Effect of *Pushkarmoola (Inula Racemosa)* churna in Hridshoola w.s.r. to Angina

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ABSTRACT
Cardiovascular diseases are the leading cause of death globally. It accounts for approximately 30% of deaths worldwide. Cardiovascular disease comprises the most prevalent serious and a rapidly growing problem in developing nations like India. According to the WHO, cardiovascular disease causes 12 million deaths in the world each year. According to Ayurveda *Sadhak Pitta, AvalambakaKapha, Vyanvayu* are responsible for heart disease. Main cause of heart disease is atherosclerosis which is waxy substance called Plaque buildup inside the coronary arteries, other causes are high LDL, Low HDL Diabetes, smoking, post menopausal women. There are an estimated 45 million patients of coronary artery disease in India. An increasing number of young Indians are falling prey to coronary artery disease. With millions hooked to a roller-coaster lifestyle, the future looks even grimmer. In ayurveda *Inula Racemosa* is very useful drug for heart. Besides this it also has anti-atherosclerotic, anticoagulant, anti-infarction, hypo-lipidemic & hypotensive properties. So, Ayurvedic drug *Inula Racemosa* is a better option for the treatment of Angina (Hridashoola) because it can improve the quality of life in individuals & potentially save millions of lives.

KEYWORDS
*Innula racemosa, Atherosclerosis, Angina, Anti-infarction*
INTRODUCTION

Rasavaha srotas is a dhatuvaha srotas, which carries or circulates the Rasadhatu. It moves in all over the body along with vyanavata. In Ayurveda cardiovascular system is correlated with Rasavah Srotas. According to acharya Charak, moola of Rasavah srotas is Hridya(heart) and dashdhamani. Shushrut also mentioned the same. That heart is the pumping station of rasadhatu, Hridaya considered as a heart in relation to Rasavahasrotas. Dasadhammyah is correlated with ten blood vessels. This mechanism of circulation is made possible by vyanvayu through Hridya. Hridya is main organ in cardiovascular system, hridya word has been used in multiple dimension based on its varied functions. Two type of concept about heart in ayurveda that is Urohridya (Heart) and Sirohridya (Brain). In India, cardiovascular disease(CVD) is the leading cause of death. The death due to CVD in 2007 in India were 32% of all population and rise to 2.03 million in 2010. Ruja in hridpradesh called hridshoola. About Hridshoola According to samprapti-ghataka, Rasa Dhatu is Dushaya, Srotodusthi is Sanga, involvement of Rasavaha-Pranavahasrotas and mainly it is a Tridoshajavyadhi and vatadosha are mainly responsible for heart disease.

Aacharya Madhav described (Hridashoola) within Vatikshool Mechanism of Hridshoola is described by acharya Shu.u.t. 42/13. According to modern science it’s described under the coronary artery disease. Angina occur due to inadequate blood supply to the cardiac musculature because of narrowing or blockage of the coronary artery, resulting a chest pain, shortness of breath, palpitation and fatigue. Main cause of heart disease is atherosclerosis which is a waxy substance called Plaque build-up inside the coronary arteries. The traditional risk factor for CAD are high LDL cholesterol, low HDL cholesterol , high blood pressure, family history, diabetes, smoking and being post menopausal woman. Classically character of angina is constricting, squeezing, pressing or crushing in nature, pain radiate to left shoulder and upper arm, radiate elbow and wrist joint, sometime it may radiate to the neck, upper jaw, throat and back intra-scapular region. In heart disease free radicals are released in artery and oxidize low-density lipoprotein. The oxidized LDL is the basis for cholesterol build-up within the artery and damage of the artery wall. In Ayurveda Pushkarmoola churna which has rich Katu, Tikta, Ushana guna along with
Madhu, play a very effective role in Angina, dyspnea and palpitation of heart.

AIMS AND OBJECTIVES
(1) To provide an absolute knowledge about Hridyashoola (Angina pectoris).
(2) Pharmacological effect of Pushkarmoolachurna in management of Angina pectoris

PATHOLOGY IN AYURVEDA

POINT OF VIEW:
According to Acharya Shushruta due to repeated Mithyaaaharvihar, Kapha & Pitta Dosha are increase and mixed with Vata. They cited in heart and due to narrowing the lumen of coronary artery resulting a pain. It is correlated with Angina Pectoris in modern science. 9

CORONARY ARTERY DISEASE:
Coronary artery disease is caused by inadequate blood supply to cardiac muscle due to occlusion or narrowing of coronary artery. Angina is also coronary artery disease.13

CLASSIFICATION OF CORONARY ARTERY DISEASE:
 Classes:
• Angina pectoris
• Myocardial infarction (MI)
• Chronic heart disease
• Sudden cardiac death

ANGINA PECTORIS:
Angina pectoris is a coronary artery disease characterized by retrosternal pain & pain radiated to the left arm which denotes lake blood supply of the heart and pain subside after taking a rest.

PRECIPITATING CAUSES:
(1) Heavy exertion
(2) Excessive Cold
(3) Hyper insulinism in diabetic patients
(4) Emotional stress, during micturition.

