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THERAPEUTIC POTENTIAL OF SHIVA GUTIKA AS A RASAYANA IN HRIDROGA (≈CORONARY ARTERY DISEASE): AN AYURVEDIC REVIEW

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ABSTRACT

Background:

Hridroga in Ayurveda encompasses various cardiovascular disorders, including conditions comparable to coronary artery disease (CAD). *Rasayana* therapy, which focuses on tissue rejuvenation and systemic strengthening, is significant in both preventive and therapeutic contexts. Shiva Gutika is a classical Ayurvedic formulation known for its *Rasayana* and Hridya (cardiotonic) effects.

Objectives:

To identify the therapeutical potential of Shiva Gutika tablet as a *Rasayana* for the management of *Hridroga*, as a secondary preventive measure in Coronary Artery Disease.

Method:

Literature review was done based on reviewing Ayurvedic texts, research articles, and various journals. The pharmacological aspects of Shiva Gutika tablet, like *rasa* (taste), *guna* (qualities), *veerya* (potency), and *vipaka* (post-digestive effect) was analyzed. Their effects on *Agni*, *Srotas*, and *Saptadhatus* were checked to understand their *Rasayana* potential in cardiovascular disorders.

Results:

The ingredients of Shiva Gutika demonstrate actions that regulate *Agni*, nourish *Dhatus*, and promote unobstructed flow in *Srotas*, particularly *Raktavaha* and *Manovaha Srotas*. It has *Hridya*, *Balya* action, *Rasayana*, and *Medhya* properties which contributes to enhance cardiac functioning. The effects observed helps in suggesting role of Shiva Gutika in delaying CAD progression and help in improvement of overall heart.

Conclusion:

Shiva Gutika *Rasayana* can be a potent secondary preventive measure in the management of CAD

Keywords: Coronary Artery Disease, *Hridroga*, *Rasayana*, *rasapanchaka*, Antioxidant

INTRODUCTION:

The term "coronary artery disease" (CAD), also referred to as "coronary heart disease" or "ischemic heart disease," encompasses a group of conditions that impact the blood vessels of heart. This includes disorders such as stable and unstable angina, as well as myocardial infarction. The primary cause for CAD is said to be atherosclerosis. In *Ayurveda*, Coronary Artery Disease can be correlated to *Hridroga* (~Cardiac disorders). *Hridroga* is one of the *Pranavaha* and *Rasavaha Sroto Vikara* (~disorders of channels carrying prana and blood). It can be further classified into 5 types. Among the 5 types mentioned, CAD

can be compared to *Tridoshaja Hridroga* based on the symptoms which includes *Hridishoola*(~chest pain), *Hrid drava*(~increased heart rate), *swasa avarodha* (~exertional dyspnoea) [1]. The management of *Hridroga* includes *Snehana* (~oleation), *Vamana* (~therapeutic emesis), *Virechana* (~therapeutic purgation), *Basti* (~medicated enema), *Bahya Karmas* (~external procedure) like *Hrid Basti* (~therapeutic retention of oil over the cardiac region), *Hrid Parisheka* (~sudation by streaming of pre-warmed liquid over chest region), *Shamana Aushadis* (~disease

specific internal medicine), *Rasayana* (~rejuvenating medicine) [2].

The increasing incidence of cardiovascular disorders among the younger population has become a serious public health concern, prompting the need for greater awareness and intervention [3]. While a sedentary lifestyle is a major contributing factor, it is by no means the only one. Rising consumption of unhealthy, processed foods, chronic stress, poor sleep habits, smoking, alcohol as well as increasing cases of obesity, diabetes and metabolic syndrome are all driving this alarming trend. These multifaceted issues are leading to earlier onset and recurrence of cardiovascular diseases, making it imperative to explore comprehensive prevention and management strategies. It is in response to these growing concerns that this article aims to emphasize the need for holistic preventive approaches- including lifestyle modification, dietary changes, and traditional systems like *Rasayana*- to combat *hridroga* and promote long term cardiovascular health.

Rasayanas are rejuvenators which supplements the nutritional value and are said to exhibit strong antioxidant activity. They counteract oxidative stressors, thereby stopping the production of different free radicals. Free radicals play a crucial role in every stage of development of CAD.

