

**LITERARY, ANALYTICAL AND OBSERVATIONAL CLINICAL
EVALUATION OF LIV XN CAPSULE AND LIV XN TABLET
COLLECTIVELY, ON NON-ALCOHOLIC FATTY LIVER DISEASE**

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ABSTRACT

Non-alcoholic Fatty Liver Disease (NAFLD) is a prevalent issue worldwide, affecting a broad demographic and linked with various co-morbidities. The management of NAFLD encompasses addressing both the liver condition and its associated co-morbidities. A comprehensive treatment strategy includes lifestyle changes, dietary adjustments, and pharmaceutical interventions. Although conventional and Ayurvedic medical approaches both adopt an extensive strategy in treating this condition, care is taken with prescribed medications due to potential side effects. In such contexts, Ayurvedic remedies become crucial. These treatments are pivotal in alleviating liver issues, sustaining liver and digestive system health, and enhancing the overall well-being and life quality of individuals affected by liver disorders. This study offers a critical examination of *LIV XN CAPSULE and LIV XN TABLET*, reputed to be among the best for treating liver disorders.

KEYWORDS: *LIV XN CAPSULE and LIV XN TABLET.*

INTRODUCTION

(NAFLD) or the Non-alcoholic Fatty Liver Disease is one of the distinct hepatic conditions that have become the global problem and one of the most common causes of chronic liver disease.^[1] Chronic liver disease has a worldwide prevalence irrespective of age, sex, region or race.^[2] In Western countries, the prevalence of NAFLD in the general population is about 20-30% and this may progress to hepato- carcinoma and liver cirrhosis.^[3] As per UK National

statistics, liver diseases are steadily increasing over the years and have been ranked as the fifth most common cause of death.^[4] They have also been identified as the second leading cause of mortality amongst all digestive diseases in the US.^[5]

Asian countries like Japan and China have well documented the increased incidence of NAFLD and Diabetes mellitus (DM), obesity, hyper- insulinemia are said to be its predisposing factors.^[6] In India in last two decades, a rise has been observed in incidence of DM, obesity, insulin resistance and NAFLD in India.^[7,8] This can be directly correlated to the rise of NAFLD in India due to its limited data on the prevalence.^[9,10]

Fatty liver disease is also termed as non- alcoholic fatty liver disease (NAFLD) or non-alcoholic steatohepatitis (NASH). Then affecting only, the liver, NAFLD is now recognized as a multisystem disease and has been associated with mortality-related cardiovascular disease, chronic kidney disease, osteoporosis, extra-hepatic malignancy with increased liver-related morbidity and mortality.^[11] Obese people are also said to have increased prevalence of NAFLD ranging from overweight to obese and severely obese, is associated with NAFLD.^[12] Based on the current guidelines, the diagnosis of NAFLD is done the following criteria; 1) the presence of hepatic steatosis (>5% of hepatocytes determined by histology or >5.6% determined by nuclear magnetic resonance techniques); 2) no significant alcohol consumption (defined as ongoing or recent alcohol consumption of >21 drinks/week for men and >14 drinks/week for women) and 3) no competing etiologies for hepatic steatosis.

Treatment of NAFLD should be aimed at decreasing disease activity, delaying the progression of fibrosis, and reducing the risk factors associated with their high cardiovascular risk.^[13,14] The management of NAFLD comprises of treating liver disease as well as the associated metabolic comorbidities such as obesity, hyperlipidemia, insulin resistance, and T2DM. Many studies indicate that lifestyle modification may reduce aminotransferases and improve hepatic steatosis when measured by either US or MR imaging and spectroscopy.^[13] Potential therapeutic modules for NAFLD are managed with weight loss lifestyle modification medications, orlistat, sibutramine and bariatric surgery for obesity, insulin sensitizers, metformin and thiazolidinediones for insulin resistance lipid lowering agents, statins, fibrates and polyunsaturated fatty acids for dyslipidemia and antioxidants such as Vitamins E and C, Betaine, N- acetylcysteine and Probiotics like VSL#3 and Oligofructose

for Oxidative stress.^[15]

