

NEUTRALIZATION AND CONTROL OF HARIDYA ROGA (HEART DISEASES) IN
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ABSTRACT

Simple, precise and accurate area under curve spectroscopic method has been developed and validated for the estimation of Nimodipine in bulk and pharmaceutical dosage form. The drug shows maximum absorption (λ_{max}) at 235nm in Acetonitrile solution and Area under Curve [AUC] in absorption spectra were measured between the wavelength range 230 to 240nm which obeys Beer's law in the concentration range of 2-12 $\mu\text{g/ml}$. The linearity study was carried out and regression coefficient was found to be 0.9998 and it has showed good linearity, precision during this concentration range. The % recovery was found to be 98.85-100.91. The LOD and LOQ were found to be 0.042 and 0.12 $\mu\text{g/ml}$. The % relative standard deviation was found to be less than 2. According to ICH guidelines the method has been validated for linearity, precision, accuracy, robustness, ruggedness, LOD and LOQ. The developed and validated method can be successfully applied for routine estimation of Nimodipine in bulk and pharmaceutical dosage form.

KEYWORDS: Nimodipine, Area under curve spectroscopy, validation, pharmaceutical formulations.

INTRODUCTION

Today the incidence of chronic non communicable disease is increasing at a high rate in our society. Due to change in concept of diet and life style, the incidence of heart diseases and diabetic mellitus is increasing at a high rate. In today's world most death are attributable to non communicable disease(35 millions) and just over half of these (17 millions) are as a result of Heart diseases, more than one third of these deaths occur in middle aged adults. In developed countries, heart disease and stroke are the first and second leading cause of death for adult men and women. It is estimated that there were approximately 46.9 million patients with heart diseases in India during the year 2010. An estimated 2.33 million people died of heart diseases during 2008.^[1] In the 21th century diet plan and lifestyle of populations across the world have been changed dramatically. Change in life style & diet pattern, lack physical exercise, increase mental stress, environmental changes has increases the incidence of this disease. From the ancient time *Ayurveda* is known for serving the society by cure & prevention & this concept is exactly applicable on the

cure and prevention of the heart diseases. *Ayurveda* teaches & enriches us such a good diet and wonderful living pattern that are very effective in the prevention of heart diseases. If we give importance to *Ayurveda* it is helpful in maintaining good health for every person. There are no of preventive (*Pathya Apathya*), curative aspects, medicinal drugs and preparations described in the *Ayurveda* having wonderful effect on these diseases.

AIMS AND OBJECTIVE

- To assessment the role of *Ayurveda* in the prevention and management heart diseases.
- To assessment the *Ayurvedic* literature in useful life style disorder.
- To assessment *Ahara, Vihara, Dina- charya, Ritucharya, Yoga, Rasayana* are described which have good role in prevention & cure of the heart diseases.

MATERIALS AND METHODS

Different *Ayurvedic* classical books, research papers and

journals were referred to fulfill this part, it comprise of subsection dealing with Neutralization And Control of heart diseases in *Ayurveda*.

Haridya (heart diseases)

Heart disease comprise of a group of disease of the heart and the vascular system. The major conditions are ischemic heart disease, hypertension, cerebrovascular disease (stroke) and congenital heart disease. Rheumatic heart disease continues to be an important health problem in many developing countries.^[1] Heart diseases can be correlated with *Haridaroga* in *Ayurveda*. *Achrya Susruta* said that due to the suppression of the natural urges, excessive intake of *Ushna*, *Rukshna*, *Ahar*, *Virudha Ahar*, *Ajrina* (indigestion), etc *Vikrita Dosha* goes in the *Hridaya* and also involves *Rakta* in it.^[2]

Etiology of Haridya (heart diseases)^[3]

Life style related Excessive physical exercise and

activity (*Vyayama*). Excessive enema (*Basti*), purgation (*Virechan*), emesis (*Vamana*). Suppression of natural urges (*vegadhaaran*) *Abhighatajanya* (physical & mental trauma) *Chinta*, *Krodha*, *Bhaya* etc. Diet related Excess & frequent consumption of substances having *Usna*, *Tikshna*, *Guru*, *Ruksha*, *Kashaya* properties.

Pathogenesis of Cardiovascular Diseases(*Hridroga*)^[4]

In this disease *Agnimandya* occurs due to *Mithya Ahar Vihar*. *Agnimandya* produces *Saama Rasa Dhatu* and due to *Saama Rasa Dhatu Srotoavrodh*, *Dhamnpartichya* occurs and results in *Hridroga*.

