

## CLINICAL EFFICACY OF ATASI (*Linum usitatissimum*) IN MEDOROGA

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### ABSTRACT

The history of herbal medicine is as old as human history. Herbal medicine is still the mainstay of about 75–80% of the world's population, mainly in developing countries, for primary health care. In today's world, sedentary lifestyle, faulty dietary habits including ready-to-eat fast food, stress during the work results into the disturbance of digestion and metabolism ultimately leading to many lifestyle disorders. *Medoroga* is one of these diseases which have taken a toll on whole generation's health. It is emerging as an important health problem in India also. When accumulation of *medas* occurs excessively in the body it causes a *roga* called '*Medoroga*'. *Medas* is basically *snigdha dravya* which does the function of *snehanam* in the body, the character of lipids/ fat is one and the same as of *medas*. Here *Medoroga* can be termed as Hyperlipidemia. Several single drugs are indicated in *Ayurveda* for the treatment of *Medoroga*. Thus, considering the lack of definite *Ayurveda* comprehension as well as the magnitude of Hyperlipidemia in causing life threatening diseases, the present clinical study has been planned with *Atasi Beeja*. 30 patients are selected randomly from OP of Dravyaguna department of PG unit, Dr.B.R.K.R Govt. Ayurvedic Hospital, Erragadda, Hyderabad. The treatment is planned for 40 days with follow up of 20 days and as per necessity. The patients are considered as a single group and *Atasi beeja churna* is given at a dose of 3gms twice a day with lukewarm water and results are assessed. *Atasi beeja churna* showed effect in reducing the total cholesterol and LDL-Cholesterol and increasing HDL-Cholesterol levels with a mild effect on Triglycerides and VLDL Cholesterol.

**Keywords:** *Atasi*, *Medoroga*, Hyperlipidemia, *Atasi beeja churna*.

### INTRODUCTION

*Medoroga* is one of these diseases which have taken a toll on whole generation's health. It is emerging as an important health problem in India also. It is the disease, which provides the platform for so many diseases like Hypertension, Ischemic Heart Disease, Diabetes, Osteoarthritis, Infertility, Impotency as well as psychological disorders like Stress, Anxiety and Depression etc. As the person grows at certain age, all

*dhatu vriddhi* takes place so *medodhatu vriddhi* also takes place. When accumulation of *meda* occurs excessively in the body it causes a *roga* called '*Medoroga*'. Absence of physical activity, sleep during the day and intake of *Guru*, *Picchila*, *Madhura*, *Sheetha guna siddha ahara* which are *kaphavardhaka* and *ahara* having the predominance of *prithvi* and *jala mahabhuta* leads to *kapha prakopa*. It results in

*Madhura Anna rasa* which in turn cause increase in *medas*. These factors leads to *kapha dusti jataragnimandya*, ie *Medo dhatwagni mandya* and *Medovaha sroto dusti* occurs which leads to *medovridhi*.<sup>1</sup> In this disease, *medodhatu* is over nourished and rest of the *dhatu*s are less nourished. In this condition *Agni* generally increases, as a result food intake will be increased, this leads to *Ama* and *Ama* is cause for *medoroga*. The symptoms of *Medoroga* are *Kshudra Swasa*, *Pipasa Atiyoga*, *Kshut Atimatra*, *Atinidra*, *Sareera Dourghandya*, *Anga Saithyla* and *Utsahahani*.

*Medoroga* can be compared to Hyperlipidaemia in present days. Hyperlipidemia is the term used to denote raised serum levels of one or more of total cholesterol, low-density lipoprotein cholesterol, triglycerides, or both total cholesterol and triglyceride (combined hyperlipidemia).

Ayurvedic principles give more importance to prevention rather than curing the disease. General measures of prevention are the adoption of *Swasthvritta* in one's life. For the prevention of disease one should follow – *Dincharya*, *Ritucharya* and *Sadvritta*. In Ayurveda, general principles of management are divided into 3 parts 1) *Nidana Parivarjana* 2) *Samshodhana* 3) *Samshamana*. As a part of *Samshamana Chikitsa*, Various single and compound drugs are mentioned in the classics for the treatment of *Medoroga*. Single drug remedies like *Haridra*, *vidanga*, *Chitraka*, *Guggulu*, *Vacha*, *Haritaki* etc are indicated. *Atasi Beeja* is one of the single drugs indicated in the treatment of *medoroga*.