Mythological text gives evidence regarding *Shiva Gutika* to be used by Lord Shiva to treat Lord Ganesha for the treatment of *Prameha*(~Diabetes) [4]. Further the reference of *Shiva Gutika* having *Rasayana* properties is found in textbooks like *Sahashrayoga* and *Bhaishyajya Ratnavali*. The use of *Shiva Gutika* in *Hridroga* is mentioned in *Sahashrayoga* text [5].

There is currently a lack of scientific research evaluating the cardiovascular benefits of *Shivagutika*, despite its traditional use in Ayurveda. This study is a preliminary attempt to explore its potential role in managing *Hridroga*. In this study, the potential of *Shiva Gutika* as a *Rasayana* in CAD is been reviewed based on the *Rasa Panchakas* of each ingredient of *Shiva Gutika*. It contains *Shilajatu* (Asphaltum) as the main ingredient which is *Katu* (~pungent) *Tikta rasa* (~bitter taste), *Guru Guna* (~heavy property), *Katu Vipaka* (~pungent biotransformed rasa), *Ushna Veerya* (~hot potency), *Vata- Pittahara* (~Reduction of vata and pitta dosha) and has *Rasayana* action [6].

Shiva Gutika also has rejuvenating and health-promoting properties like antioxidant, anti-inflammatory, lipid lowering, blood pressure regulation, immunomodulatory action. This all properties may aid to prevent the pathophysiology of CAD.

This review aims to identify the therapeutical potential of Shiva Gutika as a *Rasayana* for the management of *Hridroga*, as a secondary preventive measure in Coronary Artery Disease.

LITERATURE REVIEW

Rasayana

Rasayana are the drugs which help in nourishing *Rasa Dhatu*, which in turn improves the *gunas* of *Utarrottara Dhatu* (~preceeding tissues).

Rasayana helps in achieving the optimum qualities of *Sapta Dhatus* (~Seven tissues) like *Rasa Dhatu* and *Rakta dhatu* in the body [7]. *Rasayana* has two main facets: i) *Jara nashana* (~ delays ageing process) ii) *Vyadhi – nashana* (~ It destroys diseases). On basis of utility of *Rasayana*, they are divided into 3 forms: [8]

- *Kamya Rasayana*
- *Naimittika Rasayana*
- *Ajasrika Rasayana*

Rasayana is said to nourish all *Dhatus* and thus helps in prevention of chronic degenerative illness. *Naimittika Rasayana* are curative as well as preventive in nature as they specific to diseases. According to Acharyas, the benefits obtained by one by consuming *Rasayana* are longevity, good memory and health, good intelligence, freedom from diseases and skin becomes glowy, lustrous, good physique, proper

functioning of sense organs, good voice, resistance to diseases [9].

The pharmacodynamics of *Rasayana* [10] are

- At the level of *Rasa- Rasayana* medications have *Madhura* (~sweet) *rasa*, *Snigdha* (~unctuous), *Guru* (heavy), *sheeta*(cold) properties which help in promoting *Poshaka Rasa* (nourishing factors) in the body, thereby facilitating the optimal *gunas* of *dhatu*s in body.
- At the level of *KoshtaAgni*: - Drugs that have *gunas* like, *Laghu* (Light), *Ushna*(warm), and *rasas* like *Katu*, *Tikta*, *Kashaya Rasa* which is said to act at the level of *Koshta Agni*, *Jatharagni*, *Dhatwagni* in human body.
- Action on *Srotas*:- Drugs having *Katu*, *Tikta*, *Kashaya Rasa* and properties like *Ruksha*, *Laghu guna*, *Ushna Veerya*, *Katu Vipaka* helps in improving *Sukshma Samvahana*, thereby nourishing the tissue and enhances blood flow through *srotoshodhana*.

Hridaya and *Hridroga*: [11, 12]

Acharya Sushruta mentions that *Hridaya* is formed by *Sara bhaga of Kapha Dosha* (~essence part of kapha dosha), *Medo Dhatu* (~fat issue) and *Rakta Dhatu* [13].