Familial factors Bad dite & life style (mithya Ahar – Vihar) _ *Agnimandhya* _ Formation of samarasa dhatu (Hypercholestremia) _ *Srotoavrodh Dhamnpartichy* (Obstruction of arteries, Atherosclerosis) _ *Haridya Roga* (Heart diseases).

Table 1: Symptoms of Haridya roga as per Ayurveda and modern view.

S.N.	Symptoms of <i>Hridroga</i> ^[5] (as per Ayurveda)	Symptoms of Cardiovascular diseases ^[6] (as per modern view)
1.	<i>Vaivarnya</i> (Cyanosis)	Dyspnoea
2.	<i>Murcha</i> (Syncope)	Orthopnoea
3.	<i>Jwara</i> (Fever)	Chest pain
4.	<i>Kaphoutklesha</i> (Nausea)	
5.	<i>Urashoola</i> (pain in chest)	
6.	<i>Shwasa</i> (Dysponea & Orthopnoea)	Cheyne- Stokes breathing
7.	<i>Mukha vairasya</i> (Better taste of mouth)	Anorexia
8.	<i>Trishna</i> (Excessive thirst)	Vomiting
9.	<i>Pramoha</i> (Stupor)	Syncope
10.	<i>Chardi</i> (Vomiting)	Fatigue
11.	<i>Kasa</i> (Cough)	Peripheral edema
12.	<i>Hikka</i> (Hiccough)	Palpitation
13.	<i>Aruchi</i> (Anorexia)	

If we study the symptoms which are given above mostly these are same in *Ayurveda* and modern view. So in Heart diseases we can give the Neutralization And Control which described in *Ayurveda*.

Types of *Haridya roga* and their correlation with modern view

1. *Vataja Hridroga* - Due to the *Shoka* (sad mood), *Upashaya* (fasting), *Ativyayam* (excessive exercise), *Rooksha*, *Shushka* and *Alpa aahar Vata* aggravates and produce pain in the heart region.^[7] *Shula* (pain) is also a common symptom of *Vataja Hridaya roga*. In angina also severe pain occurs. On the point of view of pain *Vataja Hridroga* can be correlated with angina. Due to *Ruksha & Laghu Guna Vata* aggravates & cause hardness or calcification of arterial wall. i.e Arteriosclerosis can be correlated with the *Vataja Hridaya roga*.

2. *Pittaja Hridroga*- Due to *Ushna*, *Amla*, *Lavana*, *Kshara*, *Katu Rasa's* food and excessive use of alcohol *Pitta Dosha* aggravates and produce burning heart, bitter taste, vomiting (*Vamana*), thrust (*Trishna*), *Murcha*

(syncope), *Sweda* (sweating) in the body.^[7] As per modern view we can correlate with pericarditis, inflammatory disorder of heart.

3. *Kaphaja Hridroga*- Due to excessive intake of food, *Snigdha*, *Guru* food, Lack of physical work *Kapha* aggravates and produce the symptoms of *Kapha dosha* in heart region like heaviness & numbness in the chest, anorexia.^[7] *Kaphaja Hridroga* can be correlated with the myocardial infarction because in myocardial infarction also feels heaviness in chest.

4. *Sannipataja Hridroga*- It produces due to *Vata*, *Pitta* & *Kapha* & in produce the symptoms of all three *dosha* at the same time.^[7] *Sannipataja Hridroga* can be correlated with acute chest pain.

5. *Krimija Hridroga*- If patient suffering from *kaphja hridya roga* takes, *Tila*, *Guda* then *Rasa dhatu dusthi Rasa* leads to *granthi utpatti* In this *granthi Krimi* arrives and spread in all region of heart & produces severe cutting pain, itching etc. It may also lead in death & *Acharya Charka* also advise to do early management in this condition.^[8] *Krimija Hridroga* can be correlated with myocardial infarction because in case of myocardial

infarction there is severe pain occur & required urgent management like as *Krimija Hridroga*.

Some research works on Ayurvedic medicines useful in Heart Diseases^[9]

Pushkar guggulu; *Pushkar guggulu* has some significant results in case of heart diseases. Researchers have shown that after six months treatment with *Pushkar guggulu*, there is significant reduction in the serum lipid levels and, pericardial pain & dyspnoea on effort.

Arjuna; *Arjuna* improves functions of cardiac muscle & subsequently improves pumping activity of the heart. It is thought that the saponin glycosides might be responsible for the inotropic effect of Terminalia, while the flavonoids provide free radical antioxidant activity and vascular strengthening.

