



THE EFFECT OF AROGYAVARDHINI VATI AND PHALATRIKADI KVATHA IN NON ALCOHOLIC FATTY LIVER DISEASE –CASE STUDIES

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Article Info	ABSTRACT
<p>Received 15/11/2015 Revised 27/12/2015 Accepted 15/01/2016</p> <p>Key words: Fatty liver, Katuki, Argyavardhini vati, phalatrikadi kvatha, lipids, Body Mass Index.</p>	<p>The prevalence of NAFLD is to be around 9-32% in general Indian population, with a higher incidence amongst overweight/obese and diabetic/ pre diabetic patients. There is no satisfactory patient centered clinical outcomes and evidences for NAFLD although a variety of molecules have been attempted to correct wide spectrum of NAFLD. Most of clinical trials are too short to determine the outcomes. Most of the hepatologists recommended life style modification, restricted calories intake and exercise for NAFLD. More than 50% people of our country relay on Ayurveda for liver diseases. Katuki (Picrorhiza kurroa) is mostly used herb of Ayurveda in liver diseases showed reduced lipid content of liver more significantly than silymarin. High concentration of Katuki (Picrorhiza kurroa) contained in two Ayurveda formulations I.e Argyavardhini vati and phalatrikadi kvatha are selected for the treatment of two cases of NAFLD. Both the drugs administrated to one male and one female patient for a period of 12 weeks. Liver function test, Haemogram, Renal function test and cholesterol profile along with ultrasound of liver were performed D₀, after 4 weeks, 8weeks and 12 weeks of these two cases. The medication has no side effect and there was no biochemical and haematological abnormality after 12 weeks of treatment. Elevated liver enzymes with elevated liver echogenicity were normalised after 12 weeks of treatment. Randomised control trial is recommended.</p>

INTRODUCTION

Non-alcoholic fatty liver disease (NAFLD) is a most common and emerging disease of our country. It is a wide spectrum of diseases characterized by fatty Infiltration of the liver, simple steatosis, steatohepatitis, advance fibrosis and cirrhosis [1]. Non-alcoholic fatty liver disease (NAFLD) is defined as accumulation of more than 5% of liver triglyceride without excess alcohol intake. The prevalence increased significantly 80-90% in obese adults, 60% in patient with hyperlipidemia and 30-50%in diabetic patients [2]. Approximately 4-22 % hepatocellular carcinoma in west attributed to NAFLD [3].

Epidemiological studies suggest the prevalence of NAFLD to be around 9-32% in general Indian population, with a higher incidence amongst overweight/obese and diabetic/ prediabetic patients [4]. There is no satisfactory patient centered clinical outcomes and evidences for NAFLD although a variety of molecules have been attempted to correct wide spectrum of NAFLD. Most of clinical trials are too short to determine the outcomes [5]. Most of the hepatologists recommended life style modification, restricted calories intake and exercise for NAFLD. The common pharmacological interventions are



antioxidants (vitamin-E and vitamin-C; betaine), insulin-sensitizing agents (thiazolidinediones and metformin), lipid-lowering drugs (statins, orlistat, and probucol), cytoprotective agents (ursodeoxycholic acid), and anti-inflammatory (pentoxifylline) or antifibrotic (angiotensin-receptor blockers) drugs [6].

Since NAFLD is a multi-factorial disease, single target based therapy has limited implications. Hence, the use of herbal medicines could be a promising alternative due to their multiple bioactive molecules and multi prolonged mechanism of action [7,8]. The worldwide practices of alternative herbal medicines are being used in three different forms, plant extracts, polyherbal formulations and phytochemicals [9]. Ayurveda, the age old system of herbo- mineral medicine practice along with Panchakarma and yoga is being revived day to day in India and abroad due to its long lasting curative effect, easy availability, natural way of healing and less side effect. There are several Ayurveda formulations used by indigenous healers, Vaidyas and institutionally qualified Ayurveda doctors for the prevention and treatment of liver diseases. Clinical researches have confirmed the efficacy of several herbs described in Ayurveda in the treatment of liver diseases, Phyllanthus, Silymarin, Glycyrrizin, liv 52, are few among them [10,11]. We should not think that all lipid lowering agent will helpful in the treatment of NAFLD as *Garcinia Cambogia* has attenuated diet-induced adiposity but exacerbates hepatic collagen accumulation and inflammation [12]. Seeff *et al* found that 41% of outpatients with diagnosis of liver disease had used some form of CAM [13]. Therefore scope of treat NAFLD by Ayurveda medicine is greater day by day. Clinical study of Green tea (*Camellia sinensis*) and Licorice (*Glycyrrhiza glabra*) root extract have been showed significant result [14-16]. Chinese poly herbal compounds were clinically tested for its safety and efficacy [17]. Katuki (*Picrorhiza kurroa*) is mostly used herb in liver diseases showed reduced lipid content of liver more significantly than silymarin [18]. High concentration of Katuki (*Picrorhiza kurroa*) contained in two Ayurveda formulations I.e Argyavardhini vati and phalatrikadi kwatha are selected for the treatment of two cases of NAFLD.

Argyavardhini vati is a polyherbo-mineral formulation mentioned in Ayurvedic formulary of India. It has been used for centuries with claimed efficacy and safety in treatment of jaundice, liver disorders and various skin disorders. It consists *Picrorrhiza kurroa* (Kutki), *Terminalia chebula* (Haritaki), *Terminalia bellerica* (Bibhitaka), *Emblca officinalis* (Amalaki), *Asphaltum* (Silajatu), *Commiphora wightii* (Guggulu), *Ricinus communis* (Eranda), *Azadirachta indica* (Neem leaves) and metal including suddh rasa (detoxified mercury), Gandhaka suddha (detoxified sulfur), Lauha-bhasma (iron), abhraka bhasma (mica), tamra bhasma (copper). Safety of Argyavardhini vati has been evaluated by Kumar et al. The findings of the study showed that Argyavardhini vati in the doses equivalent to 10 times of

the human dose, administered to rats for 28 days, do not have appreciable toxicological effects on brain, liver, and kidney although mercury level was (>2000ppm) more than permissible limit [18-20].