Dhatus like *Rasa*, *Rakta* helps in providing nourishment to *Hridaya*. It consists of three doshas and equilibrium of these doshas is essential for normal heart functions. Out of 5 types of *Vata*, function of *Vyana Vata* helps to regulate cardiac function (contraction and relaxation) and also maintains the rhythm of heart. *Prana Vayu* is responsible for oxygen which is essential for all cells and organ. *Sadhaka Pitta* represents various enzymes present in heart and *Avalambaka Kapha* represents interstitial fluid in heart [14].

Nidanas for *Hridroga* are like *Ushna* (~hot), *amla* (~sour), *lavana* (~salty), spicy food items, *sura pana* (~alcohol consumption)

,heavy and oily food substances, *kshata* (~injury), *shoka* (~fear), *krodha* (~anger), etc. leads to *Dosha dushti* (~vitiation of dosha) and *Agnidushti* (~mandagni) which in turn leads to formation of *ama*(~toxins), this *Ama* combines with vitiated *doshas* and then takes *sthana samshraya*(~stage of localization) in *Hridaya* and causes *Srotorodha*, *margavarodha* (~channel obstruction) and will show *lakshanas* like cyanosis, exertional dyspnoea, oedema, excess sweating, syncope, fainting and chest discomfort like chest pain, chest tightness, chest heaviness. Pathogenesis of *hridroga* is explained in **Figure 1**.

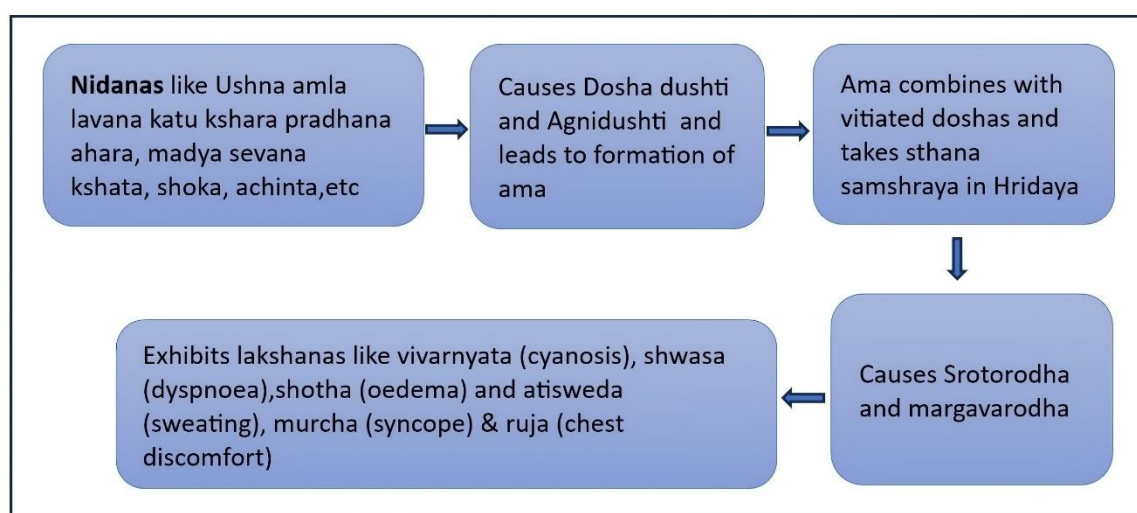


Figure 1: Schematic diagram showing pathogenesis and lakshana of Hridroga

Rasayana in Hridroga-

Various *Rasayanas* are mentioned in Ayurvedic classics in the management of *Hridroga* like *Shilajit*, *Amalaki*, *Agastya rasayana*, *chyavanprash*, [15] etc.

Rasayana after proper *Shodhana* (~purificatory measures) and *Shamana Chikitsa* (medications), might help in preventing *Hridroga*. *Rasayana* exhibits properties like antioxidant effects,

immunomodulation, Anti-inflammatory. etc. All these properties of *Rasayana* makes it highly significant for its use in disorders like CAD as the common pathology seen in CAD is caused by free radical production.