*Atasi* (Flaxseeds) is one of the most important oilseed crops for industrial as well as food, feed, and fibre purposes. Almost every part of the flaxseed plant is utilized commercially, either directly or after processing. Flaxseed is emerging as an important functional food ingredient because of its rich contents of quality protein, soluble fibre,  $\alpha$ -linolenic acid (ALA), lignans, and fibre. *Atasi* is mentioned in *Salyadi varga* in *Raja Nighantu*<sup>2</sup>, *Dhanya Varga* in *Madanapala Nighantu*<sup>3</sup> & *Kaiyadeva Nighantu*<sup>4</sup>. *Bhavamisra* has placed the *Atasi* in *Dhanya Varga*<sup>5</sup>. He explained

nirukti of *Atasi* as '*Atati satatam gachayti*'<sup>6</sup> i.e., which destroys *vata vikara*.

*Atasi* possess sweet (*Madhura*), bitter (*tikta*) taste, unctuous (*snigdha*), hot potency (*ushna virya*) and pungent end metabolism (*katu vipaka*). It alleviates *vata* and also pacifies *pitta* and *kapha*<sup>1</sup>. Flax seed oil has sweet taste (*madhura rasa*), promoting digestion and metabolism (*Agneyaguna*), heavy (*guru*), unctuous (*snigdha*), hot (*ushna*) properties and promotes vitality (*bala*). It pacifies *vata dosha* and increases *pitta & kapha*. It is useful in skin diseases (*kushtha*), worm infestation (*krimi*), dyslipidemia (*medodosha*) and inflammatory condition (*vranashotha*). Researches have been conducted phytochemically and experimentally all over the world revealing the hypolipidaemic activity, Hypoglycemic activity, Anti-Hypercholesteremic activity, Anti-Dyslipidemic activity, Anti Inflammatory activity and Anti-Oxidant activity of the flax seeds. Hence a humble trial is carried out to study clinical efficacy of *Atasi beeja* in the management of *Medoroga*.

**AIM:** To evaluate the Clinical efficacy of *Atasi Beeja* in the management of *Medoroga*.

**MATERIAL AND METHODS:** *Atasi* seeds are collected from the the cultivated fields, katrenikona, East Godavari district, Andhra Pradesh. Genuine and good quality material which are free from any worm infection were cut and separated, washed, dried in shade and stored in air tight dried container. Coarse powder of sufficient quantity prepared and packed in a zip lock Polythene bag and labelled. The prepared powder is used for performing clinical study. **SELECTION CRITERIA:** A total of 30 patients are selected randomly from OP of Dravyaguna department of PG unit, Dr. B. R. K. R Govt. Ayurvedic Hospital, Erragadda, Hyderabad. The treatment is planned for 40 days with follow up of 20 days and as per necessity. The patients are considered as a single group and are observed carefully. *Atasi beeja churna* is used for the clinical study at a dose of 3gms twice a day with lukewarm water.

**INCLUSIVE CRITERIA:** Patients were selected for the study irrespective of sex, occupation according to the following criteria for inclusion.

1. Subjects with signs and symptoms of *medoroga* – *Angagaurava*, *Atisweda*, *Alasya*, *Atinidra*, *Kshudra swasa*, *Ati kshut*, *Ati pipasa*
2. Age group above 20 years and below 60 years.
3. Weight/BMI weight is more than 20% excess of the desirable weight according to height, sex and age.
4. Raised levels of Lipid Profile

**EXCLUSIVE CRITERIA:** Certain patients were excluded from the study as per the below criteria:

1. Age below 20 years and above 60 years
2. Obesity secondary to or associated with Hypothyroidism, Hypertension, Diabetes Mellitus or Cushing's Syndrome
3. Any concomitant serious disorder of the liver, kidneys, heart, lungs or other organs
4. Pregnant and Lactating women
5. Person undergoing treatment for any other serious illness like Carcinomas.

**SUBJECTIVE PARAMETERS:** *Angagaurava*, *Atinidra*, *Atisweda*, *Utsahahani*, *Ksutatimatra*, *Pipasa atiyoga*, *Kshudraswasa*

**OBJECTIVE PARAMETERS:**

1) Lipid Profile: Serum Total Cholesterol, HDL, LDL, VLDL, Serum triglycerides.

