

# A Critical Review of Herbo-Mineral Formulations in *Jwara Chikitsa*

Akhila Retnam. A<sup>1</sup>, Keerthi V. R<sup>2</sup>, Reenu Mathew<sup>3</sup>, Sudheera .S<sup>4</sup>

<sup>1,2</sup>MD (Ay), Ayurveda Physician, Self Employed, Kerala

<sup>3</sup>Assistant Professor, Dept. of Koumarabhrithya, Govt. Ayurveda College, Thiruvananthapuram.

<sup>4</sup>Associate Professor & HOD, Dept. of Rasasastra & Bhaishajya Kalpana, VPSV Ayurveda College, Kottakkal

Corresponding Author: Akhila Retnam. A

## ABSTRACT

Fever is a generalized body reaction to a variety of infectious and non-infectious causes. Fever was referred to as *jwara* by ancient *Ayurvedic* seers, and it was thought to be the most serious of all diseases. Fever is described as a separate illness, a symptom, and a complication of many ailments in *Ayurveda* classics. *Jwara* is the first and most serious of all diseases, so it needs special attention. In this article, we will attempt to compile and evaluate *Rasa yogas* in *jwara chikitsa* from various *Ayurvedic* classics. *Rasendra Sara Sangraha*, *Bhaishjya Rathnavali*, *Rasa Ratna Samucchaya*, *Rasa Tharangini* and other works are reviewed in detail. In *Rasasastra* classics, these formulations are indicated separately for *navajwara chikitsa*, *nirama jwara chikitsa*, *jeerna jwara chikitsa*, *vishama jwara chikitsa*, and *sannipatha jwara chikitsa*. This article includes 112 formulations from various sources that have been classified based on their indications. There are certain peculiarities in the ingredients based on *jwara avasthas* that can be discovered by studying these formulations. The majority of these formulations are herbo-mineral compounds that come in tablet form, making dosage, administration, and palatability more convenient. A few of these formulations are commercially available for common clinical practise. Antipyretic use is excessive in everyday life in the present pandemic situation. The aim of this study is to raise awareness of these particular formulations in the health-care system so that they can be applied to community needs.

**Key words:** fever, *jwara*, *navajwara*, *vishama jwara*, *nirama jwara*, *sannipatha jwara*, herbo mineral formulations, *rasa yogas*

## 1. INTRODUCTION

Fever has been a characteristic of the disorder since the beginning of recorded history. Fever is the most popular excuse for a visit to the doctor these days. It is the body's complicated response to a variety of immune threats. It can also be used to predict current or potential medical problems. *Jwara* is not just a *vyadhy*, according to *Ayurveda*. It is a *Lakshana* as well as an *upadrava* for a variety of ailments. As a result, it is critical from a management perspective. The set of *Rasayogas* listed in *jwara chikitsa prakaranas* of various classical textbooks is

one of the main goals of the study. We can see that these *yogas* are appropriate for various *jwara avasthas*, such as *Nava*, *Nirama*, *Jeerna*, *Vishama*, and *Sannipatha*, by examining them. Hence, they have been grouped together based on their indications. With a detailed examination we can found that each group contains nearly identical herbal and mineral ingredients. Mineral drug ratios, *bhavana dravyas*, dosage and *anupana*, on the other hand, differ. There are also some ingredients in each category that are unusually noticeable. In *nava jwara hara yogas*, for example, *visha* and *upavisha dravyas* are used as a common

ingredient or *bhavana dravya*. Such ingredients are uncommon in *nirama jwara hara yogas*.

*Rasa yogas* in *Ayurveda* have a wide range of therapeutic utility and are fast-acting even in small doses. With proper *anupana*, herbo mineral formulations can be recommended more safely and effectively in a variety of pathological conditions. Most of the herbo mineral formulations described in *Rasasastra* classics are tablet form in *jwara chikitsa*, making their dosage, mode of administration, and palatability, among other things, more convenient.

## 2. Background and rationale

According to *Acharya Charaka*, *Jwara* is the first and most serious of all diseases, so it needs special attention. Fever is described as a separate illness, a symptom, and a complication of many ailments in *Ayurveda* classics. Despite the advancement of contemporary science, fever remains the first and foremost symptom of almost all clinical consultations.