Shiva gutika as Rasayana:

Shiva gutika is a formulation mentioned in *Sahasrayogam*, *Gutika yoga prakaranam* chapter [5].

Dose of *shiva gutika*: 1 pill (6gms)/day

Anupana of *shiva gutika*: Milk or *Mamsa* (mutton juice), *Dadima* juice, *sura*, *asava*, honey, or cold water

Rogadhikara of *shiva gutika*: *Hridroga*, *Grahani*(~derangement of agni), *Swasa* (~dyspnoea), *Kasa* (~cold), *Pandu*

(~anaemia), *Shiiroroga* (~Head disorders), etc.

When *shiva gutika* is administered for more than 1 year it shows *rasayana* effect. *Shiva gutika* contains *shilajitu* as main ingredient which consist of fulvic acids, gallic acid, flavonoids, luetin, etc which are said to have antioxidant property.

Ingredients of Shiva Gutika (Figure 2):

Shiva gutika contains total 56 drugs. The ingredients and *rasa panchaka* (~five qualities) of *shiva gutika* are mentioned in **Figure 2**. The main ingredient of this formulation is *shilajit* (Asphaltum) which is around 768gms. Other ingredients include *Haritaki*, *amalaki*, *musta*, *Talisa patra*, *go mutra*, etc.

Sl no	Ingredients	Botanical name	Rasa	Guna	Veerya	Vipaka	Deshagnata																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</
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Figure 2: List of ingredients of Shiva Gutika

Previous Research Studies:

There are various research studies carried out on individual ingredients of *Shiva gutika* and its interpretation in *Hridroga*. Properties of Ingredients of *Shiva Gutika* like *Shilajitu* [16, 17], *Haritaki* [18, 19],

Amalaki [20], *Musta* [21], *Maricha* [22], *Karkatashringi* [23], *Shunti* [24, 25], *Pippali* [26] may help as *Rasayana* and its effect in *Hridroga* are mentioned in Table 1.

Table 1: Research studies about various ingredients of Shiva Gutika

S. No.	Ingredients	Previous Research
1.	Shilajit	Shilajit possesses properties such as antioxidant, immunomodulatory, and anti-inflammatory. Study conducted on rats showed result that drug Shilajit produces the antioxidants property in body of rats. [16] One more study of shilajatu on Albino rats showed the results such as loweing the level of total cholesterol, triglycerides and LDL after administration of shilajatu. [17] The primary bioactive components of shilajit, specifically 3OH-DBP & 3,8(OH)2-DBP, demonstrated significant antioxidative properties, as evidenced by conventional in vitro radical scavenging assays. [17] Based on these studies, it can be inferred that shilajatu is effective in controlling hyperlipidaemia, which is a major risk factor for developing cardiovascular disorders.
2.	Haritaki	The study on haritaki revealed that it exhibits strong antioxidant effect through its scavenging action of free radicals, also anti lipid peroxidation action.[18] Haritaki is said to have cardio protective action and anti-inflammatory action, employing alkaloids and flavonoids. [19] The antioxidant and cardioprotective action makes haritaki an efficient drug for use in CAD.
3.	Amalaki	The study has showed that Amalaki drug has properties like antioxidant, anti-inflammatory and lipid lowering action.[20] Amalaki is rich in Vitamin C, polyphenols, and alkaloids, which aid in reducing oxidative stress and helps in protecting cardiovascular system from free radical damage. Additionally, it exhibits anti-inflammatory and lipid-lowering properties. Hypercholesteremia is a significant risk factor for CAD, the properties of amalaka contributes to the prevention of CAD.
4.	Musta	Musta is rich in polyphenols, flavonoids and ascorbic acid, contributing to its strong antioxidant properties, which protect the cardiovascular system from oxidative damage. [21] Additionally, its lipid-lowering capabilities aid in preventing hypercholesterolemia, which is one among the risk factor of CAD.
5.	Maricha	A study stated that Maricha has antioxidant property. The key function of antioxidant is to prohibit the free radical production, which is a common impacting factor in CAD. [22]
6.	Karkatashringi	The ethanol extract of karkatashringi shows a high number of flavonoids and total phenolic content which acts as a potent antioxidant, which further helps in cardioprotective activities. [23]
7.	Shunti	Phytochemical study on shunti reveals the components which have scavenging action on free radicals.[24] 6 Shogaol is a component of shunti which exhibit properties like anti-inflammatory and antioxidant. [25] Because of the properties shown in shunti, it can be inferred that shunti has a rasayana effect.
8.	Pippali	The study conducted on pippali shows β - sitosterol as an active ingredient which acts as a cardio protector by reducing serum cholesterol levels and improvising the defence system through its antioxidant nature. It also shows active component like alkaloids, isobutylamides, lignanes and esters which aids in anti-inflammatory action. [26]

