

Holistic Management of Cardiovascular Disease: Ayurvedic Principles and Therapeutic Intervention

Dharmesh Chauhan^{1*}, Hemant Toshikhane², Anitha H³, Misbah Rangwala⁴, Harish Daga⁵

^{1*}Assistant professor, Department of RSBK, Parul institute of Ayurveda, Parul University, Vadodara, 391760, Gujrat

²Dean & principal, Faculty of Ayurveda, Parul Institute of Ayurveda, Parul university, Vadodara, 391760, Gujrat

³Professor & Head, Department of RSBK, Parul Institute of Ayurveda, Parul university, Vadodara, 391760, Gujrat

⁴Chief intensivist, Parul Sevashram Hospital, Parul University, Vadodara, 391760, Gujrat

⁵Associate professor, Department of Shalya Tantra, Parul Institute of Ayurveda, Parul University, Vadodara, 391760, Gujrat

*Corresponding Author Email: drdharmesh16@gmail.com

Cite this paper as: Dharmesh Chauhan, Hemant Toshikhane, Anitha H, Misbah Rangwala, Harish Daga (2024) Holistic Management of Cardiovascular Disease: Ayurvedic Principles and Therapeutic Intervention. *Frontiers in Health Informatics*, Vol.13(8) 5148-5155

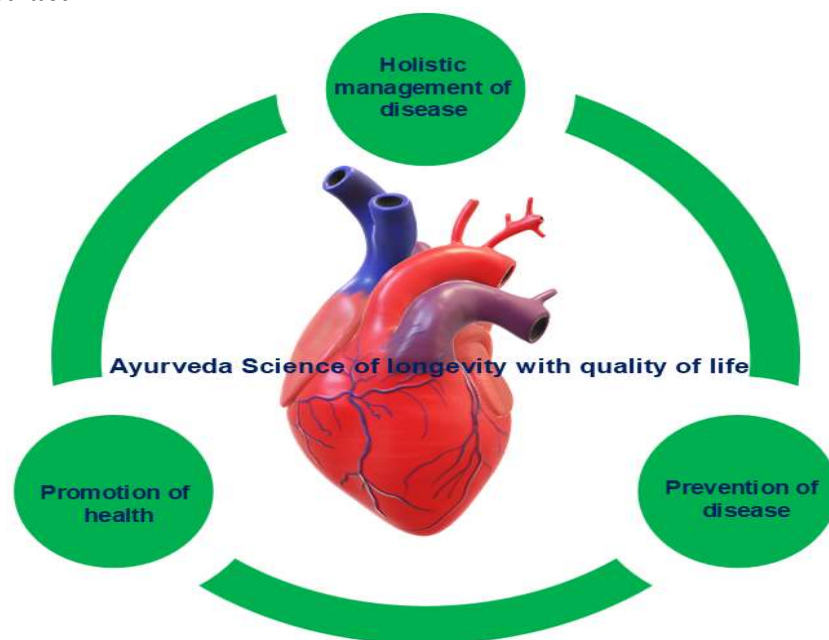
ABSTRACT

According to Acharya Sushruta, the presence of causative factors causes doshas to become unbalanced and aggravated, which causes them to depart from their proper locations and impact the rasa dhatu (body lymph). Various forms of pain known as Hridbadha or Hridroga are the manifestation of this imbalance. With around 18 million deaths annually, cardiovascular disease is the leading cause of mortality worldwide. Cardiovascular disease is a major modern health issue that is quickly overtaking all other causes of death worldwide. Formerly, cardiac ailments were predominantly observed in the elderly. Cardiac diseases have become increasingly prevalent among younger individuals as a result of changes in diet, lifestyle, and environmental factors. Fortunately, modern medicine offers a range of advanced treatments for patients with cardiac diseases. However, it is important to note that these treatments may not be accessible to all individuals. In contrast, Ayurveda provides numerous drugs, medicinal preparations such as rasayana pathya and apathya, and various yoga techniques that have remarkable curative and preventive effects on cardiac diseases. Furthermore, given the universal need for good health, all branches of Ayurveda can cooperate. Despite significant advancements in diagnostic and therapeutic cardiology, millions of individuals succumb to heart disease annually. Heart disorders, from a modern perspective, are not exclusively confined to the concept of Hridroga in Ayurveda. However, they are extensively dispersed across the description of numerous different illnesses. Ayurveda, with its potential to address this growing gap, should undergo thorough testing to determine its rationale, potential, and evidence-based applications in order to fully

utilize its capabilities. This paper provides a comprehensive assessment of the current literature on Hridroga and then explores the management and potential preventive actions for Hridroga using Ayurveda.