Pusjarmula(*inula racemosa*), Studies have been conducted to find the efficacy of *Inula* compared to nitroglycerin for the prevention of angina symptoms in patients with chest pain and electrocardiogram ST-segment depression on exertion. Pre-treatment with *Inula* (3 grams root powder 90 minutes prior to testing) or nitroglycerin showed improvement in ST segment depression on electrocardiogram, with greater improvements seen after *Inula* treatment.

Prevention of the Heart Diseases (*Haridya roga*)

Principle of *Ayurveda* is Prevention is better than cure. So, preventive aspect is very important in case of *Haridya roga*. Avoidance of *Manas hetu*

1. Diet & life style modification
2. *Rasayana* therapy for *Haridya roga* *Brahm Rasayana*, *Amalaki Rasayana*, *Shilajeet Rasayana*, *Agastaya*

Pathya Apathya^[13]

Table 2: Diet regimen (*pathya apathya*) for *Hridroga*.

<i>Pathya Aahar, vihar</i>	<i>Apathya Aahar, vihar</i>
<i>Puraanraktshali, Jaangal pshupakshiyo ka maasrasa, Munga, Kultha ka Yush, Khandayush, Aama, Anaar, Amaltaash, Nayi Muli, Shunti, Kelaa, Aakesh ka Jla, Parwal etc Sevadan, Vamana, Basti, Virechana, Vishraama, Laghna Etc</i>	<i>Bheda ka Dudh, Nadi ka Jla, Usna, Tikshna, Gurupakee, Kashaya Aahar ka Sevan, mahuaa etc Tarishna, Vamana, Mutra, Adhovayu, Kash, Ashru Vega dhaaran karna, Daatun karna etc</i>

DISCUSSION

The increase incidence of the Heart diseases all over the world is due to the faulty diet plan & life style, Obesity, & Diabetes mellitus. Uncontrolled hypertension & Hyperlipidemia are the common risk factors for the Heart diseases. Role of *Ayurveda* in the prevention and cure of the Heart diseases is very systematic and goodmanner. In *Ayurveda Ahara, Vihara, Dinacharya, Ritucharya, Yoga, Rasayana* are described which have good role in prevention & cure of the heart diseases. Different researches have been showed that *Ayurveda* drugs have effective role in heart diseases. If someone adopt the diet pattern, lifestyle according to the *Ayurveda* it can be helpful in the decrease the incidence of Heart diseases. In text of *Ayurveda* there are number of drugs, formulation are

Haritaki, Chayavanprasha Rasayana.^[10]

Management of Heart Diseases asper *Ayurveda*^[11]

1. *Nidan parivarjana* (eg- change in diet & life style)
2. *Samshodhana* therapy
 - *Vamana Karma* (only *mridu Vamana* in *Vataja & Kaphaja Hridroga*)
 - *Virechana Karma* (Beneficial in Hypertension, Hyperlipidemia & *Krimija Hridroga & mridu Virechana* in *Pitta Hridroga*)
 - *Basti* (Beneficial in Obesity, Hyperlipidemia, Hypertension)
 - *Snehan, Sevadan, Shirodhara*

1. *Saman* Therapy

- *Haridya Mahakashya – Amra, Amarataka, Lakucha, Karmarda, Vrikshamla, Amlavetas, Kuvala, (Badi Ber) Badra, Dadima, & Matulunga*.^[12]
- Beneficial formulation in *Haridya roga*.^[11]
 - a) *Rasa- Haridyarnawa Rasa, Nagarjunabhra Rasa, Kalayansunder Rasa*
 - b) *Churna- Haritakyadi churna, Pipali churna, Pushkermul churna*
 - c) *Ghrita—Haritakyadi Ghrita, Arjun Ghrita, Pipplyadi Ghrita*
 - d) *Vati- Prabhakara Vati, Shanker vati, Hridroga vati*
 - e) *Kwatha- Arjunatwak Kwatha, Shunti Kwa-tha*
 - f) *Bhasma /Pishti- Akika Bhasma, Akika Pishti, Mukta Pishti Yoga for Hridroga Light exercise, Shavasan, Surya Namashkar, Pranayama.*

described which have very effective result on the Heart diseases. as mentioned above in details.

CONCLUSION

In *Ayurveda Ahara, Vihara, Dinacharya, Ritucharya, Yoga, Rasayana* are described which have good role in prevention & cure of the heart diseases. The researches on the heart protective drugs mentioned above have an effective role in the heart diseases. The Neutralization And Control can be done successfully in *Ayurveda*. Moreover *Ayurvedic* treatments are safe & affordable by everyone.

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