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# EVALUATION OF CLINICAL ROLE OF FATTILIR SYRUP ON FATTY LIVER AND ASSOCIATED CONDITIONS

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#### **ABSTRACT**

Liver is an important organ responsible for blood purification, metabolism & fat digestion. When it fails to do so, diseases develop and fatty liver is one that condition. It is the condition in which more than 5% of fat gets deposited in liver. It is often associated with metabolic disorders and obesity. Ayurveda provide treatment which includes management of liver diseases with Ahara-Vihara as well as natural drugs mentioned in ancient Ayurvedic literatures. In Ayurveda, liver diseases are classified as Yakrit Roga and Ayurveda suggested various drugs such as Bhumyamlaki, Punarnava and Sharpunkha, etc. for treating liver conditions. Fattilir syrup is a natural preparation which consists of 10 medicinal drugs and recommended for managing such types of condition. This article presented a study which showed that reduction of fat in liver & recovery of liver functions after the use of Fattilir syrup.

KEYWORDS: Fatty Liver, Liver Diseases, Medicinal drugs, Yakrit Roga.

# INTRODUCTION

Fatty liver disease (FLD) is the condition in which fat deposits in liver and it is related to many systemic, hormonal and lifestyle diseases like Diabetes, Obesity and Metabolic syndrome, etc. The major factors which cause FLD included excessive alcohol consumption, hepatitis and faulty lifestyle habits. The liver is known as Yakrita in Ayurveda and it is known as a seat of Pitta Dosha. Yakrita is related to formation and maturation of blood thus an excess intake of factors affecting aggravating Pitta cause inflammation and toxicity in liver.

"स्थूलेस्युरदस्तरारोगाविसर्पाः सभगंदराः। ज्वरातिसारमेहाशः श्लीपदापचेअकामलाः।॥यो.र.मेदोरोग)।

Above Sutra refers that if Pandu (Anaemia) left untreated it leads to disorders such as Kamla (Jaundice) which get

vitiated by Vidahi and Abhishyandi Anna which leads to Rakta and Pitta Dushti. If Pitta gets decreases then favourable conditions for Kapha develops and liver fails to metabolize Abaddha Medas and they tend to accumulate in liver.

The preferred treatment of FLD in Ayurveda lies in its classical drugs. Fattilir syrup is manufactured out of all prime Ayurvedic medicinal drugs which directly encounter the deposited fats in liver and other liver disorders. The formulation contains Kutaki 100 mg, Chiraita 50 mg, Punarnava 500 mg, Giloya 600 mg, Bhumiamla 700 mg, Aloevera 600 mg, Bhringaraja 600 mg, Triphala churna 250 mg, Sarpunkha 700 mg and Chitraka moola 500 mg, with sugar not exceeding 50% of the total composition. Ayurvedic properties of these medicinal compounds are presented in Table 1 and Rasadipanchak properties of these compounds are mentioned in Table 2.

www.ejpmr.com Vol 12, Issue 12, 2025.

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Table 1: Ayurvedic property of medicinal compounds of Fattilir syrup.

