forth, in which *Vata* assumes a significant part in the pathogenesis. The typical gati of *Vata Dosha* gets stopped up with an abundance *medo dhatu* which is in this way debilitated and brings on additional pathogenesis. These variables lead to greasy liver illness.

#### Samprapti of NAFLD and its consequences -

NAFLD is called *santarpana janya vyadi* at the most basic level. Regardless of *Santarpana Ahara* and *Vihara*, having a stable lifestyle, affirmation of high-calorie foods, a sedentary lifestyle, etc. also hope to become an important part of the disease. But *Dushti Kapha, Rasa* and *Medo Dhatu and Shrotasa* are most obvious from the constellation, the relationship between the different parts. Things like *Vata, Pitta, Rakta, Anna Vaha and Purisha Vaha Srotas* cannot be discarded. From the point of view of *Samanya Vishesh Siddhanta*, the limited use of almost the same substance (*Dravyasamanya*), almost the same properties (*Gunasamanya*), or almost the same exercise (*Karmasamanya*) will help in the future. In the signs of disease, there will be defects in some important segments: *Dosha, Dhatu, Mala, Shrotasa*.

#### Rupa (Clinical Presentation) of NAFLD

The appearances can be ascribed transcendently to the *Dushti of Rasa and Medo Dhatu and Srotasa shows the qualities of Jatharagni and Dhatvagni Mandya*. The patient can encourage signs of *ajirna* and *sthaulya* as the root cause is *aam* and *agnimandya*. Such as *Atipravritti of Mala* (never ending or complete elimination of dung), *Anannabhilasha, Glani* (general insufficiency), *Vishtambha* (distension of the middle district), *Gaurava* (feeling of heaviness), *Brahma* (Dizziness), *Anaha* (belching), *Praseka* (excessive reluctance), *Utklesha / Hirnilasa* (nausea), *Gaurava* (feeling of weight). Signs of *Sthaulya Ati Kshudha* (Excessive Desire), *Ati Sveda* (Excessive Sweating), *Ati Nidra* (Excessive Rest), *Daurbalya* (General Deficiency), *Udara Vriddhi* (Enlargement of the abdomen), *Anga Shithilata* (looseness of the Body), *Ayasa Akshamata* (Incapable of endure real exercise).

#### Chikitsa (Management)<sup>5</sup>

The treatment should focus on *Agni Deepana, Ama Pachana, Kapha Medo Sroto Shodhan*, which are basically similar to the treatment rule of *Ajirna* and *Sthaulya*. There is no settled treatment for NAFLD in standard prescription. Treatment is generally highlighted smoothing out body weight, which ensures and improves histological disease development in NASH. Profile (heaviness, diabetes, hyperlipidemia, High circulatory strain) and extended real work in patients Even little changes in body weight (1 kg to 3 kg) can improve histological changes and chat insulin resistance. Various modalities Treatment modalities for NAFLD join treating danger factors like diabetes . There is no settled pharmacological treatment for NAFLD in present day medicine without a drug unquestionably exhibited to be convincing. A couple of observational treatment techniques like dietary constraint, real work, and weight decrease structure the fundamental line of treatment. Ayurveda has massive potential in treating noncommunicable contaminations, and NAFLD is one of them. *Agni Deepana*

(vivifying the stomach related fire), *rookshana* (drought treatment), *sroto shodhan* (clearing channel blockages), calming *kapha, medo* and *vata* should be the primary line of treatment in the treatment of oily liver. The treatment rule is embraced here. It is basically similar to *sthaulya*, when oily liver moves to a more significant level and *dhatu* is incorporated, treatment should be composed towards *prasadana* (disinfection) of *rasa* and *rakta* and moreover *yakrit shothahara* (quiets liver inflammation). *Samshodhana, Samshamana, Ahara, and Achara* help rearrange fat changes in the liver and prevent further troubles. Churnas like *Patoladi, Hapushadi, Narayana, Avipathi*, various courses of action of *Eranda Taila, Trivrit Avaleha, Misraka sneha, Haritakyadi ghrita* can be safely used to satisfactorily treat NAFLD. Papers definitions like *Kashaya (Vasaguduchyadi, Phalatrikadi, Drakshadi, PatolaKaturohinyadi), Arishta (Sudarshanarishta, Rohitakarishtha, Pippalyasava), Churna (Hinguvachadi, Vaiswanara) , Herbo-mineral preparations (Abhrak Bhasma , Arogyavardhini Rasa, Punarnava Mandoor)* are striking for their hepatoprotective, hypolipidemics and haematinic properties, and can be effectively used for the organization of NAFLD. Disharmony in the connection among people and the environment is the primary guilty party, all things considered, particularly metabolic disorder, which predominantly emerges from inappropriate eating routine and way of life, so diet and way of life assume a significant part in the causation, counteraction and treatment of NAFLD. *Pathya Apathya*, which can be prescribed to the patient over the span of treatment.

Some formulations mentioned here in Ayurveda classics like

- *Matulunga Rasa*
- *Shankha Bhasma*
- *Jambeeraphala Rasa*
- *Sharapunkha mula Kalka*
- *Shalmali Pushpa Phanta*
- *Yavanika Churna*

*Pathya Apathya to be continued in the administration of NAFLD<sup>6</sup> - Pathya - Use Shyamaka, Yava, Laja, Mudga, Dadima, Pippali, Maricha, Draksha, Kapitha, Jambu, Ela, Karavellaka, Patola, Shigru, Ardraka, Kushmanda, Kaalashaaka, Lasuna, Panchakola, Madhu, Takra, Ushnajala, Puranashali, Kodrava, in routine diet. Also do the upavasa,, Kale Bhojana, Vyayama, Chamkramana Yoga, Pranayama Dhyana, Pathana, Madhyama Marga Sheelana* in day by day schedule.

*Apathya - Try not to take Tila, Masha, Kanda, Kulatha, Masura, Mulaka, milk preparations (Dugdha, Dadhi), Mastu, Sura, Ikshuvikara Anupa, Oudaka Mamsa, Navadhanya, Chanaka, in the diet. Try not to take over the top eating routine, stationary lifestyle, stress, indignance, Svapnaviparyaya , Vegadharana and excessive thoughts.*

#### CONCLUSION-

NAFLD is an undeniably perceived clinicopathological sickness that can form into end-stage liver infection for which ordinary medication has neglected to build up a compelling therapy methodology. *Ayurvedic* medicines have colossal potential in treating these kinds of way of life issues. As indicated by *Ayurvedic* ideas, *Agni, Kapha, Vata Dosha, Anna Vaha Srotasa, Rasa, Rakta, Meda Dhatu and Srotasa, Yakrit* are the foundations of *Samprapti*, the non-alcoholic greasy liver. A commonsense treatment convention with *Virechana, Shamanoushadha* and *Pathyasevana* with The exceptional significance of the body constitution can help in the right treatment of the disease. Proper utilization of the *Ayurvedic* treatment convention alongside way of life changes can incredibly forestall the movement of the illness and different confusions. Greasy liver is basically brought about by inordinate calorie admission and a stationary way of life, which demonstrates the remedy of an undesirable way of life. Style as the First-Line Approach to NAFLD Prevention and Management. By following the correct way of life and changing your eating routine, you can forestall illness.



Conventional medication is useful, the infection is likewise beneficial and improves the personal satisfaction for patients.

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