Keywords: Heart disorders, Hridrava, Hriddaha, formulation, cardiovascular, Samhita, Anupana.

Graphical abstract



Introduction

As per Ayurvedic scriptures, the heart transforms into a muscular organ that is regulated by vyana vayu to govern its movement. The heart is thought to have its origins predominantly from the maternal side, deriving from the essence of rakta and kapha. The leading cause of mortality globally, known as hridaya rogas, results in 17.3 million deaths per year and is projected to rise to around 23.6 million by 2030. The three primary marma points in the human body are hridroga. The Moola of pranvaha and rasavaha srotas is Hridaya and rasavaha dhamani and any deviation in normal pathology here may lead to several cardiac pathology. The causes of hridroga, as mentioned in the samhita, include shwasa roga (asthma), vyama(excessive physical exertion), dukha (emotional stress), karshan (malnutrition), and abhighata (physical injury). The samhita categorizes hridroga doshaja into five main varieties: vatja, pittaja, kaphaja, sannipataja, and krimija. Medieval compendiums have a multitude of complex and direct formulations for the treatment of hridroga. Every medical text from the medieval period included most of the formulations, but some were attributed to specific authors. Ayurvedic medicine has faced criticism for its lack of emergency management options, which is considered to be purely based on belief. Furthermore, individuals were subjected to life-threatening circumstances as well. There is documentation in the literature of daruna and ashukari (emergency) diseases, which implies that emergency was managed using Ayurvedic medicines.¹ According to Ayurveda “HRIDAYA” is most important marma and pranayatana. It is also moolsthana of Ras and Rakta vaha srotasa. Modern science says Heart is cardinal organ of respiratory and circulatory system. It is very essential to know Ayurvedic approach of understanding anatomy, physiology of hridaya to know pathology of heart diseases and then we will be able to give effective Ayurvedic solution heart diseases.²

Hridaya and its physiology

The heart consists of a specialized tissue known as myocardium. Featuring four chambers and valves positioned between them, which operate in a continuous and rhythmic manner. In Ayurveda, the myocardium might be associated with the *mamsa dhatu*. The rhythmic contractions are caused by *vayu*.³ The blood is collected in the right atrium by both the superior and inferior vena cava, and then pumped into the right ventricle. From there, it is expelled towards the lungs for gas exchange and subsequently returns to the heart, specifically the left atrium and finally the left ventricle. It is expelled towards the outer edge. Ayurveda also describes the process similarly, stating that *saman vayu* transports *aahar rasa* to the *hridaya* (heart) and then *vyana vayu* circulates it throughout the body and brings it back. *Sharangdhar Acharya* states that *prana vayu* facilitates the intake of oxygen into the body during each inhalation. On the other hand, *udana vayu* provides strength and vitality to the cardiac muscle. *Sadhak pitta* is responsible for the proper functioning of cognitive abilities, intelligence, and metabolic processes. *Kapha* fulfils the functions of *dharan* and *avalambana*, which involve retaining, lubricating, and shock-absorbing properties. According to Ayurveda, the origin of the heart is the combination of the blood and phlegm components, which is why it is regarded a "*sira marma*" as *sira* refers to the blood tissue. The concept of *Hridaya utpatti* holds significant importance in the context of pathology and treatment. All types of coronary artery disorders fall under the category of *sira dushti*, which is a disorder of the blood tissue (*raktavikruti*) due to the involvement of the blood vessels (*sira*) and their branches (*kandara*). When *Raktavikruti* is caused by *pitta*, the permeability of *sira* increases due to the qualities of *laghu* (light) and *ushna* (hot), resulting in the occurrence of *visra guna* (abnormal qualities) and haemorrhagic diseases. When *Rakta vikruti* is caused by an imbalance of *kapha*, it leads to an increase in blood coagulability, which in turn results in the occurrence of atherosclerotic diseases due to the heavy, stable, and slow qualities of *kapha*. If *Rakta vikruti* is caused by *vata*, it mostly impacts the cardiac rhythm. Cardiac arrhythmia and impulse conduction problems such as bundle branch block (BBB) and heart block may occur. Congenital heart diseases are also due to *vata dosha* like ASD, VSD, PDA or Tetralogy of fallot, Coarctation of Aorta because *vibhajana* is *karma* of *vata* and defective *vibhajana* while organogenesis in gestational age leads to congenital anomalies etc.⁴