“While the focus is on the rising number of COVID-19 cases in Kerala, the fact is that a sizeable number of people die in the state due to fever. According to official statistics, the state has recorded 234 fever deaths in the past five years, including 51 last year.” “In 2018 and 2017, 63 and 76 fever deaths were reported, respectively, in the state. Experts say that the number of deaths due to fever will be much higher and “scary” than the official figures as most fever deaths go unreported.” “Fever is the most dangerous because it does not reveal the disease; it is only a symptom that can lead to something major at times. Fever is a symptom of over 1,000 diseases and, therefore, it is very important that the fever is kept in check if one gets it. If we look at the fever death cases in all age groups, from babies to elderly, the number would be a scary one. The fever death cases in private hospitals are not included in the official statistics, so the real number would be twice the official

figure,” said Dr Anup R Warriar, infectious diseases expert.”<sup>1</sup>

This is according to the current statistics from Kerala, where even in rural regions, well-established medical services, including doctors and laboratory facilities, are available. When we examine India as a whole, as well as the rest of the world, the situation is dire. The purpose of this work is to familiarize and remember the potential *Ayurveda* medicines in light of the current pandemic crisis.

## 3. Jwara Samprapthi & Types in Ayurveda classics

*Acharya Charaka* gave various names to *Jwara* in *Ayurveda*, including ‘*Vikara*’, ‘*Roga*’, ‘*Vvyadhi*’, ‘*Aathanka*’ and so on<sup>2</sup>. Fever is caused by deranged *doshas* of the body and mind, as it does not occur in people who are free of them<sup>3</sup>. Pyrexia (*santhapa*), anorexia (*aruchi*), thirst (*trishna*), body ache (*anga marda*), and distemper are some of the symptoms associated with fever<sup>4</sup>. When the increased *doshas* enter *Amasaya* and combine with undigested or improperly processed metabolites (*ama*) present in the alimentary canal (*amasaya*), fever is produced. These *doshas* with *ama* then block the channels of the *rasa dhathu*, removing the digestive fire from its usual location (*pakthi sthana*)<sup>5</sup>. Increased body temperature is the cardinal characteristic of fever, as the digestive fire pushes to the skin and all other body tissues. Sweating does not occur in general, despite the rise in temperature, due to the *doshas*’ and *ama*’s blockage of the sweat channels<sup>6</sup>.

When it comes to *jwara* categorization, different textbooks have different categories such as *ashta vidha*, *pancha vidha*, *dvi vidha* and so on<sup>7</sup>. The pharmaceutical formulations are listed in this article according to the stages of fever, as in the *Rasendra sara sangraha*. Hence, the *jwara* is examined in terms of its stages.

### 3.1 Nava jwara in Ayurveda

According to the knowledgeable academics of *Ayurveda*, the *Tharuna jwara* refers to the period from the first to the seventh day. The intermediate stages (*Madhyama jwara*) of the fever correspond to the period from the seventh to the twelfth night. If the fever lasts longer than that, it is considered *Purana jwara*<sup>8</sup>.

The *jwara samprapthi* is influenced by the development of *ama*. Except for *vathika* and *kshayaja* conditions, *ama soshana* and *ama nirharana* are the key aspects of *Nava jwara chikithsa*. Drugs with *kashaya rasa* (astringent taste) and decoctions (*kwatha* preparations) are not recommended in *nava jwaravastha*<sup>9</sup>. If we take decoctions at that time, the fever would worsen, and the vitiated *dosha* will be exceedingly difficult to manage<sup>10</sup>. *Langhana*, *swedana*, *kala*, and *yavagu* prepared with *thiktha rasa dravyas* are general treatment modalities for *tharuna jwara*<sup>11</sup>. In the case of an acute fever, the patient should avoid day time sleep, bathing, anointing, heavy food, sexual activity, wrath, wind, exercise, and astringent decoctions<sup>12</sup>.

