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Efficacy of *Cinnamomum Zeylanicum* and *Cinnamomum Tamala* in the Management of Hypercholesterolemia

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ABSTRACT

In Modern medicine, Hypercholesterolemia is under dyslipidemia. It is the presence of high cholesterol level in the blood. Now days, Hypercholesterolemia is a dangerous problem among the people. To know the effectiveness of *Cinnamomum zeylanicum* and *Cinnamomum tamala* in the management of Hypercholesterolemia to study the etiology, pathogenesis and symptomatology of Hypercholesterolemia according to Ayurveda and modern science. Total 30 patients of Hypercholesterolemia were treated with Bark powder of *Cinnamomum zeylanicum* and *Cinnamomum tamala*, 1g. twice a day for 3 months. The results were assessed in terms of clinical recovery, symptomatic relief and assessment of Lipid profile.

Key words: Hypercholesterolemia, *Cinnamomum zeylanicum*, *Cinnamomum tamala*.

INTRODUCTION

In Modern medicine, Hypercholesterolemia is under dyslipidemia. It is the presence of high cholesterol level in the blood. Now a days, Hypercholesterolemia is a dangerous problem among the people. In this era due to irregular life style and food habit, people become overweight or obese by eating junk food and other unhygienic food. In this type of food calories are more. These calories are converted into fat. If this fat imbalance continues for an extended period of time, it will lead to overweight or obesity and it causes Hypercholesterolemia. Many disorders like atherosclerosis, coronary heart disease are caused by Hypercholesterolemia. In people with very high cholesterol, diet is often insufficient to achieve the

desired lowering of cholesterol level. Medication which reduce cholesterol production are usually required.

In *Madanpal nighantu* the drug *Tvak* (Cinnamom) is used in the management of *Hridroga*.^[1] In modern medical science, Hypercholesterolemia is one of the cause of cardiac diseases. There is no precise term for Hypercholesterolemia in the Ayurvedic literature. It is related with *Asthayi Medo Dhatu Vriddhi* with regard to the pathophysiology. Also this excessively increased *Asthayi Medo Dhatu* is *Ama* in nature,^[2] due to which it is settled in the body for long duration, resulting in further complications.

Total 240 species of *tvak* are available in Pharmacognosy. As per previous research, *Cinnamomum zeylanicum* is superior to *Cinnamomum tamala*. *Cinnamomum zeylanicum* is not easily available in India and it is also expensive. It is imported from the USA. So adulteration is seen more in *Cinnamomum zeylanicum* by adding *Cinnamomum tamala* and other types of *Tvak* in it.

MATERIALS AND METHODS

The Samples *Cinnamomum zeylanicum* and *Cinnamomum tamala* were collected from the Spyrans shop, Sardar Estate, Ajwa road, Vadodara. The authenticity of these samples were confirmed by

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comparing their characters with various floras and standard herbarium sample available at the Pharmacognosy Laboratory of Parul Institute of Ayurveda, Vadodara. with the help of Pharmacognosy unit.

Sample size: 30 patients

Patients of both sexes, between the ages of 40 to 70 years were registered in the clinical trial from outdoor patients from Parul Ayurveda Hospital. The study obtained Institutional Ethics Committee clearance (PIA/IECHR/DRAVYA/05) dated 01/05/2015) and registered at Clinical Trial Registry of India (REF/2016/03/011000)

Exclusion criteria

- Patients age : < 40 years and > 70 years
- Patients who have started any Antihypercholesterolemic medicine.
- Serum cholesterol level : < 201 mg/dl
- Serum Triglycerides : <151 mg/dl
- Serum LDL : <131 mg/dl
- Serum VLDL : <41 mg/dl
- Patients related to any serious diseases and surgery.

Investigations

Serum Lipid Profile

- Serum cholesterol
- Serum triglycerides
- Serum LDL
- Serum VLDL

Group Design

Group A - Treatment was given to 15 patients.

Drug - *Cinnamomum zeylanicum*

Latin Name	Part used	Dose
<i>Cinnamomum zeylanicum</i>	Bark	1 gm

Group B - Treatment was given to 15 patients.

Drug - *Cinnamomum tamala*

Latin Name	Part used	Dose
<i>Cinnamomum tamala</i>	Bark	1 gm

Form of Medicine: Churna (powder) form.

Dose

- *Cinnamomum zeylanicum* - 1 gm twice / day before meal
- *Cinnamomum tamala* - 1 gm twice / day before meal

Anupana: Luke warm water.

Total Duration: 3 months.

Followup: every 1 month

Criteria for assessment

The over all effect of the treatment was judged on assessment of the Lipid profile data obtained were statistically analyzed using student paired t-test.