**METHOD OF ASSESSMENT:** The patients registered for clinical trial were examined clinically and the findings were recorded in a specially prepared

case sheet. Patients were advised for laboratory investigations before and after treatment. During this period the patients were directed to keep away from the etiological factors. All the patients are advised to come for review at regular intervals of 20 days till 40 days. After 40 days of treatment the results were noted.

**ASSESSMENT CRITERIA:** The improvement of the patients was assessed by adopting standard scoring pattern for signs and symptoms of the disease. The assessment of **subjective parameters** was done by giving individual scores to signs and symptoms and percentage of result was assessed in each group for each sign or symptom and for every patient. The Gradation of signs and symptoms as per classics is given by sign 1 (mild), 2 (moderate) and 3 (severe). The total signs are counted. The absence of signs and symptoms is given by 0 sign. For each and every character individual scoring was given for before & after treatment and percentage relief was calculated. According to the severity of the symptoms grading were given as below :

**CRITERIA OF ASSESSMENT**

1. Mild relief : 25% to 50%
2. Moderate relief : 50% to 75%
3. Good relief : 75% to 100%

**OBJECTIVE PARAMETERS:** The assessment of objective parameters was based on the below table. The values of each entity of the Lipid Profile after Treatment are marked as per the table and improvement is assessed.

**TABLE 1:** Criteria for Diagnosing Hyperlipidemia and Assessment of Lipid Profile (Ncep Guidelines)

<b>Total Cholesterol- TC (mg/dl)</b>	
< 200	Desirable
200-239	Borderline
>240	High
<b>LDL Cholesterol (mg/dl)</b>	
<100	Optimal
100-129	Near/Above Optimal
130-159	Borderline
160-189	High
>190	Very High
<b>HDL Cholesterol (mg/dl)</b>	
>59	Great

45-59	Desirable
<40	Risk
<b>Triglycerides TG (mg/dl)</b>	
<150	Normal
150-199	Borderline
200-499	High
500	Very High
<b>VLDL Cholesterol (mg/dl)</b>	
< 32	Desirable
>32	High

**STATISTICAL ANALYSIS:** Clinical symptoms and laboratory parameters will be analyzed using appropriate statistical methods. Wilcoxon Test and Paired T test are the tests used to analyze statistical significance in the present study.

## RESULTS AND DISCUSSION

**AGE:** Out of 30 patients, the distribution of patients based on age group between 25 to 55 years is divided into 3 groups each consisting a range of 10 years. The percentage of patients in 25-35 age group is 30%, 36-45 age group is 50%; 46-55 age group is 20 %. It is observed that the percentage of patients in 36 – 45 yrs is maximum. Among them, along with the respective age factor, mostly lack of exercise and sedentary life style are the main cause for this disease.

**GENDER:** Out of 30 patients, 10 are male (33.33%) and 20 (66.66%) are female subjects. The maximum incidence of the disease is occurred in female subjects who may be mostly due to lack of exercise and sedentary life style.

**SOCIO ECONOMIC STATUS:** The Distribution of patients Based on socio economic status showed that 50% patients are upper middle class people, 33.33% are lower middle class people and 16% are poor. The maximum incidence is observed in upper middle class may be due to irregular Dietary habits, excessive consumption of junk and fast food, lack of exercise is main cause among them.

**OCCUPATION:** In a total of 30 patients 4(13.34%) people are students, 12(40%) people are employees, 7 (23.34%) people belongs to business class and housewives. It was observed that majority of patients belongs to Employee class i.e., 40%. The prevalence may be due to their dietary habits of consuming fast foods, irregular diet timings, lack physical exercise, increased work load, stress, and sleep habits

**DIET:** The incidence is equal 50% each in both vegetarian and mixed groups. Both are equally prevalent due to their nature of food, dietic habits.

**PRAKRITI:** Amongst the 30 patients, 7 (23.34%) patients belongs to *Vata-Pitta prakrti*, 5 (16.67%) are of *Pitta-Kapha* and its observed that majority of patients belong to *Vata-Kapha prakriti* i.e., 18 (60%). As medoroga is Kapha dominant disease associated with *Vata*, it may be prevalent in *vatakapha prakrti*.

**SUBJECTIVE PARAMETERS:** Out of 30 patients, 16 (53.3 %) patients exhibited *Utsahahani*, 20 (66.66%) patients exhibited *Kshudra swasa*, 22 (73.33%) patients exhibited *Atinidra*, 13 (43.33 %) patients exhibited *Kshutatimatra*, 11 (36.66%) patients exhibited *Pipasaatiyoga*, 20 (66.66%) patients exhibited *Sandhisoola*, and 19 (63.33%) patients exhibited *Angasaithilyam*.