Coronary Artery Disease:

CAD is a cardiac condition characterized by atherosclerotic plaque accumulation in the walls of coronary arteries, which further leads to impaired blood flow in the heart

[27]. The risk factors mainly associated with CAD include excessive smoking, hypertension, hypercholesterolemia, and diabetes etc.

Pathophysiology of CAD:[27]

Building up of Fatty streaks beneath the endothelial layer → Plaque progression involves cytokine release from T cells, which activates vascular smooth muscle cells → These cells take up oxidized LDL and produce collagen, contributing to subendothelial plaque formation → Plaque evolution includes stabilizing through forming a fibrous cap, which may later be calcified → Clinical manifestations may include chest pain (angina), palpitations, and exertional dyspnoea

DISCUSSION:

Shivagutika, a polyherbo-mineral formulation primarily composed of *Shilajitu* and over 56 herbal ingredients such as cow's urine, cow's milk, cow's ghee, honey, *Amalaki*, *Haritaki*, *Vibhitaki*, *Shalaparni*, *Prishnaparni*, *Musta*, etc. This is a *Rasayana* that helps to provide benefits in the management of various chronic metabolic disorders.

In *Phalashruti* (~ Benefits) of *Shiva gutika*, there is a direct indication of *Hridroga*. *Shiva gutika*, when administered for a long period in a disease condition, is said to have a *Rasayana* effect.

From the detailed study of *rasa panchaka* of all dravyas of *Shiva Gutika*, a consensus could be formulated to understand the yoga at the gross level:

Rasa- Tikta, Madhura, Katu predominant
Gunas: Ruksha guna, Laghu (~light) *guna, Tikshna* (~sharp property)

Veerya: Usna (~hot) potency

Vipaka: Primarily – Katu, Secondary – Madhura (~sweet)

Karma (~action): Alleviates *Kapha Vata dosha*

Action of predominant rasa of shiva gutika in CAD

Madhura Rasa: *Madhura rasa* is said to *Hridya* and has *Sharira Satmya* quality which helps in

- सप्तधातुवर्धन - It increases *rasa* and *raktadi dhatus* which helps in nourishing *Hridaya* and thereby improves blood circulation.
- मनोविश्रान्तिकरम् - this quality of *Madhura rasa* helps to calm the mind and reduce Stress which is a common risk factor associated with CAD.
- दाहप्रशमनम्- This property may reduce inflammation by reducing *pitta dosha* in body.
- बृंहण – Nourishes all tissues of heart and helps in enhancing its function and strength.

Katu Rasa: *Katu rasa* primarily reduces the *kapha dosha* in body and has following action [28]

- स्रोतशोधनं - clears the *kapha, medo avarana* (atherosclerosis) in the coronary arteries which are the main pathology seen in CAD

- पाचन - stimulates *Agni* (~digestive fire), promoting efficient digestion and metabolism. This supports the proper breakdown and absorption of nutrients essential for heart health.
- विशद Guna - clears the channels and enhances the blood circulation
- तीक्ष्ण and उष्ण guna - this gunas of *katu rasa* helps in improving overall blood circulation.
- शोणितसङ्घातं भिनत्ति- it has an ability to break up platelet aggregation and prevent further aggregation. This also aids in the breakdown of atherosclerotic plaques.

Tikta Rasa : It has following actions [28]

- शोधनम्- It helps in eliminating *ama* which has a purifying effect on blood and body tissues.
- वातपित्तशमनम्- Pacifies aggravated *Vata* and *Pitta* doshas and helps reducing inflammation and balancing metabolic processes in the cardiovascular system.