Ingredients	Karma	<b>Chemical Constituents</b>	Pharmacological Action
Kutki	आस्रजित, भेदिनी, हृदयहितकारी, कफपित्तज्वरापह	D-Mannitol, Kutkin, Apocyanin, Picrorhizin	Carminative, digestive, liver stimulant, anthelmintic, anti-diabetic, improves body strength
Chiraita	पित्तास्रनुत, शोफहर, कासहर, ज्वरहर, कृमिध्नी	Swertinin, Glutamic acid, Threonine, Aspartic acid	Anthelmintic, blood purifier, Aampachaka, indicated in fever and burning conditions
Punarnava	शोथनाशन, पां <u>डु</u> हर, शूलनुत, दीपनी, व्रणहर	β-Sitosterol, Retinoids, Sterols	Diuretic, carminative, cardiac stimulant, rejuvenative, antihepatotoxic
Giloy	बल्य, अग्निदीपनी, आमहर, दाहहर, कृमिहर	Berberine, Tinosporin, Ascorbic acid, Phenols	Rejuvenative, antipyretic, liver protective, immunomodulatory
Bhumyamlaki	पांडुहर, विषहर, दाहहर, कफकुष्ठहर	Lignans, Glycosides, Amarin	Astringent, antiviral, hepatoprotective, laxative, febrifuge
Aloe vera	भेदनी, प्लीहहर, यकृत्वृद्धिहर, त्वक्शुद्धिकर	Emodin, Barbaloin, Aloenin, Aloctin-A	Digestive, liver stimulant, blood purifier, aphrodisiac, hepatoprotective
Bhringaraj	केश्य, रसायन, कासहर, पांडुनुत	Ecliptin, Wedelolactone, Stigmasterol	Hepatoprotective, purgative, analgesic, hypotensive
Sharpunkha	यकृतहर, प्लीहघ्न, व्रणहर, श्वासहर	Tephrosin, Cleguelin, Isotephrosin, Rotenone	Anti-inflammatory, antimicrobial, carminative, anti-helminthic
Chitraka Moola	पाचन, कुष्ठहर, कृमिनुत्, ग्राही	Chitanone, Plumbagin, Plumbagic acid	Carminative, digestive, anti- inflammatory, anti-colic, anti-aging

Table 2: Rasadipanchak property of medicinal compounds of Fattilir syrup.

Contents	Rasa	Guna	Veerya	Vipaka	Karma
कुटकी	तिक्त	रुक्ष, लघु	शीत	कटु	कफ-पित्त साम्य
चिरायता	तिक्त	रुक्ष, लघु	शीत	कटु	कफ-पित्त साम्य
पुनर्नवा	मधुर, तिक्त, कषाय	रुक्ष, लघु	<i>380</i> 7	कटु	कफ, वात साम्य
गिलोय	तिक्त, कषाय	लघु, स्निग्ध	<del>300/</del>	मधुर	वात, पित्त, कफ साम्य
भूम्यामलकी	तिक्त, कषाय, मधुर	रुक्ष, लघु	शीत	मधुर	कफ, पित्त शामक
एलोवेरा	तिक्त	गुरु, स्निम्ध, पिच्छिल	शीत	कटु	वात, पित्त, कफ साम्य
भृंगराज	कटु, तिक्त	रुक्ष, लघु	उष्ण	कटु	वात, कफ साम्य
शरपुंखा	तिक्त, कषाय	लघु, रुक्ष, तीक्ष्ण	<i>380</i> 7	कटु	कफ, वात साम्य
आमलकी (त्रिफला घटक)	पंचरस (कषाय)	लघु, रुक्ष, शीत	शीत	मधुर	सर्वदोष प्रशम
विभीतकी (त्रिफला घटक)	कटु	लघु, रुक्ष	<i>3ष्ण</i>	मधुर	वात, पित्त शामक
हरीतकी (त्रिफला घटक)	पंचरस (कषाय)	लघु, रुक्ष	3807	मधुर	सर्वदोष प्रशम
यष्टिमधु	मधुर	गुरु, स्निम्ध	शीत	मधुर	वात, पित्त शामक
चित्रकमूल	कट	लघु, रुक्ष, तीक्ष्ण	<i>3ष्ण</i>	कटु	वात, कफ साम्य

Considering importance of these contents of formulation, this study presented **Two Cases** to evaluate the efficacy of *Fattilir Syrup* in the management of fatty liver disease.

#### **CASE REPORT-1**

The first case of a 69-year-old male, presented with complaints of abdominal pain, indigestion, patches around the neck, loss of appetite, belly fat and puffiness around the eyes. Laboratory investigations including CBC, Liver Function Test (LFT), and Kidney Function

Test (KFT) were conducted, and the diagnosis was confirmed as  $2^{nd}$  grade fatty liver. The patient was advised *Fattilir Syrup* along with dietary modifications.

# **CASE REPORT-2**

The second case of a 52-year-old female; complained indigestion, bloating, excessive belly fat, decreased appetite and abdominal pain. Investigations such as CBC, LFT, and KFT were carried out, and she was diagnosed with 1<sup>st</sup> grade fatty liver. She was also

www.ejpmr.com Vol 12, Issue 12, 2025. ISO 9001:2015 Certified Journal 282

prescribed Fattilir Syrup along with specific dietary changes.