Hridroga

According to pathology there are five types of Hridroga: *Vataj*, *Pittaj*, *Kaphaj*, *Sannipataj* and *Krimij Hridroga*.⁵

3.1 Vataj Hridroga

Acharya Charka said that, *vataprakopaka* means *rookshya*, *laghu*, *shushka* and *dhatukshayajanan* or *alpasatwa aahar* i.e. malnutrition or long-term fasting and heavy work called as *ati vyayam*. *Vataj Hridroga* can also be attributed to mental stress, such as anxiety, grief, and hyper excitability. *Vataprakop*, caused by the dry and light qualities of *ruksha* and *laghu guna*, leads to the hardening of arterial walls, known as arteriosclerosis. This condition is responsible for arteriosclerotic cardiovascular disorders such as angina and hypertension, which is sometimes referred to as the "silent killer". Ayurveda states that old age is characterized by *dhatukshyakarak* and *vataprakopak awastha*, leading to the predominance of *vaatpradhan roga*, particularly in the elderly. Arteriosclerosis is typically associated with advanced age, according to contemporary scientific research. Therefore, it may be concluded that Ayurveda should consider all arteriosclerotic conditions as *vataj Hridroga* and provide appropriate treatment. Calcification of heart valves is also classified as *vataj Hridroga*. If the *chala guna* of *vata* is elevated as a result of strenuous activity or intense exercise, it leads to an increase in heart rate. If this persists for extended durations, the cardiac muscles may undergo hypertrophy and result in arrhythmia due

to excessive workload. If it again continued then heart muscle got fatigue leads to dilated cardiomyopathy. It leads to congestive heart failure. Ayurveda named it as Hridravata and Hridavyasa in vataj Hridroga.

3.2 Pittaj Hridroga

Acharya Charaka attributed the occurrence of pitta dosha prakopa, which finally leads to raktadushti, to the presence of ushna, tikshana, vidahi, kshara, amla, and lavana ras, as well as the use of alcohol beverages, greasy and spicy food. The individual is experiencing symptoms such as fever, sweat, extreme thirst, heartburn, dizziness, syncope, and a burning sensation throughout the body. Modern research suggests a correlation between it and infective endocarditis, pericarditis, pericardial effusion, or any other inflammatory illnesses of the heart.

3.3 Kaphaj Hridroga

Acharya Charaka stated that the accumulation of guru and sthira gunatmak kapha occurs in the inner lining of the blood vessels, which is referred to as 'Dhamni pratichaya' - a kaphaj naanatmaj vyadhi. Atherosclerosis is a term used in modern science to describe one of the main causes of coronary heart disease, myocardial infarction (MI), and stroke in young individuals. The symptoms of kaphaj Hridroga include guru bharikam uramashmavruttam, which refers to a sensation of chest heaviness similar to the feeling of a stone on the chest, as observed in cases of angina or myocardial infarction (MI).

3.4 Sannipataj Hridroga

The condition is characterized by the aforementioned symptoms, but in a severe form, accompanied by dizziness, fainting, nausea, and intense chest discomfort. It is a critical situation that requires prompt and proactive intervention.

3.5 Krimij Hridroga

Ayurveda says that 'Hridayad krimi' - a special type of parasites also cause heart disease. The patients suffering from sannipataj Hridroga, if take kledajanya aahara i.e. Til, Gud means jaggery, milk. Kledajanya rasadushti leads to granthi uttpati in which krimi arises. The krimi enter the heart along with the ras dhatu and cause erosions and granthi in the blood vessels of the heart. The symptoms of krimij Hridroga include "suchivat tudyate," which refers to intense stabbing and cutting chest pain, accompanied by itching, nausea, and chest discomfort. It is strongly recommended to treat this as an emergency, as failure to do so may result in death. These symptoms indicate a thrombo-embolic event in the coronary artery, resulting in an acute myocardial infarction (M.I.).