Phalatrikadi kvatha contains eight drugs which are having predominately Kamalahara properties like – Pitta-Kapha Shamaka, Yakriduttejaka, Shothahara, Pandurogahara, Recana, Dipana etc. Kvatha of Triphala (Amalaki, Haritaki and Bibhitaki), Amrita, Vasa, Tikta(Katuka), Bhunimba, and Nimba tvaka taken with Honey relieves Kamala and Pandu [21].

Case Presentation

Case 1

Presenting complain and history- A 34 years male patient was came to our hospital with reports of elevated liver enzymes and sonograph of elevated liver echogenicity (Lipid accumulation). His OPD registration no is 5584 of 20/10/2014.His body weight was 68kg, BMI was SGOT-86 , SGPT-116 , fasting blood sugar125mg/dl , Post pradial blood sugar 229mg/dl and HbA₁C was 7.1%. The patient is a primary teacher in profession, taking vegetarian diet and had no history of taking alcohol.

Case 2

Presenting complain and history - A 37 years female patient was came to our hospital with complains of constipation and abdominal flatulence since six months. We send for ultrasound abdomen and all biochemical tests. The investigation reports showed elevated liver enzymes and sonograph of elevated liver echo-genicity (Lipid accumulation). Her body weight was 72kg, BMI was 29.26, SGOT-97, SGPT-134, the patient is a house maker, taking mixed diet and had no history of taking alcohol. Her associate complain was irregular menstruation and slightly elevated TSH.

Course of treatment and Assessment of progress

Both the patients were advised to take 2 tablet (250mg) Arogyavardhini vati twice daily before principal meal and Phalatrikadi kvatha 20ml before food along with same quantities of luke warm water for a period of 12 weeks. Patient was advised to report on 4th, 8th and 12th week for clinical, sonological and biochemical evaluation. The progress of both the cases assessed by liver transaminase and sonological evaluation. Both the cases have normal liver morphology after 12 weeks of treatment and reduction of lipid profile and liver transaminase.

Treatment implication of these cases

The case no-1 has elevated SGOT and SGPT along with hyperglycaemia and hyper cholestremia on D₀. The case has slightly elevated PP sugar that was normalised after 4 weeks of treatment. Serum bilirubin was elevated in D₀and it was normalised after 12 weeks of treatment. The morphological change of liver seen after 12 weeks of treatment.



The patient has normal urea and creatinine before and after treatment. The case no-1 lose BMI from 4 weeks of treatment and increase weight in 12th weeks of treatment. Hb% was reduced on 4 weeks of treatment and gradually increased till the end of treatment (Table no-1). The case no-2 has elevated SGOT and SGPT along with hyper cholestremia on D₀. The blood sugar normalised after 4 weeks of treatment. The elevated cholesterol and TG were normalised after 12th week of treatment.

The liver was slightly enlarged in size (158 mm in mid clavicular line) was normal morphology of liver after 12 weeks of treatment. The patient has normal urea and creatinine before and after treatment. The case no-2 loses BMI from 4 weeks of treatment till 12th weeks of treatment. Total 6kg of weight loosed after the treatment period. Hb% was reduced on 4 weeks, 8th week of treatment of treatment and slightly increased in the end of treatment (Table no-2).

Table 1. Baseline and follow up Clinical profile of observed NAFLD case no-1

Parameters	Baseline (D0)	After 4 weeks	After 8 weeks	After 12 weeks
Liver sonography	Fatty liver	----	---	Normal
SGOT	86	42	29	32
SGPT	116	38	14	29
Serum Bilurubin	2.1	2.2	2.0	1.3
Weight	68kg	66	61	63
BMI	24.11		21.63	22.34
FBS	125	89	104	92
PPBS	229	102	110	107
HBA ₁ C	7.2	6.2	5.8	5.8
Total cholesterol	168	143	154	128
Urea	19	24	26	24
Creatininthe	0.7	0.8	0.7	0.8
Hb%	14.3	13.6	15.00	15.4

Table 2. Baseline and follow up Clinical profile of observed NAFLD case no-2

Parameters	Baseline (D0)	After 4 weeks	After 8 weeks	After 12 weeks
Liver sonography	Fatty liver (158mm)	----		Normal
SGOT	97	67	47	34
SGPT	134	88	50	38
Serum Bilurubin	0.6	0.6	0.6	0.8
Weight	72kg	70	69	66
BMI	29.26	28.45	28.04	26.82
FBS	110	89	102	86
PPBS	165	122	116	114
HBA ₁ C	6.8	-	-	6.4
Total cholesterol	234	168	154	146
Triglyceride	314	264	214	180
Urea	24	25	27	27
Creatinine	0.7	0.7	0.9	0.9
Hb%	12.4	12.00	12.00	12.6

DISCUSSION AND RECOMMENDATIONS

There was a significant reduction of BMI in two treated cases. The fat reduction of liver as well as body weight reduction was noted in both the cases. This regimen lowers visceral fat accumulation and adipocyte size and Katuki has the power of reduce lipid content of liver. This type of result noted in Chinese herbal study but it requires 24 weeks of treatment. The primary outcome of this case study was reduction of fat in liver assed by 3D ultrasound whereas abdominal CT value ratio of liver to spleen (L/S

ratio) was taken as assessment criteria in other study. A Randomised placebo control study is recommended to evaluation the safety and efficacy of this treatment regimen.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.



STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964

Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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