### 3.2 Nirama jwara

The signs and symptoms of *nirama jwara* include an increase in appetite, a lighter body, a decrease in temperature, and the evacuation of *doshas* as well as waste materials from the body. On the eighth day of a fever, these signs and symptoms usually occur.<sup>13</sup>

### 3.3 Sannipatha jwara

The treatment principles of *sannipatha jwara* are *langhana*, *valuka sweda* (fomentation with hot sand), *nasya* (inhalation therapy), *nishteevana* (spitting therapy), *avaleha* or confection administration, and *anjana* therapy<sup>14</sup>. The vitiated *ama kapha* should also be treated first with *langhana*, *swedana*, and *nasya*

therapies in *sannipatha jwara*<sup>15</sup>. The procedures for pacifying *pitta* and *vatha* should be undertaken after achieving *kapha ksheenavastha*.

### 3.4 Vishama jwara

Vitiation of all *doshas* (*sannipatha*) leads to the *vishama jwara*. Therefore, the *dosha* with the maximum vitiation should be treated first<sup>16</sup>. Measures such as *vamana* and *virechana* therapies are also advised in the treatment of this form of fever. Fever can also be lowered by eating and drinking greasy, hot foods and drinks (*snigdha & ushna anna pana*).

### 3.5 Jeerna jwara

This indisposition is called *jeerna jwara* or chronic fever if the degree of fever is decreased after 21 days and only affects certain parts of the body such as the hands, feet, and shoulders. Symptoms include spleen enlargement (*pleeha*) and loss of digestive ability (*agni saadam*)<sup>17</sup>. The patient should be treated with *peya*, *kashaya*, *sarpi* and *ksheera*, on every sixth day purgation therapy should be administered according to the *bala* of patient<sup>18</sup>.

## MATERIALS AND METHODS

The principal sources for this study were key *Ayurvedic* books, ranging from *Charaka Samhitha* to *Rasarathna Samuchaya*, *Rasa Tarantini*, and *Rasendra Sara sangraha*. *Rasendra Sara sangraha* is particularly helpful for this article, which categorizes *rasa yogas* based on *jwara avasthas*<sup>19</sup> and refers to other works for the other essential formulations. This work only includes the herbo-mineral formulations mentioned for *jwara chikithsa*. Attempt was made to analyze them based on their ingredients, such as minerals, herbs, and special drug groups such as *upa visha varga*, *pancha pitha*, and so on.