The COVID-19 pandemic has heightened awareness about the importance of immunity, wellness, and traditional and alternative medical sciences such as Ayurveda. Ancient medical practitioners, including Acharya Sushruta and Acharya Charaka, devoted years to researching and documenting the properties of medicinal herbs and minerals. Their findings, preserved in ancient texts like the Granthas or Samhitas, continue to serve as valuable sources of knowledge today. According to the World Health Organization, approximately 70-80% of the global population primarily relies on these herbal and non-conventional medicines for healthcare.^[16]

Modern medicine and Ayurveda exhibit significant differences in their approaches to health. Ayurveda, an ancient holistic science, has been dedicated to promoting well-being and preventing diseases for centuries. Modern medicine, on the other hand, excels in emergency care, diagnostics, and surgical interventions.

Ayurveda has demonstrated its effectiveness particularly in managing chronic conditions. Integrating both systems could greatly benefit society by enhancing disease management and recovery processes, including those for liver diseases.^[17]

Ayurvedic science has been effectively treating liver diseases for centuries, demonstrating both safety and efficacy. Ayurvedic remedies for liver disorders are known for their low toxicity, in contrast to modern medicines, which often carry a higher risk of systemic toxicity. This makes physicians hesitant to prescribe modern treatments for prolonged periods. Numerous studies have shown that Ayurvedic herbs and products contain bioactive molecules that provide multiple benefits. These include protecting the liver from oxidative stress, offering anti-inflammatory and immune-modulating effects, aiding in liver regeneration, promoting virus elimination, blocking fibrogenesis, and inhibiting tumor growth in both laboratory and clinical settings.^[19]

In India, over 50% of patients with liver disorders rely on Ayurvedic medicine for treatment. Therefore, this study aims to evaluate the efficacy of two Ayurvedic formulations: **LIV XN CAPSULE and LIV XN TABLET**. The ingredients of these products are detailed in the Samhithas, the traditional texts of Ayurvedic science. The study administered a daily dose of **1- 2 capsule of LIV XN CAPSULE and 1-2 tablets LIV XN TABLET, twice a day and in**

a form of Ayurvedic Patent Medicine Duly Approved By AYUSH department of Haryana.

Over the course of 45 consecutive days, the results demonstrated a statistically significant increase ($P < 0.05$) in treatment of Non-alcoholic Fatty Liver Disease and Liver function disorders.

AIMS AND OBJECTIVE

The present work was undertaken with the following aims and objectives

Conceptual and hypothetical evaluation of Non-alcoholic Fatty Liver Disease and associated liver disfunction mentioned in ayurvedic Texts.

Literary, Analytical and Observational Clinical evaluation **LIV XN CAPSULE and LIV XN TABLET** in the management of Non-alcoholic Fatty Liver Disease and associated liver disfunction mentioned in ayurvedic Texts.

MATERIAL AND METHODS

Selection of Cases: Patients with Non-alcoholic Fatty Liver Disease and associated liver disfunction mentioned in ayurvedic Texts selected randomly from OPD of P.G Department of Rasa Shastra at Shri Krishna Govt Ayurvedic College Kurukshetra.

Age Group

60 Individual from the age group of 30 to 55 Years were taken for Non-alcoholic Fatty Liver Disease and associated liver disfunction mentioned in ayurvedic Texts.

Selection of healthy volunteers

The observational clinical trial took place from May 2024 to July 2024 at OPD of P.G Department of Rasa Shastra at Shri Krishna Govt Ayurvedic College Kurukshetra.

The trial design involved the enrolment of volunteers aged between 35 to 55 Years without consideration of their religious affiliation, income level, or occupation. Initially, a total of 100 volunteers were screened for primary eligibility, but 40 individuals were subsequently excluded for various reasons.

Ultimately, 60 volunteers were selected for this trial and were randomly assigned to one group: that receiving **LIV XN CAPSULE and LIV XN TABLET** in the management

of Non-alcoholic Fatty Liver Disease and associated liver disfunction mentioned in ayurvedic Texts. Eligibility for participation in the study was determined by specific inclusion and exclusion criteria.

Inclusion criteria

1. Male or female patients suffering from Non-alcoholic Fatty Liver Disease and associated liver disfunction mentioned in ayurvedic Texts.
2. Inclusion criteria involved clinically assessed healthy male and female volunteers aged between 30 to 55 Years, irrespective of their religious beliefs and income status.
3. These participants were required to be free from chronic, organic, or severe diseases and should not be taking any supplements or vitamins.