CLASSIFICATION OF ANGINA:
Angina pectoris is classified into five specific classes depending its appearance:
• Class 0: No any Sign & Symptoms.
• Class 1: Angina can’t occur due to daily routine work like walking or climbing stair. it’s appear rapid or prolonged exertion.
• Class 2: Angina can occur during rapidly walking or climbing, exposure to cold, after a heavy diet, emotional stress.
• Class 3: In this person feel discomfort or uneasy to his daily routine work or physical activity.
• Class 4: Patients feel more discomfort and unable to do any physical activity.

CLINICAL FEATURES:
The following clinical features are found in angina pectoris:
(1) Commonly pain found in mid or upper sterna region in 80-90%.
(2) An uncomfortable pressure, fullness, squeezing pain in the center of the chest.
(3) Also feel tightness, burning or heavy weight.
(4) Pain radiated to left shoulder, neck & upper arm
(5) Usually start after exercise, walking uphill, walking against wind, after heavy meals even during sexual intercourse.

Others symptoms may occur with an Angina attack:-- Shortness of breath, Lightheadedness, Anxiety, Sweating, Nausea, Irregular heart beat.

EFFECT OF *Inula Racemosa* IN ANGINA:-

(1) **Pushakarmoola**¹² :-

**Properties** -
*Rasa* – Tikta, Katu
*Guna* – Laghu, Tikshana
*Virya* – Ushana
*Vipaka* – Katu

**Action** -Kaphghna, *Hridya*, *Parshashoolhara*, *Medohara*, Anti-inflammatory, anti-helmintic, weak heart, anti-spasmogic activity, cardio tonic, bronchodilator, improve cardiac debility, improve heart rhythm, prevents angina episodes, controls cholesterol level & cure cardiac Pain¹⁷

(2) **Madhu** –

**Properties** –
*Rasa* - *Madhura*
*Guna*–*Ruksha, Sheeta, Laghu*
*Virya* – *Sheeta*
*Vipaka* – *Katu*

**Action** –*Varnya, Agnivardhaka, Supachya, Lekhana, Hridya, Vajikarna, Samdhana¹⁸*Ropana, Medograndhi-Chedaka¹⁹Grahi, Medodhatu-Sthoulyanashaka, Atilekhana¹⁸*Srotomarga shodhaka²⁰*

CHEMICAL COMPOSITION OF *INULA RACEMOSA*²¹ :-

**Plant** - Isoalloalantolactone, beta-sitosterol, isoalantolactone, pyrazoline.

**Oil**: - Sesquiterpenes, phenylacetonitrile, benzaldehydesesquiterpene hydrocarbon.

**Root**: - Sesquiterpenes lacton, D-mannitol, inulin.

RESULTS
Due to all above properties of *Inula-Racemosa* on the basis of their *Rasa-Guna-Virya-Vipaka* and other pharmacological activity and various type of chemical composition present in Plant, root or oil they Play a very effective role in management of Angina.
DISCUSSION

Angina is caused by thrombus, emboli specially atherosclerosis formed by the deposition of protein, fat, lipid, carbohydrate, cholesterol within the artery which is responsible for lake blood supply to the heart due to narrowing of coronary artery lumen. resulting Anginal pain. It is a leading cause of death in Indian population\(^6\). Pushkarmoolachurna with Madhu plays very effective role in hridshoola due to following properties like Kaphvatashamak due to Ushanaveerya and Stroshodhak due to Tikshanaguna. Including Madhu is Supachya, Lekhana, Hridya, Vajikarna, Samdhana\(^{18}\) Ropana, Medograndhi-Chedaka\(^{19}\), Grahi, Medodhatu-Sthoulyanashaka and Atilekhana,\(^{18}\) Srotomarga shodhaka\(^{20}\) In heart disease free radicals are released in artery and oxidize low-density lipoprotein. The oxidized LDL is the basis for cholesterol build-up and damage coronary artery wall. Both medicines are good Deepan-pachana properties because of Katu-Tikta which is prevent the formation of free radicals as well as oxidation promoted by this drug. Pushkarmoola rhizome has Sesquiterpanelectone, Alantolactone they control heart rhythm, prevent angina episodes & control cholesterol level. Alcoholic root extract of Innula racemosa show Anti-histaminic and Anti-serotonergic effect as well as essential oil are antibacterial and antifungal activity against S.aureus, Ps.aeruginosa. The essential oil exhibited anthelminthic activity against earthworms and tapeworms\(^{22}\). Innula racemosa root Powder prevent ST-segment depression and T-wave inversion. This indicates may have adrenergic activity. Especially combined with Comiphora mukul it decreases cholesterol level in liver.

CONCLUSION

Angina pectoris is a one of the fetal coronary artery disease for this rhizome extracts of Pushkarmool, sesquiterpanelacton, Alantolactone and roots are bitter, acrid, thermogenic, cardiotonic expectorant, alexipharmic, anodyne, anti-inflammatory, digestive, carminative, aphrodisiac, febrifuge and tonic. Sesquiterpane lacton improve heart rhythm and Alantolactone is Krimghna properties so also used in Krimij Hridya roga\(^{23}\). Pushkarmoola has shown anti-Anginal and hypolipidemic activity in coronary heart disease\(^{24}\) For the management of Angina pectoris avoid stress, heavy work and fatty diet in daily routine, control systemic hyper-tension, left
ventricular failure and lipid abnormalities, approved exercise program, decrease intake of coffee and tea. So Pushkarmoolchurna with anupana of Madhu very useful in the management of Hridashoola (Angina Pectoris).
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