## 5. List of herbo mineral formulations with their ingredients and bhavana dravyas

Chart 5.1- Herbo mineral formulations in nava jwara

Sl. NO	Name of book	Name of yoga	Mineral ingredients	Herbal ingredients	Visha/upaviha	Bhavana dravya
1	BR, Jwara chi.,528-533	Agni kumara rasa		Maricha, vacha, musthaka	Visha	Ardraka rasa
2	RSS Jwara. Chi., sloka-44,45	Amrutha manjari rasa	Hingula, tankana	Maricha, pippali, jathikosa	Visha	Jambeeraswarasa
3	BR, Jwara chi.-575-584	Achinthyasakthi rasa	Rasa, gandhaka, swarnamakshika	maricha		Bringakesa, manduki ,patra etc. (9 drugs)
4	BR (Jwara. Chi., sloka-484)	Brihath hinguleswara rasa	Hingula, tankana	Vyosha , nagara	Visha, Jaipala	
5	BR,Jwara. Chi., sloka-569-572	Chandeswara rasa	Rasa, gandhaka, Tamra		Visha	Ardraka rasa, nirgundi swarasa
6	RSS Jwara. Chi., sloka-41	Gadamurari rasa	Hg,Gandaka,Sila, Loha, Tamra, Darada,Naga	Vyosha		Water
7	RSS Jwara. Chi., sloka-2	Hinguleswara rasa	Hingula	Pippali	Visha	
8	RSS Jwara. Chi., sloka-16	Jaya vati		Trikatu, mustha, haridra, nimbapatra,vidanga	Jaya -8 part	Chagamutra
9	RSS Jwara. Chi., sloka-17	Jayanthi vati		Pata, aswagandha, vacha etc.	Visha, jayanthi	Ajamuthra
10	RSS Jwara. Chi., sloka-3	Jwara dhumakethu rasa	Hg, S ,hingula, samudraphena			Ardrakaswarasa
11	RSS Jwara. Chi., sloka-35	Jwaramurari rasa	Hingula, tankana	Vyosha, nagara, abhaya	Visha, jayapala	
12	BR,Jwara chi. 560-561	Jwarahari rasa	Seesaka, Rasa sindura, thala		Visha	Water
13	BR, Jwara chi. 585-590	Jwarakesari rasa	Rasa, gandhak	Vyosha, triphala	Jaypala, Visha	Bhringatoya
14	RSS Jwara. Chi., sloka-	Jwarasimha rasa	Parada, Gandhaka, Tala		Bhallathaka	Vajriksheera
15	RSS Jwara. Chi., sloka (4-15)	Mrithyunjaya rasa	Gandaka hingula, tankana	Pippali, maricha	Visha	
16	RSS Jwara. Chi., sloka-1	Nava jwarankusa rasa	Hg, S, Hingula (1:2:3)		Danthibeeja (4 parts)	Danthi moola kwatha
17	BR, Jwara chi-522	Nava jwarankusa rasa	Rasa, S, hingula		Nikumbha beeja	Danthi varina
18	RSS (Jwara. Chi., sloka- 36)	Nava jwarebhankusa rasa	Hg, S, Talaka, Tankana			Meenapitha
19	RSS Jwara. Chi., sloka-55-57	Nava jwarebha simha rasa	Hg, S, loha, tamra, seesa	Maricha, pippali, viswa	Visha	
20	BR, Jwara chi. 498-499	Nava jwarahari vati	Hg, S	Trikatu, triphala	Danthibija , visha	Dronapushpi rasa
21	BR, Jwara chi.500-502	Nava jwarari rasa	Rasa, gandhaka	Swarnaksheeri	Visha(3parts),jayapala(5 parts)	Nimbu rasa
22	BR,Jwara chi.523-524	Prachandeswara rasa	Rasa, gandhaka		Visha	Sindhuvara rasa
23	BR, Jwara. Chi., sloka-839-858	Prathapalankeswara rasa	Hingula, tankana		Visha, jayapala	
24	RSS Jwara. Chi., sloka-38	Prathapamarthanda rasa	Hingula, tankana		Jaypala, visha	
25	BR,Jwara chi. 562-567	Ratnagiri rasa	Hg, S, tamra, loha, abhra, swarna	Sigru, vasa, nirgundi, vacha,chitraka, bhringa raja etc.		
26	BR,Jwara. Chi., sloka-638-641	Sannipatha bhairava rasa	Tamra,S, Hg	Harithaki, maricha	Swethagunja, jayapala	Meenapitha
27	BR, Jwara chi.,503-505	Sarvangasundara rasa	Rasa gndhakatankana	Triphalatrikatu	Visha, jayapala	
28	BR,Jwara. Chi., sloka-485-487	Seethabhanji rasa	Hg,S,hingula		Jaypala	Danthikwatha
29	BR, Jwara. Chi., sloka-520-521	Sri rama rasa	Hg,S	Maricha (2parts)	Jaipalabeeja	Danthikwatha
30	BR,Jwara. Chi., sloka-490-491	Swachandabhairva rasa	Tamrabhasma		Visha , hema	Dhathuraswarasa
31	BR Jwara. Chi., sloka-488-489	Tarunajwaraari rasa	Hg, S		Visha, jaipala	Kumari rasa

**Chart 5.1 Continued....**

32	BR,Jwara. Chi., sloka-558	Trilokyatambara rasa	Hg, Cu,S, Chapala	Tiktha, pathya, trivruth	Jaipala vishathint huka	Vajripayas, madhu
33	BR,Jwara. Chi., sloka-506-508	Tripurabhairava rasa	Tamra, S, tankana		Danthibija	Danthimoolakwatha
34	BR,Jwara, 573-574	Udakamanjari rasa	Hg, S, tankana	Maricha		Sitha, mathsyapitta
35	RSS Jwara. Chi., sloka-42-43	Vidyadhara rasa	Hg,S, Tamra Tankana	Trikatu,trivrith, vara, katuki	Danthi, dathura, arka, visha, jaipala	Snuhiksheera, dant himoolakwatha
36	BR,Jwara chi. 601-602	Anjanabhairava rasa	Sudha parada, Tankana, Gandhaka	Pippali	jayapala	Nimbuswarasa