Drug management of heart diseases

For the management of heart diseases, or *Hridroga*, a range of Ayurvedic formulations are traditionally used, including Hridyarnava Rasa, Chintamani Rasa, Nagarjunabhra Rasa, Vishvesara Rasa, Trinetra Rasa, Shankara Vati, Panchanan Rasa, Kalyanasundara Rasa, Prabhakar Vati, and Ratnakar Rasa. These preparations are specifically designed to support cardiovascular health by enhancing heart function, regulating blood flow, and balancing the body's energies according to Ayurvedic principles. Various compounds with *Hridya* (cardiotonic) properties are available in Ayurveda, including Abhrak Bhasma, Tutha Bhasma, Suvarna Makshik Bhasma, Mukta Bhasma, Shilajit, and Hiraka Bhasma. These formulations are traditionally used to strengthen heart function, enhance vitality, and support cardiovascular health through their rejuvenating and balancing effects on the body.

4.1 Treatment of heart diseases⁶

Ayurveda stated that "pariharya visheshen manaso dukkha hetava". Hridya is the location or seat of Oja, Prana, Buddhi, and Mana. Therefore, it is advisable to avoid anxiety, tension, depression, or mental stress. Shirodhara Shiropichu, Hridbasti, Pranayam, and Yoga are highly efficacious

techniques for managing stress. Adhere to the lifestyle prescribed by Ayurveda. According to the symptoms of dosha dushti lakshana, it is necessary to undergo shodhana treatment using panchakarma. Next, we might consider utilizing shamanic therapy to address any lingering dosha, employing various herbal concoctions. The sthan vaigunya serves as the foundation for the invasion of dosha. Sthan vaigunya refers specifically to dhatu vikruti. To reverse the dhatu vikruti, one should utilize dhatu paushtik aahara dravyas for mending. Hence after shodhana and shamana, give rasayan and hridbalya therapy for rejuvenation and revitalization. That will avoid the recurrence of the disease.⁷

4.2 Approaches for Treatment of Heart Diseases

Until the early 1980s, there was a widespread belief that cardiac disease was mostly irreversible. Consequently, once the disease was established, it followed a continuous and worsening path until the coronary arteries were fully obstructed. Recent research have unequivocally demonstrated that it is not only feasible to impede the progression of arterial blockage, but also to effectively reverse the blockage. This suggests that it is feasible to achieve a desired outcome without resorting to angioplasty or bypass surgery. It is depressing that modern medicine's highly sophisticated approach fails to address the root causes of heart disease. Ayurveda, in contrast, seeks to address the fundamental cause of the illness. An authentic remedy for this ailment can only be achieved by embracing a comprehensive approach, such as the one advocated in Ayurveda, and targeting the issue at its fundamental source. It is regrettable to dismiss the ancient therapeutic concepts detailed in the Vedas, which are part of India's rich past, as unscientific simply because they are old. However, due to the intensive research work of some doctors in the west, people now have come to believe that heart disease can be reversed.⁸

4.2.1 Nourishment

The utilization of Amla fruit as a remarkable anti-oxidant can effectively inhibit artery damage caused by free radicals while also providing nourishment to the heart tissue. Amla possesses the ability to enhance the immune system and provide nourishment to the heart. Chywanaprash is a delectable and nourishing herbal jam that includes Amla and provides a significant enhancement to cardiovascular vigor.

4.2.2 Increase circulation

Heart problems often arise from arteriosclerosis, inflammation, or arterial congestion, which can impede blood circulation and exert strain on the cardiac muscle and tissue. Arjuna is a remarkable herb in Ayurveda that enhances the strength of the cardiac muscle, alleviates arterial congestion, and reduces blood pressure.

4.2.3 Reduce Blood fats and high cholesterol

If you experience high cholesterol, consider using Triphala Guggul, herbal supplement that contains a variety of herbs specifically designed to address the underlying causes of high cholesterol and lower elevated levels of blood lipids.

4.2.4 Relaxation

If you suffer from excess tension, try using Ashwagandha. It is a wonder herb for helping reduce tension in the body and mind as well as strengthen the heart muscle.