Exclusion criteria

1. Age below 30 years and above 55 years.

Investigations

1. Routine hematological investigations: Hemoglobin %, Total Leucocyte count, Differential Leucocyte count, Erythrocyte Sedimentation Rate.
2. Biochemical investigations: Fasting Blood Sugar, Post Prandial Blood Sugar, lipid profile, blood urea, serum creatinine.
3. Urine for routine and microscopic examination.
4. Liver function tests;
 - a. Alanine transaminase (ALT)
 - b. Aspartate transaminase (AST),
 - c. Alkaline phosphatase (ALP),
 - d. Gamma -glutamyl transferase (GGT),
 - e. Total bilirubin, conjugated (direct) bilirubin,
 - f. Unconjugated (indirect) bilirubin

Assessment criteria: Effect of the therapy will be assessed on the basis of improved status in Non-alcoholic Fatty Liver Disease and associated liver disfunction mentioned in ayurvedic Texts.

Yakrut (Liver) rogas/Liver disorders in Ayurveda

The liver is described as Yakrut (Liver) in ancient texts such as the Vedas and Ayurvedic

scriptures, including the Sushruta Samhita, Charaka Samhita, and Ashtanga Hridaya. In the Vedas, the liver is referred to as "Takima" or "Yakna." Other synonyms for the liver found in these texts include Yakrut (Liver) khanda, Yakrut (Liver) pinda, Kalakhanda, Jyotisthana, Raktadhara, and Raktashaya. Sushruta describes the liver as Jyotisthana, while Acharya Vagbhata refers to it as Yakrut (Liver) khanda in Ashtanga Hridaya. The liver, or Yakrut (Liver), is believed to develop from Matrijabhava, or the maternal structural components, and its primary function is the transformation of Rasa Dhatu into Rakta Dhatu, as it is the seat of Ranjaka Pitta.^[20]

Yakrut (Liver) is an important Koshtanga and is the *Mulasthan* of *Raktavahasrotas*, *Raktavahi* and *Mamsavahi dhamani*. In Ayurveda, the manifestations of diseases are either through *Vrudhi* (Increase of specific quantity) or *Kshaya* (decrease of specific quantity) such as *Rasa Vrudhi*, *Rasa Ksyaya*, *Rakta Vrudhi*, *Rakta Ksyaya*, *Mamsa Vrudhi*, *Mamsa Ksyaya* etc. Likewise, the disorders of *Yakrut (Liver Disorders)* are manifested through *Yakrut Vrudhi* and *Yakrut Kshaya (Sluggish Liver)* that can be correlated to hepatomegaly and the cirrhosis of liver as per the conventional medicine. Sushruta explains about *Yakridalyudara* which can be perceived as *Yakrut vridhi (Liver enlargement)* but the term *Yakrut Kshaya (Sluggish Liver)* is available in *Bhaisajya Ratnavali*.^[21] Charaka samhitha speaks of *Yakrut (Liver)* under the management of *Plihodara* or the management of splenomegaly. The detailed description of *Yakrut roga (Liver Disease)* is found in *Bhavaprakash* as *Yakrut vridhi (Liver enlargement)* along with its classification and symptomology. The *Yakrut vridhi (Liver enlargement)* again classified in to *Chyuta* (displacement from own place due to accident) and *Achyuta* (due to *Rasadi dhatu* and *Rasa, Rakta* and *Mamsa vaha srotas*).

In Ayurveda, liver disorders and its management are described in vast and scattered through the entire ancient texts and these are dealt under *Udara roga* or the abdominal disorders. *Yakrut Vridhi* (Hepatomegaly), *Yakrut dalludara*, *Yakrut dora*, *Yakrut gata dosa*, *Yakrut Kshaya* (Cirrhosis of Liver), *Yakrut Vidradhi* (Liver abscess), *Yakrut granthi* (hepatic cyst) are some of the disorders based on its structure and *Kamala (Jaundice)*, *Kumbhakamala*, *Panaki*, *Halimala*, *Alasa* etc based on its functions that are found in Ayurvedic literature.^[22] Ayurveda is known for being a more cost-effective and affordable treatment option compared to modern medicine or synthetic drugs, which are often associated with side effects. In the management of liver disorders, Ayurveda emphasizes an integrated approach that includes lifestyle modifications, dietary changes, and Ayurvedic formulations, including herbal and