**Chart 5.2 - Herbo mineral formulations in Nirama jwara**

SL.No.	Text	Yoga	Minerals	Herbals	Visha/upavisha	Bhavana
1	RSS Jwara. Chi., sloka-60	Chandra sekhara rasa	Suta, Gandhaka, Tankana, Manasila	Maricha		Matsyapitta
2	RSS Jwara. Chi., sloka-58,59	Udaka manjari rasa	Rasa, Gandhaka, Tankana	Maricha, Sarkara		Meenapitha
3	RSS Jwara. Chi., sloka-61	Pancha vaktra rasa	Rasa, Gandhaka, Naga, Tankana	Maricha, Pippali		Dhatu swarasa
4	RSS Jwara. Chi., sloka-62-66	Parpata rasa (parpatiprepared and then bhavana with nirgundi etc. then swedana on angara)	Rasa, Gandhaka, Tamra, Loha			Bhringara, nirgundi, Jayanthi, triphala, Kanya, vasa, Bhanga, Trikatu, Chitraka, Mundi
5	RSS Jwara. Chi., sloka-67-69	Vatha pithanthaka rasa	Rasa, Abhra, Tamra, Theekshana, Loha, Makhika, Tala, Ganthaka	Mustha		Yashti, Draksha, Amrutha, dhathri, Satavari, Kseera vidari
6	RSS Jwara. Chi., sloka-70-72	Visweswara rasa	Rasa, Tamra, Theekshana, Tala, Gandhaka			
7	RSS Jwara. Chi., sloka-73-75	Sithari rasa	Rasa, Gandhaka, Tankana	Saindhava, maricha, chinchu, Twag, Bhasma, Sarkara	Jayapala	Jambi

**Chart 5.3- Herbo mineral formulations in Sannipathajwara chikitsa**

Sl. No.	Reference	Yoga	Minerals	Herbals	Visha/upavisha	Bhavana
1	BR, Jwara. Chi., sloka-591-593	Maha jwarankusa rasa	Rasa gandhaka	Hemahwa	Visha dhathura bija	Jambiramajja
2	BR, Jwara chi. 594-595	Mohandandha suryo rasa (nasya)	Rasagandhaka			Lasuna rasa
3	RSS Jwara. Chi., sloka-142-144	Brihath badavanala rasa (kupi pakva)	Rasa gandhaka, Tala, Daru, sila, Abhraka		Jangama visha, Visha, Jayapala	Mathsya, Mahisha, Mayura, Chaga pitha
4	RSS Jwara. Chi., sloka-145-146	Suchikabhrana rasa	Rasa, Gandhaka, Naga		Jangama visha, Vatsanabha	Matsya, Mayura, Chaga, Varaha pitha
5	RSS Jwara. Chi., sloka-147	Panchanana rasa	Gandhaka, Hingula, Tamra	Maricha	Vatsanabha	Arka, Ksheera
6	RSS Jwara. Chi., sloka-148-149	Tridosha nihara vinasaka surya rasa	Rasa, gandhaka		Vatsanabha (1/8 of rasa)	Chitraka, Kwatha, Pitha of Matsya, Varaha, Chaga, Mayura, Mahisha
7	RSS Jwara. Chi., sloka-104-106	Ananda bhairava rasa	Hingula, Tankana	Vyosham, Maricha, Kana, Jatikosa	Visha	Jambira, Drava
8	RSS Jwara. Chi., sloka-107-117	Ananda bhairavi vatika	Gandhaka, Tankana, Tamra, Hingula	Trikatu	Visha, Dhathura bija	Vijaya