Action of predominant guna of shiva gutika in CAD

Laghu Guna:

- *Laghu guna* is antagonist to gunas of *Kapha*. It has action of – लेखन AND रोपन [29]

- Because of the above actions, it helps in scarping accumulated fat in the arteries and thus helps in breaking the pathogenesis of CAD.
- The सर action of *laghu guna* helps in enhancing the circulation.

Ruksha Guna:

- *Ruksha guna* has शोषण [30] action and it is कफहर [31]. It helps in drying and reduce the accumulation of lipids and cholesterol in arteries thereby helps in preventing atherosclerosis.

Tikshna guna:

- *Tikshna guna* is opposite to the properties of *kapha*. It possesses the actions of शोधन and कफहर (reducing *kapha*). [31] Since *kapha* is the primary dosha affected in coronary artery disease (CAD), managing *kapha* is crucial in the prevention of CAD.

Action of veerya of shiva gutika in CAD

Around 30 ingredients of *Shiva gutika*, having *Ushna veerya* i.e. hot potency in nature which are predominant of *Agni bhuta* and exhibit the actions like *kapha vilayana*, and it mainly reduces *Vata* and *kapha doshas* [32]. In CAD, *kapha vilayana* (~liquefaction of *kapha*) and *dosha pachana* will help in preventing the further progression of the disease.

Pharmacodynamics - Shiva Gutika as *rasayana* in CAD:

The pharmacodynamics of shiva gutika is explained in terms of action on *rasa dhatu*,

action on *agni* (~digestive fire) and action on *srotas* is explained in **Table 2**.

Table 2: Pharmacodynamics of Shiva Gutika in CAD

Action on <i>Rasa Dhatu</i>	Shiva Gutika, rich in Madhura Rasa (25 drugs), promotes Rasa Dhatu formation, supporting Dhatu Poshana and healthy tissue regeneration. As <i>Hridroga</i> is a <i>rasa pradoshaja vikara</i> , by improving the quality the <i>rasa dhatu</i> , it might help in rehabilitation of the damaged tissue
Action on <i>Agni</i>	<i>Laghu, Ruksha, Teekshna Gunas</i> and <i>Katu, Tikta, Kashaya Rasas</i> enhance <i>Agni</i> . Many ingredients of Shiva Gutika possess these properties (Figure 2), supporting <i>Agni Deepana</i> (~increasing agni), proper metabolism, and aiding in <i>Hridroga Chikitsa</i> .
Action on <i>Srotas</i>	Shiva Gutika drugs mainly have <i>Katu, Tikta, Kashaya Rasa, Ushna Veerya, Katu Vipaka</i> , and are <i>Laghu</i> and <i>Ruksha</i> . • These <i>Rasayana</i> traits cleanse <i>Srotas</i> , enhance microcirculation, and support tissue nourishment, maintaining the heart's structure and function.

Active principles of shiva gutika acting as *rasayana*:

Antioxidant property –

The antioxidant property of *shiva gutika* can be interpreted by the drugs mentioned in **Table 2**. Most of the drugs contains polyphenols which acts as antioxidant by neutralizing free radicals and metal chelation properties. This free radical scavenging mechanism results in release of hydrogen or electron to free radicals and thus helps in neutralizing reactive oxygen species, which leads to prevention of lipid peroxidation helping in prevention of progression of atherosclerosis which reduces the further ischemic episodes

Anti-inflammatory property-

The drugs like *haritaki, shunti, guduchi, musta, pippali* contains bio active component like flavonoids and alkaloids which have the potential to reduce

inflammation by inhibition of pro-inflammatory mediators like cytokines and prostaglandins which prevents progression of plaque formation which is a prime cause of CAD.

CONCLUSION:

Shiva gutika is a polyherbal drug. A comprehensive analysis of *rasa panchaka* of *shiva gutika* helps to indicate its significant potential as *Rasayana* in managing *Hridroga*. It also shows antioxidant property by various free radical scavenging action, lipid lowering action. Considering the properties, *Shiva gutika's* effect as *rasayana* in CAD can be used as secondary preventive measures.

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