After assessment of the signs and symptoms and analysis of the results, it was observed that the percentage relief of symptoms are *Utsaha hani*- 56.3%, *Kshudra swasa*-69%, *Atinidra*-68.2%, *Kshut atimatra*-76.9%, *Pipasa atiyoga*-90.9%, *Angasaithilya*-69.2%, *Sandhi soola*-75.9%. The statistical significance of results was calculated from the “p” values of each parameter which helps in coming to a conclusion in assessing the efficacy of *atasi beeja churna*. The “P” value observed in *Utsahahaani* (0.00148), *Kshutatimatra* (0.00512), *Pipasaatiyoga* (0.00512), *Atinidra* (0.0010), *Angasaithilyam* (0.0004) and *Sandhisoola* (0.0002) and *Kshudraswasa* (0.00128) is statistically significant.

The effect of the therapy on Subjective Parameters showed mild response in 7 patients (23.33%), moderate response in 16 patients (53.4%) and good response in 7 patients (23.33%).

**OBJECTIVE PARAMETERS:** The percentage change or difference obtained in the objective parameters after the treatment in total cholesterol is -17.61%, HDL-Cholesterol is +25.96 %, LDL-Cholesterol is -

27.26%, VLDL-Cholesterol is -17.44%, Triglycerides- 16.70%.

The statistical Analysis of objective parameters showed that the “P” value of the lipid profile including Total cholesterol, HDL, LDL, VLDL and Triglycerides is <0.00001 which indicates that the result is highly significant.

After the assessment of and analysis of results of the lipid profile, it was observed that the total cholesterol levels of 22 patients (73.33%) reduced, Triglyceride levels of 2 patients out of 6 patients (33.33%) reduced, LDL Cholesterol levels of 23 patients (76.6%) reduced, VLDL of one patient out of one (3.33%) reduced and cholesterol levels of 27 patients (90%) improved.

The normal lipid levels before treatment are present in none of the patients considering all the lipid entities and after treatment 20 (66.6%) patients have normal lipid values. The abnormal lipid levels before treatment are present in 30 (100%) patients and after treatment 10 (33.3%) patients have an abnormal lipid values. So it may be assumed that the treatment with *atasi beeja* inferred the increase in the number of normal lipid level patients.

**PROBABLE MODE OF ACTION:** According to *Ayurveda* the drug action is understood based on its composition like *rasa panchakas*. This is being applied in the clinical practice on the basis of this knowledge evolved 3000 years back. *Ushna veerya, katu vipaka, tikta rasa* of *Atasi Beeja* reduces the *kapha vridhhi*. It also has *kapha medohara* property. *Tikta Rasa* has the property of *ama pachana* and thus they are capable of rectifying digestion and metabolism at different levels in order to achieve *dhatuamyata* and *mala samyata*. *Ushna veerya* and *katu vipaka* also helps in reducing *kapha*. *Atasi Taila* is indicated in *medodosh*. Thus reducing the lipids i.e. cholesterol levels bringing into normal state.

*Linum usitatissimum* contains chlorogenic acid- its isomer, palmitic, stearic, oleic, linoleic acids, along with amino acids and sugars. Its seeds also contains mucilage (3-10 %) in epidermis, Fatty oil (30- 40 %) Cynogenic Glycosides (0.05-0.01 %) mainly Linustanin, Neolinustatine and Linamarin; Lignans; Phenylpropane derivatives including linusitamarin. The seeds are an excellent source of dietary alpha-linolenic acid for modifying plasma and tissue lipids. It is also a rich source of **Omega-3 Fatty Acids** which reduces the Atherogenic risk in *Hyperlipidemic* patients.

## CONCLUSION

The drug *Atasi beeja* is useful in reducing the total cholesterol and LDL-Cholesterol and increasing HDL-Cholesterol levels with a mild effect on Triglycerides and VLDL Cholesterol. This is due to the *Ushna virya* of *Atasi Beeja* reduces *kapha* as *medo roga* is *kaphaja vyadhi* thus reduces lipid profiles and brings back to normal state. Hence *Atasi beeja* is clinically effective and is a drug of choice in the management of *Medoroga*. This humble was conducted in a small sample with limited parameters. There is need for further research in large samples with more parameters for analyzing its efficacy and different in *medoroga* which will be beneficial to the humanity at large.

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