Chart 5.3 Continued...						
9	RSS Jwara. Chi., sloka-131-132	Unmatta rasa for nasya	Rasa, Gandhaka			Dhathura Phala
10	RSS Jwara. Chi., sloka-133-138	Mritha, Sanjeevana rasa (kupi pakva)	Tamra, Tankana		Visha, Jayapala	
11	RSS Jwara. Chi., sloka-118-125	Praneswara rasa (kupi pakva)	Rasa, Gandhaka		Visha	Thalamuli, Rasa (before kupi pakva), Ajaji, Jeeraka, Hingu, Sarjika, Yavakshara, Yavanika, Maricha, Pippali (kashaya of them after preparation)
12	RSS Jwara. Chi., sloka-139-141	Swalpa badavanala rasa (gajaputa)	Tamra	Maricha	Visha	Langali rasa
13	RSS Jwara. Chi., sloka-31-32	Bhasmeswara rasa	Aranya upala bhasma (16)	Maricha (3)	Visha (1)	
14	RSS Jwara. Chi., sloka-33	Chintamani rasa (kupipakwa)	Rasa, Gandhaka, Tankana, Tamra, Talaka.	Yavakshara, Vyosha, Triphala	Visha	Madhu
15	RSS Jwara. Chi., sloka-86-87	Kulavadhu rasa (nasya) (kupipakwa)	Suta, Tamra, Naga, Manasila, Thutha			Uthara varuni drava
16	RSS Jwara. Chi., sloka-88-90	Jayamangala rasa (anjana, nasya) Bhudharaputa	Rasa, Abhraka, Tara, Munda, Theekshna, Manasila, Makshika, Tankana	Chitraka, Vyosha, Pata, Nirgundi, Vilwamoola		
17	RSS Jwara. Chi., sloka-91	Nasya bhairava rasa	Suta, Tamra, Theekshna, Tankana, Kharpara			Arka dugdha
18	RSS Jwara. Chi., sloka-92	Anjana bhairava rasa	Rasa, Theekshna, loha, Gandhaka	Kana	Jayapala (3 times of all)	Jambeera rasa
19	RSS Jwara. Chi., sloka-93	Anjana rasa-1	Rasa, Gandhaka			Lasuna rasa
20	RSS Jwara. Chi., sloka-94	Anjana rasa-2	Rasa, Sulba, Tutha	Karpura, Hingu		Kasamardarasa
21	RSS Jwara. Chi., sloka-95-98	Trilokya sundara rasa	Rasa, Gandhaka			Sakra, Musali, Dhattura, Bhringa raja, Devadali, jayanthi, Manduka parni
22	RSS Jwara. Chi., sloka-99-102	Swachanda bhairava rasa	Rasa, Gandhaka, Makshika	Eeswari, Nagada, Amalaki, Vandhya, Karkotaki		
23	RSS Jwara. Chi., sloka-183-185	Brihath kasthuri bhairava rasa	Tamra, Kanaka, Rajatha, Muktha, Loha, vidruma, Kasthuri	Karpura, Dhathaki, Suka, Simbi, Pata, Vidanga, Musta, Viswa, Usira, Dhathri		Arka dugdha
24	RSS Jwara. Chi., sloka-189-191	Sannipata badavanala rasa	Rasa, Gandaka, Talaka, tankana	Vyosha	Visha, Danthibija	Chitraka kwatha
25	RSS Jwara. Chi., sloka-169-172	Vethala rasa	Rasa, Gandhaka, Manasila	Maricha	Visha	
26	RSS Jwara. Chi., sloka-176	Kasthuri bhairava rasa	Hingula, tankana	Jatikosha phala, maricha, Pippali, Kasthuri	Visham	
27	RSS Jwara. Chi., sloka-177-182	Brihath kasturi bhairava rasa	Vanga, Kharpara, Swarna, Thara, Kantha (4), Makshika (2), Rasabhasma	Lavanga, Jathikosaphala, Trikatu		Dronapushpi rasa, Nagavalli rasa
28	RSS Jwara. Chi., sloka-150-155	Rasarajendra rasa (kupi pakwa)	Rasa, Tamra, Abhraka, Ayas, Naga, Vanga, Gandhaka, Thalaka		Visha	Kakamachi, Trikatu, Ardraka, Rasa, Pitha (5)
29	RSS Jwara. Chi. sloka -159-160	Mritha sanjeevani rasa	Suta, Gandha (2), Abhraka, Loha, Tamra, Tala, Varatika, Sila	Hingu	Visha	Ardraka, Nirgundi, Vijaya
30	RSS Jwara. Chi., sloka-161-167	Gandhakakajjali vidhi	Parade, Gandhaka			Kantakari, Sindhuvari, Nata, Karanja
31	RSS Jwara. Chi., sloka-192-194	Simha nada rasa	Gandha, Rasa, Abhraka		Vatsanabha	Barnigi drava, Nirgundi