herbo-mineral products. These components play a crucial role in managing these disorders. Herbo-mineral products, are metal or mineral formulations used for therapeutic purposes. Ancient texts have limited references to the use of Herbo-mineral drugs in disease management, but their popularity increased significantly during the medieval period. This rise in popularity is due to their rapid absorption, quick assimilation, and almost immediate effects, even in small doses, without significant side effects. These formulations penetrate deep into the body's minute channels, providing fast results. Consequently, Herbomineral have become increasingly popular and accepted in the treatment of debilitating and life-threatening diseases, where quick and immediate results are crucial for recovery and cure.

Numerous Ayurvedic formulations have been described for the treatment of liver disorders, including: *Phalatrikadi Kasaya*, *Potala katurohinyadi Kasaya*, *Varunadi Kasaya*, *Indukanta Kasaya*, *Suta sekharas Rasa*, *Agni kumar rasa*, *Sanjeevani vati*, *Arogya Vardhini Rasa*.^[23-26] *Lokanath Rasa*, *Siddha Makardwaja*, *Punnavadi kasaya*, *Potala Katu Rohinyadi Kasaya*, *Vardhamana Pippali Yoga*, *Panchagobya grita*, *Paurasaki avaleha*, *Gomutra Haritaki*.^[27-29]

LIV XN CAPSULE and LIV XN TABLET are regarded as the leading and most frequently prescribed medicines for liver disorders. The current study focuses on these herbo-mineral compound preparations, which are widely prescribed by Ayurvedic practitioners for liver disorders. Which are detailed in the "Rasa Ratna Samucchaya," as well as in "Rasa Chandansu" and "Rasendra Kalpa Druma.

LIV XN CAPSULE and LIV XN TABLET is one among the polyherbo-minerals mentioned in Ayurvedic formulary.^[30] For centuries "Rasa Ratna Samucchaya" and Bhav Prakash Nighantu advises using herbs and minerals which compound **LIV XN CAPSULE and LIV XN TABLET** primarily which have the properties to treat all liver disorders and Yakrut Daurbalya (Sluggish Liver functions), these two formulations are also used to treat a variety of conditions associated with liver. They are effective for lack of appetite, indigestion, irregular bowel movements, hepatic and liver disorders, skin diseases, leprosy, fever, edema, obesity, and jaundice. Additionally, they serve as alternatives, carminatives, and stomachic.^[33]

Ingredients of LIV XN CAPSULE consists of

	Hindi or Sanskrit Name of Herb	Latin or English Name	Morpho-logical Part Used	FORM Used	Each 400 mg of capsule Contains	Book Name Page No.
A.	KUTAKI	Picrorhizakurroa	ROOT	EXTRACT	75 MG	Bhav Prakash Nighantu
B.	PUNARNAVA	Boerhaavia diffusa	SEED	EXTRACT	75 MG	Bhav Prakash Nighantu
C.	KAL MEGA	<i>Andrographis paniculata</i>	PLANT	EXTRACT	75 MG	Bhav Prakash Nighantu
D.	KASANI	Cichoriumintybus	ROOT	EXTRACT	40 mg	Bhav Prakash Nighantu
E.	RAKT PUSHPI	<i>Tephrosiapurpurea</i>	STEM	EXTRACT	40 MG	Bhav Prakash Nighantu
F.	GILOY	Tinosporacordifolia	STEM	EXTRACT	75 MG	Bhav Prakash Nighantu
	Minerals (Bhasma, Pishti etc.):					
1.	FERRIC OXIDE	FERRIC OXIDE	POWDER	POWDER	20 MG	RAS RATAN SMUCHAYA