4.3 Pathyapathya⁹

Seasonal fruits and fresh vegetables, whether steamed or cooked, an appropriate selection of food items includes brown bread or chapatti, salad, sprouts, vegetable soup, buttermilk, cottage cheese (paneer), a small amount of fresh milk, and ghee (clarified butter) made from cow's milk. Consuming sugary foods and drinks should be done in limited quantities. Honey and jaggery are more nutritious than refined sugar. Deep-fried foods, legumes and their derivatives, and peanut oil are not allowed. Ayurvedic practitioners recommend the use of butter or ghee instead of

groundnut oil. Cow's ghee, cow's milk, and cow's butter are beneficial for the patient. It is not advisable to consume buffalo ghee and buffalo milk. Patients with certain conditions should avoid consuming stimulants such as tea, coffee, and alcoholic beverages due to their detrimental effects. Aside from adhering to a nutritious dietary regimen, certain foods are frequently acknowledged for their exceptional benefits to cardiovascular health. Consume a nutritious diet that excludes all processed foods, low-quality dairy products, low-quality oils, and hydrogenated oils. Enhance the consumption of heart-healthy foods. Utilize garlic, turmeric, ginger, and saffron. Incorporate whole grains, legumes, and foods rich in vital fatty acids like hemp seed oil. Essential fatty acids (EFAs) are well-known for their ability to promote arterial cleanliness and strengthen the heart. A highly popular nutritious diet is fatty fish, known for its abundant omega-3 fatty acid concentration. A recent study found that women who regularly took two servings of fish rich in omega-3 fatty acids per week had a lower mortality rate from heart disease. These researchers discovered that this was unrelated to cardiovascular risk factors or other food sources that could impact the onset of heart disease. Alternative sources of omega-3 fatty acids, apart from fish, include flaxseeds, flaxseed oil, canola oil, olive oil, sesame oil, peanut butter and oil, sunflower seeds and oil, avocado, soybean oil, and safflower oil. Moreover, the presence of flavonoids in tea and cocoa has been acknowledged for their advantageous antioxidant properties. Flavonoids can potentially decrease the likelihood of cardiovascular disease by inhibiting oxidative damage to LDL cholesterol and diminishing platelet aggregation. An inverse association between dietary fiber intake and cardiovascular disease risk has also been proposed. This underscores the recommendation for increased consumption of fiber-rich whole grains, legumes, fruits and vegetables.¹⁰

4.4 Lifestyle suggestions for heart diseases

Heart needs a regular supply of oxygen and it also must not be overstressed. Practice light aerobic exercise and regular relaxation. Ayurveda would recommend some nourishing yoga practices, such as the dynamic 'Sun Salutation' as well as daily breathing practices (Pranayama). Ayurveda suggests exercising within your own limitations and does not encourage excessive exercise that leaves you tired. Yoga is exercise that leaves you energised and fitter.

4.5 Pranayama

A very common cause of heart diseases is mental stress. Regular practice of yoga and Pranayama (breathing exercises) reduces stress levels. Also, meditation has been scientifically proven to prevent as well as cure heart diseases.¹¹

Discussion

Ayurveda and the modern scientific field of cardiology both delineate shared indications and manifestations. It is crucial to observe the correlation between vaivarnya and symptoms such as pallor and cyanosis, murccha, syncope, kasa (cough), hemoptysis, and absence of dyspnea or shortness of breath. The samanya lakshanas exhibit a nearly flawless association with current cardiological indicators and symptoms in terms of statistical significance, leading to the manifestation of amadosha at different degrees. Herbomineral formulations have been extensively used in Ayurveda for various disease, including cardiac pathologies. These preparations combine herbs, minerals, and metals, which are process to make them therapeutically potent. There are various heart conditions are reported which affects the functionality and the condition of the heart.

5.1 Heart disease

5.1.1 *Suvarna sindoora*: It is used in managing cardiovascular disorders due to its rejuvenating and cardio protective properties. It enhances heart function by improving circulation and reducing stress on the heart.

5.1.2 *Arogyavardhini vati*: This is a commonly used formulation for balancing cholesterol levels and supporting liver function, indirectly benefiting heart health by improving metabolism and reducing the burden on the cardiovascular system

5.2 *Angina (chest pain)*

5.2.1 *Vishatinduka vati*: It is known for its analgesic and anti-inflammatory properties. It is used to reduce pain and discomfort associated with angina. It helps to regulate heart rhythm and control blood pressure.

5.2.2 *Hridayarnava rasa*: It strengthens the heart and is specifically useful in treating angina by improving blood flow to the heart muscles.

5.3 *Congestive heart failure (CHF)*

5.3.1 *Prabhakar vati*: It is prescribed to manage fluid accumulation and improve heart efficiency in congestive heart failure by supporting cardiac muscle function.