#### **Treatment Protocol**

- ✓ In both cases, two teaspoons of Fattilir Syrup were administered twice daily for a period of two months, accompanied by individualized dietary advice.
- ✓ The dietary regimen included *Pathya* foods such as green leafy vegetables, fresh fruits, whole grains, pulses, buttermilk, warm water, and cow's milk characterized as *Laghu* and *Kapha-Pitta Shamak* in Avurveda.
- ✓ Apathya foods such as alcohol, oily, fried, processed foods, meat, and caffeine were restricted, as they are considered Guru, Snigdha, Ati-Madhur, and Madyahar.

✓ Lifestyle management included daily exercise, stress reduction and weight control.

#### Follow-up Period

Follow-ups were conducted throughout the two-month period.

# RESULTS AND OBSERVATIONS

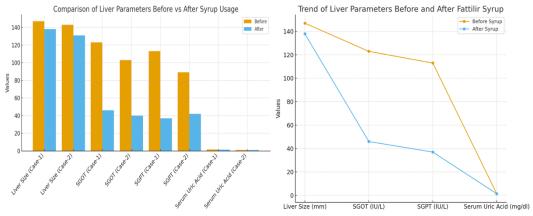
The ingredients of *Fattilir Syrup* have been proven to aid in the reduction of fat deposition in the liver while improving appetite and digestive function. The study revealed significant effect of Fattilir syrup on patient as USG results showed improvement in grade of fatty liver and associated conditions. USG was also done after two months and results are presented in **Table 3**.

Table 3: Effects of treatment on symptoms of disease and associated conditions of liver.

Parameters	Before treatment	After treatment	
Liver Size (mm)	Case-1: 147 mm	Case-1: 138 mm	
Liver Size (mm)	Case-2: 143 mm	Case-2: 131 mm	
SCOT (N.V. < 40 HJ/L)	Case-1: 123 IU/L	Case-1: 46 IU/L	
SGOT (N.V. < 40 IU/L)	Case-2: 100 IU/L	Case-2: 40 IU/L	
SCDT (NIV < 45 HI/I)	Case-1: 113 IU/L	Case-1: 37 IU/L	
SGPT (N.V. < 45 IU/L)	Case-2: 89 IU/L	Case-2: 42 IU/L	
Serum Uric Acid (N.V.	Case-1: 1.48 mg/dl	Case-1: 1.45 mg/dl	
0.8–1.3 mg/dl)	Case-2: 1.0 mg/dl	Case-2: 1.0 mg/dl	
Grade of Fetty Liver	Case-1: 2nd Grade	Case-1: 0	
Grade of Fatty Liver	Case-2: 1st Grade	Case-2: 0	
Patches Around Neck	Case-1: Dark	Case-1: Faded	
r atches Afound Neck	Case-2: Absent	Case-2: Absent	
Latheray	Case-1: Present	Case-1: Active	
Lethargy	Case-2: Absent	Case-2: Active	
Rolly Fot	Case-1: Protruded	Reduced in both cases	
Belly Fat	Case-2: Excess		
Appetite	Reduced in both cases	Increased in both cases	
Indigestion	Present in both cases	Resolved in both cases	
Pain in Abdomen	Present in both cases	Resolved in both cases	
Deffines Annual Fees	Case-1: Present	Case-1: Resolved	
Puffiness Around Eyes	Case-2: Absent	Case-2: Absent	

After the therapy the liver size showed reduction of approximately 6–8%. SGOT levels decreased by around 62% while SGPT exhibited the highest improvement

with about a 67% reduction. Serum uric acid levels remained stable, showing no significant change as depicted in **Figures 1** and **2**.