Ingredients of LIV XN TABLET is consisting of

	Hindi or Sanskrit Name of Herb	Latin or English Name	Morpho-logical Part Used	FORM Used	Each 500 mg of TABLET Contains	Book Name Page No.
A.	KUTAKI	Picrorhiza kurroa	ROOT	EXTRACT	75 MG	Bhav Prakash Nighantu
B.	PUNARNAVA	<i>Boerhaavia diffusa</i>	SEED	EXTRACT	75 MG	Bhav Prakash Nighantu
C.	KAL MEGA	<i>Andrographis paniculata</i>	PLANT	EXTRACT	75 MG	Bhav Prakash Nighantu
D.	KASANI	Cichorium intybus	ROOT	EXTRACT	40 mg	Bhav Prakash Nighantu
E.	RAKT PUSHPI	Tephrosia purpurea	STEM	EXTRACT	40 MG	Bhav Prakash Nighantu
F.	GILOY	Tinospora cordifolia	STEM	EXTRACT	75 MG	Bhav Prakash Nighantu
G.	DARU HALDI	Berberis aristata	Mool	EXTRACT	50 mg	Bhav Prakash Nighantu
H.	BHUIAMALA	Phyllanthus urinaria	Panchang	EXTRACT	50 mg	Bhav Prakash Nighantu
	Minerals (Bhasma, Pishti etc.):					
	FERRIC OXIDE	FERRIC OXIDE	POWDER	POWDER	20 MG	RAS RATAN SMUCHAYA

LIV XN CAPSULE and LIV XN TABLET is Ayurvedic Patent Medicine Duly Approved by AYUSH department of Uttar Pradesh and prepared in the R n' D Lab of **VAIDBAN**

AYURVED BHAWAN VILLAGE FADAULI VPO AND THANA MOHRA, DISTRICT AMBALA, HARYANA

LIV XN CAPSULE and LIV XN TABLET possess the quality to penetrate the deeper tissues. The idea behind this is to use minute alkaloids which has a quality to penetrate the Sukshma Srotas i.e. most fine channels. Here are the properties of the mentioned herbs as useful in optimum Liver functions, according to the Bhav Prakash Nighantu and Materia Medica.

Here's a brief overview of how these herbs may possess hepatoprotective properties.

1. **Kutaki (*Picrorhiza kurroa*)** - Contains compounds like kutkin and picroside that have been studied for their antioxidant and anti-inflammatory effects, potentially aiding in liver protection against toxins.
2. **Punarnava (*Boerhavia diffusa*)** - Known for its diuretic properties, it may help in reducing fluid accumulation in the liver and improving liver function through detoxification.
3. **Kalmegh (*Andrographis paniculata*)** - Contains andrographolide, which has been shown to have hepatoprotective effects due to its anti-inflammatory and antioxidant activities.
4. **Kasani (*Cichorium intybus*, Chicory)** - The root extracts are believed to protect the liver by enhancing bile secretion, which helps in eliminating toxins from the body.
5. **Rakta Pushpi (*Canscora decussata*)** - Less commonly known in Western herbal medicine but traditionally used in Ayurvedic preparations for its detoxifying properties.
6. **Giloy (*Tinospora cordifolia*)** - Often used in Ayurveda for its immune-boosting and liver-protective effects, likely due to its antioxidant properties.
7. **Daru Haldi (*Berberis aristata*)** - Contains berberine, an alkaloid that has shown potential in protecting the liver by modulating enzyme levels and enhancing bile production.
8. **Bhuiamla (*Phyllanthus niruri*)** - Widely researched for its potential to treat liver ailments like hepatitis and protect the liver against damage from toxins due to its antiviral and hepatoprotective compounds.
9. **Ferric oxide** - While not an herb, it's sometimes used in medicinal preparations. However, its role in liver protection is not as clear and might be more supportive when used in specific formulations.

Indications of *LIV XN CAPSULE and LIV XN TABLET*

With respect to Eminent Acharya's texts like Rasaratna samucchaya, Bhaisajyaratnavali, BhavPrakash Nighantu and Bharatbhaisajya ratnakara. The ingredients of ***LIV XN CAPSULE and LIV XN TABLET*** are indicated in *Medonashaka* (can hyperlipidemia), *Malashuddhikari* (cleansing of waste materials), increases hunger or *Kshudha* (appetizer), *Sarvaroga prashamani*, one which alleviates all the *Rogas*, *Pachani* (digestive), *Dipani* (appetizer) and *Pathya*.^[30]

Anupana (Adjuvant)

