



## THE THERAPEUTIC ROLE OF SANGA THIRAVAGAM IN TREATING ANGINAL PAIN- A REVIEW

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### ABSTRACT

General public are more attracted towards the Modern Scientific Medicine because of the fact that emergencies can be handled only by them. On the contrary Traditional Indian System of medicine particularly Siddha has a long history of handling such emergencies from time in memorial. Emergency conditions as defined by WHO includes Injuries, Cardiac and Circulatory Failures, Acute Respiratory Diseases, Neurological Diseases, etc. Among these, Cardiac and Circulatory Failure have higher incidence.

Out of 32 Internal medicines found in Siddha Materia Medica ‘*Thiravagams* (medicated, distilled acids)’ are indicated for emergency conditions. *Sanga Thiravagam* is specifically indicated for cardiac emergencies such as Anginal pain. This review paper deals in detail the preparation, ingredients of the drug with the special reference to the individual properties to attributing to the therapeutic effect. The probable mechanism of action of ingredients including *Vedi Uppu* (Potassium nitrate), *Induppu* (Sodium chloride impure), *Thurusu* (Cupric sulphate) and *Vengaram* (Borax) are also discussed. So this is the right time to do more research on *Thiravagams* and scientifically explore the feasibility of using Siddha Medicine in Emergency Conditions.

### Key Words:

Emergency in Siddha, *Sanga Thiravagam*, Siddha Emergency Management, Anginal pain.

## INTRODUCTION:

Siddha system of medicine is one of the ancient systems of medicine in the world which is being followed by the people of Tamilnadu in India.

Angina Pectoris commonly known as Angina, is chest pain often due to ischemia of the heart muscles, due in general to obstruction or spasm of coronary arteries<sup>[1]</sup>. The main cause of Angina pectoris is improper contractility of the heart muscle and coronary artery disease, due to atherosclerosis of the arteries feeding the heart. In some cases Angina can be extremely serious and has been known to cause death.

*Table. 1. Basic signs of Angina and conventional Treatment methods:*

Signs and Symptoms	Major Risk Factors	Treatment for Angina
*Chest discomfort  *Discomfort is usually as pressure, heaviness, tightness, burning or choking sensation.  *Pain is experienced in epigastrium which may radiate to the medial side of left arm towards the little finger.  *Pain may be accompanied by breathlessness, sweating, nausea in some cases.  *Pulse rate and blood pressure increases.	Cigarette smoking,  Diabetes mellitus,  Hyper cholestremia,  Hypertension,  Sedentary life style,  Family history of premature Heart Disease,  Kidney diseases,  Obesity,  Prolonged psychosocial stress.	Nitrates  $\beta$ –blockers  Calcium channel blockers  Vasodilators  Diuretics

Table. 2. Actions of conventional Anti-anginals

<i>Name of Anti-anginal</i>	<i>Action</i>	<i>Reference</i>
Nitrates	Stimulating endothelial derived relaxing factor and causes vasodilatation <sup>[4]</sup> .	[4]
Beta blockers	Used in prophylaxis <sup>[5]</sup> and reduces myocardial oxygen demand.	[5]
Calcium channel blockers	Improving myocardial efficiency, reducing heart rate, and improving coronary blood flow.	[6]
Vasodilators	Dilates the coronary vessels and reduces the blood pressure.	[7]
Diuretics	Decreases blood volume and venous pressure, decreases ventricular stroke volume and cardiac output which lead to fall in arterial pressure.	[7]

***Treatment for Angina in Siddha:***

Our Siddha medicine has the treatment and management for emergency conditions such as angina. *Thiravagams* are indicated for emergency conditions. *Thiravagams* are Medical liquid preparation (or) distilled mineral acids obtained from vegetable and mineral origin <sup>[9, 10]</sup>. *Sanga Thiravagam*, an acid preparation obtained from distillation of Nitrate, Iron sulphate, Rock Salt, Alum etc <sup>[10]</sup>.

***General concept of Sanga Thiravagam***

All the individual drugs added in the *Sanga thiravagam* except copper sulphate are the drugs that also act as diuretics. Diuretic drugs acts on Sodium and water

balance to reduce the Sodium reabsorption which leads to fall in arterial blood pressure.

*Table. 3. Constituents of Sanga Thiravagam and its uses*

S.No	Tamil Name	Common name	Uses	Reference
1	<i>Vediuppu</i>	Potassium nitrate	Hypotensive Agent, Diuretic <sup>[13]</sup>	[8] [11]
2	<i>Induppu</i>	Sodium Chloride Impura	Diuretic <sup>[15]</sup>	
3	<i>Padikaram</i>	Alum <sup>[11]</sup>	Anti platelet aggregation <sup>[12]</sup>	
4	<i>Venkaram</i>	Borax <sup>[11]</sup> .	Ca+ antagonist <sup>[13]</sup>	
5	<i>Navacharam</i>	Ammonium chloride <sup>[11]</sup> .	Diuretic	
6	<i>Annabedi</i>	Iron sulphate <sup>[11]</sup> .	Diuretic	

The mechanism of action of the above individual drugs are also discussed below

***Vediuppu (Potassium Nitrate):***

Potassium combats high blood pressure and was once used as hypotensive agent<sup>[24]</sup>. Potassium nitrate is belongs to inorganic nitrate group organic nitrates are capable to produce NO and reduces angina pain. Brunton and butter who works at Edinburgh royal infirmary noted that the effect of potassium nitrate on the pulse and arterial blood pressure of healthy human volunteers. The most significant observation was that even a small dose of <0.5 grains (=30mg) given by mouth caused, at first, an increase in arterial blood pressure, followed by a moderate decrease. With large doses, pronounced hypotension. They also noted that potassium nitrate, however administered, had a profound effect on the appearance and oxygen carrying capacity of the blood. Thus potassium nitrate helps in lowering the arterial blood pressure in treatment of angina<sup>[7]</sup>.