OBSERVATIONS AND RESULTS

In the present study, total 30 patients of Hypercholesterolemia were registered and randomly divided into two groups i.e. 15 patients were registered in group A and 15 patients were registered in group B. In both group A and B, 4 patients dropped out from the study at different stages without any specific reasons. Total 26 patients, 14 patients in group A and 12 patients in group B completed the course of therapy. Maximum number of patients (50%) belonged to the age group of 40-50 years. Most of the patients were Hindu by religion (100%). Majority of patients have education up to the level of graduation. *Madhurarasayukta Ahara* was predominantly consumed by majority of patients. Maximum numbers of patients were of economically middle class (70%). This study shows (96.67%) of patients had the habit of *Niraamisha Ahara*. Majority of patients had *Kaphaja Prakruti*. Majority of patients

had symptoms like *Bharvridhi*, *Nidradhikya*, *Swedadhikya*.

Effect of therapy on Serum cholesterol level

Statistically highly significant results were observed

Table 1: Effect of *Cinnamomum zeylanicum* Churna on 14 patients of Serum Cholesterol.

Serum Cholesterol (n=14)	Mean BT	Mean AT	Mean Diff	%	SD	SE	't'	p
	210.36	204.14	6.214	2.95	5.010	1.339	4.641	<0.001

Table 2: Effect of *Cinnamomum tamala* Churna on 12 patients of Serum Cholesterol.

Serum Cholesterol (n=12)	Mean BT	Mean AT	Mean Diff	%	SD	SE	't'	p
	211.00	207.500	3.500	1.65	3.317	0.957	3.656	<0.02

Overall effect of treatment

Table 3: Overall effect of *Cinnamomum zeylanicum* powder (Group- A)

Assessment	No of Patients	% of Patients
Complete remission	0	0
Marked improvement	2	14.28%
Moderate improvement	11	78.54%
Mild improvement	1	7.14%
Unchanged	0	0

Table 4: Overall effect of *Cinnamomum tamala* powder (Group- B)

Assessment	No of Patients	% of Patients
Complete remission	0	0
Marked improvement	2	16.67 %

Moderate improvement	7	58.31 %
Mild improvement	2	16.67 %
Unchanged	1	8.33 %

DISCUSSION

Cinnamomum zeylanicum having sweet taste while *cinnamomum tamala* having pungent taste. Both drugs are having *Ushna Virya* and *Laghu, Tikshna, Ushna* properties which normalize the state of *Agni*. Doing the function of *Stroto-Vibandhanasana* and acts against *Kapha, Kleda* and *Meda* which effective on *Rasa, Meda, Medodhatvagni* and provided good results in all signs and symptoms. Thus, regulated *Jatharagni*, checks the excessive growth and accumulation of *Medodhatu* and there by causing *Lakshana Upashamana* of disease Hypercholesterolemia.

The *Rasa* of both drugs is mentioned in our classics as which is *Kaphagna* in nature. Due to its *Ushna Virya* it also acts as *Vataghna*. Since *Vata* and *Kapha Dosha* are involved in the *Samprapti* of Hypercholesterolemia, both drugs by their *Rasa* and *Virya* can be used in *Samprapti Vighatana* of Hypercholesterolemia (Anti Hypercholesterolemic Activity). *Meda* and *Kleda Medokledopashoshana* action.^[3] *Ushna Virya* also helps in *Kleda* and *Meda Vilayana* action.

By its *Laghu, Ruksha, Ushna, Tikshna Gunas* it causes *Medodhatvagni Deepana* at the same time it removes *Avarana* of *Meda on Vata Dosha*, hence bring *Jatharagni* to its normalcy. *Katu Rasa - Ushna Virya* encounters *Dhatvagnimandya* and potentiates the weakened *Dhatvagni* and help in *Ama-Pachana* thereby alleviates *Aparipakwa Ama* Dhatu. Due to *Lekhana* property it disintegrates the *Kleda, Meda, Lasika, Sweda* and *Vasa* and eliminates the *Mala, Kapha* and *Pitta* from the *Srotas* and due to *Katu Rasa*, all the involved channels are dilated i.e. "*Srotamsi Vivrunoti*" action. *Katu Rasa* and *Ushna Virya* check over *Medovaha* and *Mamsavaha Srotodushti*. Which leads to Anti hypercholesterolemic activity.^[4]

CONCLUSION

The over all assessment of treatment proves the study drug – *Cinnamomum zeylanicum* and *Cinnamomum tamala* have significant action in the management of Hypercholesterolemia. No any unwanted effect noticed during the entire study period. *Cinnamomum zeylanicum* and *Cinnamomum tamala* is economic, safe and effective remedy, hence it can be used as preventive type of medication.

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