5.3.2 *Makardhwaja rasa*: A potent rejuvenator, this rasa aushadhi helps in strengthening the heart muscles, boosting overall energy level, and supporting long-term cardiac health.

5.4 *Arrhythmia (irregular heart beat)*

5.4.1 *Sutshekhara rasa*: This formulation helps in calming the heart and restoring normal rhythm, and it is beneficial in treating conditions like arrhythmia.

5.4.2 *Nagarjuna Rasa*: helps stabilize the heart rhythm and strengthens the cardiac muscles.

5.5 *Hypertension (high blood pressure)*

5.5.1 *Arjuna ksheerapaka*: While not strictly a rasa aushadhi, arjuna bark is often processed in to rasa formulations to help manage blood pressure, it strengthens the heart and improves circulation.

5.5.2 *Rasa sindura*: It helps reduce hypertension by calming the mind, reducing stress, and balancing the body's doshas, particularly vata and pita.

5.6 *Atherosclerosis (plaque formation in arteries)*

5.6.1 *Swarna makshika Bhasma*: This is useful in clearing arterial blockages and improving blood circulation. It helps in managing cholesterol levels, thus reducing the risk of plaque formation.

5.6.2 *Lahu bhasma*: It promotes healthy blood flow by improving haemoglobin levels and reducing oxidative stress, which can prevent the development of atherosclerosis.

Conclusion

This article aims to elucidate the care of cardiac disorders using both Ayurveda and modern medicine. Malnutrition and unhealthy lifestyle habits such as stress, anxiety, and anger are among the primary factors contributing to heart disease. Hridya dravyas are essential for maintaining a healthy heart. The medications employed in different formulations possess features such as pachana (digestive), deepana (appetizing), hridya (heart-strengthening), anulomana (promoting normal flow), rasayana (rejuvenating), and krimihara (anti-parasitic).

Acknowledgement: Authors are highly grateful to the chancellor of the Parul University for their continuous support and motivation. Also, thankful to Drug Chemistry Research Centre for their support for the completion of the article.

Conflict of interest: There is no conflict of interest between the authors.

Authors contribution: All the authors are grateful to Parul University, Vadodara, Gujarat for their kind support. Authors such as DC contributed to main draft of the manuscript preparation, literature survey and planning and execution of the article, HT help in the manuscript writing and reviewing, AH, MR and HD helped in the article writing, final drafting and reviewing.

References

1. Agnivesh, Charaka, Dridhabala, Charak Samhita Sidhi Sthana 9/27 Hindi Commentary by Vidhyodhar Shukla and Ravidat tripathi Chaukhambha Sanskrit pratishtan.

2. Agnivesa, Charaka Samhita sootra stana 17/30-31, R.K Sharma and Bhagawan Dash editor, Reprint edition 2015. Varanasi: Chaukamba Sanskrit series office; Page 315
3. Sanjeev Rastogi, Priyanka Chaudhari. Ayurvedic understanding of cardiovascular diseases and its prevention. J Preventive Cardiology, Feb 2015; 4(3), page 710-714
4. Susruta, Susruta samhita sootra sthanam 24/4, Priyavrat Sharma editor, Reprint edition 2013, Varanasi; Chaukamba Viswabharathi; Page 253
5. Sushruta Samhita other tantra 46/4-7 Nibandha Sangraha Vyakhya by Dalhan Chaukhambha Surabharati Prakashana Varanasi, 2012.
6. Govind Bhaishajyaratnavali edited by Ambikadatta Shashtri Reprinted Chaukhambha prakashan Varanasi 2011.
7. Yadavji Thrikamji Acharya editors Sushruta samhita Sharira Sthana 9/12 Chowkumbha Surabharati prakashan 2013.
8. Acharya Sushruta Samhita (3rd edn.) Nirvana Sagar Press Mubai su. u., 43/5.
9. Acharya Charaka Samhita Nirvana Sagar Press ch.chi., 15/36.
10. Agnivesh Charaka Dridhabala Charak Samhita Chikitsa Sthana 26/27 Hindi commentary by Vidhyadhar Shukla and Ravidat tripathi chaukhambha Sanskrit pratishthan Delhi, 2009.
11. Bhavmishra Bhavaprakash Samhita edited by pandit Shri Brahma sankar mishra with the vidyotani hindi commentatry Chuakhambha Sanskrit Sansthan varanasi 9th edition, 2005.