### ***Vengaram (Borax):***

*Vengaram* (borax) is calcium antagonist. It reduces the calcium level in blood<sup>[13]</sup>. So the smooth muscles of arterial wall were relaxed and vasodilation occurs. Because relaxation and contraction of the cardiac muscles and smooth muscle are depends on calcium channels. When the calcium enters into the cell muscles are contracts. If the calcium is pumped out the muscles are relaxed, in other words intra cellular calcium causes contraction of muscles. Borax as a calcium antagonist it reduces the calcium level of blood stream, so intra cellular calcium is pumped out and smooth muscles of arterial wall are relaxed. Borax is very effective in improvement of heart diseases. Other than this borax is hypolipemic agent<sup>[13]</sup>.

### ***Padikaram (alum):***

Recent studies of alum as an anti aggregation effect on Human proved that alum acts as a anti-platelet agent and should be used cautiously in the treatment of intractable intra vesicle hemorrhage. Alum at concentrations less than 1.5 mg/ml inhibited platelet aggregation induced by collagen, epinephrine, ADP and thrombin in dose dependent manner<sup>[12]</sup>. So alum can be able to reduce the anginal pain. Alum is a cheap anti platelet drug that needs further investigation

### ***Navacharam (ammonium chloride):***

Ammonium chloride acts as diuretics as the mechanism describe above diuretics are able to reduce the blood pressure which plays important role in treatment of angina. Diuretic drugs influences the re absorption of ionic sodium at tubular levels. Thus it reduces the blood pressure, cardiac filling, and ventricular stroke volume etc.

### ***Induppu (sodium chloride impure):***

Induppu (sodium chloride impure) is an diuretic drug so it reduces arterial blood pressure and cardiac filling. Apart from this ionic sodium is helpful in maintaining the heart beat<sup>[7]</sup>.

## DISCUSSION & CONCLUSION:

From the details above the therapeutic effect of *Sanga Thiravagam*, it is clearly known that Good Anginal drug. The individual drugs added in *Sanga Thiravagam* may directly or indirectly act upon cardio vascular system as a vasodilator (or) as a hypotensive agent (or) as calcium antagonist etc. so it is inferred that *Sanga Thiravagam* can be used as an anti anginal drug in Siddha. The Scientific Research Community has to elucidate the above properties of *Sanga Thiravagam* as anti anginal medicine. Further studies are to be done and the therapeutic effect of *Sanga Thiravagam* has to be proved scientifically.

## REFERENCES

1. "MerckMedicus: Dorland's medical dictionary" Retrieved 2009-01-09.
2. Tobin, Kenneth J. (2010). "Stable Angina Pectoris: What Does The Current Clinical Evidence Tell Us?" The Journal of the American Osteopathic Association 110(7): 364-70.
3. Guyton, Arthur. "Textbook of Medical Physiology" 11<sup>th</sup> Edition. Philadelphia; Elsevier, 2006.
4. Pfister M, Seiler C, Fleisch M, Göbel H, Lüscher T, Meier B (October 1998). "Nitrate induced coronary vasodilatation: differential effects of sublingual application by capsule or spray". Heart 80 (4): 365-9.
5. O'Rourke ST (October 2007). "Antianginal actions of beta-adrenoceptor antagonists" Am J Pharm Educ 71(5): 95.
6. National Clinical Guidelines Centre (UK). Stable Angina: Methods, Evidence & Guidance [Internet]. London: Royal College of Physicians (UK); 2011 Jul. (NICE Clinical Guidelines, No. 126.) 7, Beta blockers vs. calcium channel blockers. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK83601/>
7. Medical treatment of Angina - HeartSite.com. 2015. Medical treatment of Angina - HeartSite.com. [ONLINE] Available at: [http://www.heartsite.com/html/med\\_rx\\_angina.html](http://www.heartsite.com/html/med_rx_angina.html). [Accessed 15 January 2015].
8. Siddha Maruthuvam (pothu) Dr.K.N.Kuppusamy Muthaliyar H.P.I.M, Dept of Indian Medicine And Homeopathy, Chennai. 2007-7<sup>th</sup> edition- P.No 263.

9. "The Wealth of India", Vol 10, Publication and Information Directorate, CSIR, New Delhi, 281, (1985).
10. Sambasivam Pillai TV, Dictionary Based on Indian Medical science, 2nd edition, Vol. 2, published by Directorate of Indian Medicine and Homeopathy, Chennai, India. 1991.
11. R.Thiyagarajan, Gunapadam Thathu Seevam, Dept of Indian Medecine and Homeopathy,Chennai,2013-8<sup>th</sup> Edition P.No.441.
12. Mohammed FI, Shafagoj YA, Antiaggregation effect of alum on human platelets. - PubMed - NCBI . 2015.
13. Borax Conspiracy by Walter Last, Nexus Magazine,June-July 2012,P.No 29-34