LIV XN CAPSULE and LIV XN TABLET is prescribed with various types of *Anupanas* or the adjuvant based on the *Vyadhi*, its stage and the strength of the patients. These are *Moong dal* (*Vigna radiata* (L.) R. Wilczek), *Masur dal* (*Lens culinaris* Medik.; *Arhar- Cajanus cajan* (L.) Millsp), *Ghee* (ghee made from cow milk), Barley (*Hordeum vulgare* L.; *Parwal Trichosanthes dioica* Roxb), curds from cow milk, milk (cow milk), *Urad dal* (*Vigna mungo* (L.) Hepper, sugarcane juice, jaggery, butter milk, *Dashamula kwatha* and *Punarnavadi kwatha*.^[35]

DISCUSSION

Ayurvedic science aims at maintaining positive health by balancing the three *Doshas* such as *Vata*, *Pitta* and *Kapha*. Any imbalance in these leads to the disorders and in turn these are the causes for liver disorders too. Ayurvedic management of liver disorders comprises the integrated approach with proper diagnosis after the evaluation of *Dosha*, *Srotas*, *Bala kala* etc. Since NAFLD is a multi-factorial disease, single target-based therapy has limited implications. Hence Ayurvedic approach with the lifestyle modification, *Pathya* and herbo-mineral formulations like ***LIV XN CAPSULE and LIV XN TABLET*** would be very effective in alleviating the liver disorders.

LIV XN CAPSULE and LIV XN TABLET consists of many ingredients among which **Kutki (Picrorhiza kurroa)** - Contains compounds like kutkin and picroside that have been studied for their antioxidant and anti-inflammatory effects, potentially aiding in liver protection against toxins.

Punarnava (Boerhavia diffusa) - Known for its diuretic properties, it may help in reducing fluid accumulation in the liver and improving liver function through detoxification.

Kalmegh (*Andrographis paniculata*) - Contains andrographolide, which has been shown to have hepatoprotective effects due to its anti-inflammatory and antioxidant activities.

Kasani (*Cichorium intybus*, *Chicory*) - The root extracts are believed to protect the liver by enhancing bile secretion, which helps in eliminating toxins from the body.

Rakta Pushpi (*Canscora decussata*) - Less commonly known in Western herbal medicine but traditionally used in Ayurvedic preparations for its detoxifying properties.

Giloy (*Tinospora cordifolia*) - Often used in Ayurveda for its immune-boosting and liver-protective effects, likely due to its antioxidant properties.

Daru Haldi (*Berberis aristata*) - Contains berberine, an alkaloid that has shown potential in protecting the liver by modulating enzyme levels and enhancing bile production.

Bhuiamla (*Phyllanthus niruri*) - Widely researched for its potential to treat liver ailments like hepatitis and protect the liver against damage from toxins due to its antiviral and hepatoprotective compounds.

Ferric oxide - While not an herb, it's sometimes used in medicinal preparations. However, its role in liver protection is not as clear and might be more supportive when used in specific formulations.

Clinical Applications of *LIV XN CAPSULE* and *LIV XN TABLET*

Chronic Liver Diseases (CLD)

With Ayurvedic formulations, the reduction in hepatic dysfunctions, metastatic adhesion and induction of apoptosis are observed in hepatocellular carcinoma. Few studies have reported that Ayurvedic medication have significantly increased the thrombocytes in thrombocytopenia of alcoholic liver diseases^[37,38] with a positive outcome in chronic liver diseases (CLD).

Non Alcoholic Fatty Liver Disease

In this study two Ayurveda formulations *LIV XN CAPSULE* and *LIV XN TABLET* having high concentration of *Katuki (*Picrorhiza kurroa*)* and hepatoprotective Herbs were selected for the study on NAFLD. This involved 35 patients, the treatment was administered for a period of 8 weeks. Liver function test, Haemogram, Renal function test and cholesterol

profile along with ultrasound of liver were performed, after 4 weeks and 8 weeks. 12 weeks of treatment showed that the elevated liver enzymes and elevated liver echogenicity were normalized with no adverse effects.^[25]

Alcoholic Fatty Liver

An Clinical observation was conducted at OPD of P.G Department of Rasa Shastra at Shri Krishna Govt Ayurvedic College Kurukshetra. 60 Patients with the features of AFL were screened and included for the study. The trial group was administered 400 mg of **LIV XN CAPSULE and 500 mg of LIV XN TABLET** twice daily with *Koshana jala Anupana* after meals for 45 days.