Figures 1 & 2: Improvement in disease parameters after the therapy.

www.ejpmr.com Vol 12, Issue 12, 2025. ISO 9001:2015 Certified Journal 283

# **Probable Mode of Action of Therapy**

Fattilir Syrup is made from many synergistic herbs that support liver function and help body to get detoxified. Kutki is hepato-protective, hypolipidemic and antiinflammatory, reducing oxidative stress, preventing fat deposition in the liver, and reducing cytokine production. Chirayta is hepato-protective for the liver from damaging substances, helps in digestion, and stimulates insulin release resulting in hypoglycemic effects. *Punarnava* is hepatoprotective and immunomodulatory and improves serum bilirubin and LDL levels, while normalizing liver enzymes. Giloy rejuvenates the liver preventing fat deposition and supports the immune response with inhibition of cytokine production. Bhumvamlaki helps in bile secretion, decreases oxidative stress, and has antiviral and nephroprotective properties. Aloe vera is hypolipidemic and digestive stimulant, increases bile flow, emulsifies liver fats, and reduces oxidative stress. Bhringaraja is restorative to liver damage, stimulates bowel motility and reduces pain. Sharpunkha is cytoprotective, antimicrobial, and antiinflammatory, regulating cytokine levels and clears toxins from circulation. Triphalachurna has antioxidant and rejuvenative effects, scavenges free radicals, increases fatty acid metabolism, and promotes regeneration of liver tissue. Chitraka moola is antiinflammatory and a digestive stimulant, increasing liver cell regeneration and activity.

# DISCUSSION

Approximately 60% of cases of Fatty liver develop in 10 years of diagnosis. Further complications such as Hepatitis, Jaundice and livercirrohsis, etc. if left untreated leads to liver failure and death. As a reflection of severity of this disease, most of the OPD management of patient is focused on prevention of complications and relief in symptoms of disease. The present study evaluated the therapeutic impact of the syrup on two clinical cases with disturbed liver functions, fatty liver changes, and associated complaints. The comparative analysis of before and after treatment findings highlights a remarkable improvement in biochemical, morphological, and symptomatic parameters.

# Improvement in Liver Size and Fatty Liver

Both cases demonstrated a reduction in liver size, with Case-1 decreasing from 147 mm to 138 mm (-6.12%) and Case-2 from 143 mm to 131 mm (-8.39%). Correspondingly, the grade of fatty liver regressed to normal (grade 0) in both cases; indicating effective hepatoprotective and hypolipidemic activity of the formulation.

### Improvement in Biochemistry Markers

The most significant changes were noted in the liver enzyme levels. SGOT levels decreased by 62.60% (Case-1) and 61.17% (Case-2), while SGPT levels reduced by 67.26% (Case-1) and 52.80% (Case-2). Serum uric acid levels remain unaffected, demonstrating that the syrup does not adversely affect purine metabolism.

Both patients reported considerable relief, dark patches around the neck faded in Case-1 and were absent in Case-2 after the therapy. Lethargy, initially present in Case-1, was replaced by an active state in both cases after treatment. Belly fat, indigestion, abdominal pain, and puffiness around the eyes showed substantial resolution, while appetite improved in both patients.

# **CONCLUSION**

The findings ultimately suggest that Fattilir syrup has been found to be highly effective treatment finishes for various hepatic and metabolic diseases. It showed significant efficacy in morbid Kapha and Pitta type pathologies underlying Medoroga and Sthoulya, blood purification and as a treatment for the spectrum of Yakrit Roga. Also, visible evidence of recovery from the liver was registered in USG reports, demonstrative of its therapeutic action. Fattilir syrup demonstrates its efficacy in treatment of both alcoholic and non-alcoholic fatty liver diseases since the active principles act on the underlying pathophysiological mechanism in both conditions. The formulation promotes liver inflammation reduction via cytokines' activity suppression. The formulation also participates in abdominal fat reduction and fat oxidation through inhibiting fat accumulation and enhancing fatty acid metabolism. Its rejuvenative action promotes restoration of cells, creating an enhancement of energy and a feeling of rejuvenation. Its digestive and gentle laxative action also relieves constipation, indigestion, anorexia, hence improving appetite and digestive efficiency. In conclusion, therapeutic properties of Fattilir syrup significantly restored liver function and reversed hepatic abnormalities without adverse effect and minimized chances of invasive intervention like liver transplantation.

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www.ejpmr.com Vol 12, Issue 12, 2025. ISO 9001:2015 Certified Journal 284