Subjective parameters such as anorexia, vomiting, abdominal distention, abdominal pain, nausea, fatigue and the objective parameters such as USG abdomen and LFT blood reports were assessed before and after the treatment.

Trial group with **LIV XN CAPSULE and LIV XN TABLET** showed significant changes.^[43]

Alcoholic Liver Disease

Symptoms such as nausea, vomiting, swelling in bilateral foot, weakness in the body, reduced appetite, gradually weight reduction and semisolid stool with frequency of 6-7 times/ day associated with reduced appetite and frequent vomiting.

The patients were administered with Ayurvedic treatment for 45 days among which one medication was **LIV XN CAPSULE and LIV XN TABLET** that showed significant changes both in subjective and objective parameters. After 3 months of treatment, the patient was free from complications.^[44]

Patients with jaundice, abnormal liver functions (high transaminases and hyper bilirubinemia) and fatty liver diagnosed and Alcoholic Liver Disease (ALD) was administered Ayurvedic medications **LIV XN CAPSULE and LIV XN TABLET** along with dietary advices. After 60 days of treatment, significant improvement was observed in clinical findings, reduction in liver transaminases, and fatty infiltration after the treatment.^[45]

Katuki, being one of the main ingredient of the **LIV XN CAPSULE and LIV XN TABLET** has also been studied to assess its effect in liver disorders. *Katuki (Picrorrhiza kurroa)*-

Kutki is bitter in taste, cooling and removal of excessive fire energy from the body, best of removal of excessive *Pitta* from the body via colon. *Katuki* helps in restoration of Liver functions by overcoming fatty liver changes. Research on animal studies suggested *Picrorrhiza kurroa* effective in hepatitis B infection and promising effect on bilirubin, SGOT, SGPT, preventing liver toxicity and improves hepatic glycogen preservation. It also promotes liver regenerating activities by restoring cytochrome.^[48, 49]

Apart from liver disorders or the *Yakrut (Liver) rogas*, **LIV XN CAPSULE and LIV XN TABLET** has also proved its effects on other health disorders such as

Dyslipidemia

Clinical study conducted at OPD of P.G Department of Rasa Shastra at Shri Krishna Govt Ayurvedic College Kurukshetra, 60 patients were screened and 45 patients with dyslipidemia and a poor history of lipid control were enrolled for the study. They were treated with **LIV XN CAPSULE and LIV XN TABLET** (400 mg capsule and 500mg tablet, twice a day) for next 6 weeks brought about significant reduction in the level of risk factors of CVD arising from dyslipidemia and inflammation. Use of **LIV XN CAPSULE and LIV XN TABLET** to the currently available hypolipidemic therapy would offer significant protection against atherosclerosis and CAD with a reduction in the dose and adverse effects of hypolipidemic agents.^[51]

Metabolic Syndrome (MS)

In this clinical trial, 35 patients were registered for the trial and randomly divided into two groups and were treated with lifestyle modification with **LIV XN CAPSULE and LIV XN TABLET** compound for 6 weeks.^[52]

From the above critical extraction and evaluation of **LIV XN CAPSULE and LIV XN TABLET** from the Ayurvedic literature and the studies conducted, it definitely shows promising results in providing the effective results in the liver disorders and particularly the fatty liver also called as NAFLD, one of the commonest among the current digestive disorders. More clinical studies are needed to authenticate its efficacy so that it can be administered as the main medication for the fatty liver disorders.

CONCLUSION

LIV XN CAPSULE and LIV XN TABLET as the name itself indicates that it improves the

Arogya of the person who consumes it apart from all its other benefits. Though it is a herbo-mineral formulation, it is free from adverse and toxicological effects as it will be prepared according to the classical method and principles without compromising the qualities. It is considered as the best medicine for liver disorders as it maintains the health of the liver and thereby a healthy digestive system apart from relieving the liver disorders. Though it has proved its efficacy through few animal experimentations, case studies and case series, larger clinical studies are needed to be conducted with a larger sample size to validate its efficacy and to make it applicable to the larger population.

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