**Chart 5.3 Continued...**

32	RSS Jwara. Chi., sloka-195-198	Sannipatha surya rasa	Rasa,Gandhaka,Tamra,Tara hema		Visha	Chitrakakwatha,Matsy adi pitha
33	RSS Jwara. Chi., sloka-199-203	Swachanda nayaka rasa(kupi pakwa)	Suta,Gandhaka,Loha, Tara			Surya,Vartha,Nirgundi, Tulasi,Girikamika,Agnivalli,Ardrak,Vahni,Vijaya,Jaya,Kakamachi,Pancha pitha
34	RSS Jwara. Chi., sloka-204-205	Sannipathanthaka rasa	Rasa,Gandha,Hingula,Tamra,Kharpara	Amlavetasa		Bhringaraja
35	BR,Jwara chi. 827-830	Kasthuri bhushana rasa	Rasa,Abhra,Tankana	Sunti,Kasturi,Pippali,Maricha,Karpura	Danthi mula,Jaya bija	Ardra rasa
36	BR, Jwara chi. 831-832	Arkamurthi rasa	Loha(8),Tamra(1),Rasa(2),Gandhaka(4)		Visha(1/16)	Chithraka kwatha,Pancha pitha
37	BR,Jwara chi. 833-834	Tridosha davanalo rasa	Arkamurthi rasa			Nimba,Kantakari,Ardra ka
38	RSS Jwara. Chi., sloka-186-187	Soubhagya vati	Tankana ,lavana panchaka,abhraka, gandhaka	Jeeraka churna,vyosha,tripphala, bhringaraja,vasa , apamarga	Vathsanabhi	

**Chart 5.4- List of Herbo mineral formulations for Jeerna and vishama jwara chikitsa**

Sl no	Text	Yoga	Minerals	Herbals	Visha / upavisha	Bhavana
1	RSS Jwara. Chi., sloka-208-209	Jwarankusa rasa	Rasa,Gandhaka,Tankana	Maricha,Katphala	Danthibija, visha	
2	RSS Jwara. Chi., sloka-210-214	Jwarari abhram	Abhraka,Tamra,Rasa ,Gandhaka	Trikatu	Visha, Dhattura	Ardra ka
3	RSS Jwara. Chi., sloka-215-218	Jwarasani rasa	Rasa,Gandhaka,Saindhava,Tamra,Loha,Abhraka	Maricha	Visha	Nirgundi
4	RSS Jwara. Chi., sloka-219-221	Ardhanareeshwara rasa	Rasa,Gandhaka	Maricha	Jayapala, visha	Triphala,jambhira
5	RSS Jwara. Chi., sloka-222	Chandanadi louha	Loha	Raktachandana,Hribera,Patha, Usira,Kana,Siva,nagara,Utpala ,Dathri,Trimada		
6	RSS Jwara. Chi., sloka-223-232	Jwarari rasa	Rasa,Gandhaka,Sila,Tala,Sulba	Trikatu	Visha, Dhathura	Rohitaka matsya,Pitha,Arka,Ardra ka
7	RSS Jwara. Chi., sloka-233-239	Sarvajwara hara loha	Loha (equal to all)	Triphala,Trimada,Trikatu		
8	RSS Jwara. Chi., sloka-240-252	Brihat Sarva jwarahara loha	Parada,Gandhaka,Tamra ,Abhraka			Karavella,Dasamula, Parpati
9	RSS Jwara. Chi., sloka-253-260	Maharaja vati	Rasa,Gandhaka,Abhraka, Vanga,loha,Swarna,Tamra	Vridha daru,Karpura, Sakrasana Vari,Lavanga, Kokilaksha,Vidari,Musali,Sukala,Jatiphala,Kosha,Bala,Nagabala		Talamuli
10	RSS Jwara. Chi., sloka-261-262	Chintamani rasa(oter)	Swarna,Rajatha,Tala,Mukta,Gandhaka,Parada	Trikatu,Kunati		Kasthuri
11	RSS Jwara. Chi., sloka-263-265	Trailokya chintamani rasa	Swarna,Tara,Abhraka,Loha,Pravala			Kanyarasa
12	RSS Jwara. Chi., sloka-266-270	Brihath chintamani rasa	Rasa,Gandhaka,Sila,Roopya,Tala,Swarna tala,Mukta kasthuri	Trikatu,Triphala	Visha	Bhringaraja,Tulasi,Ardra ka
13	RSS Jwara. Chi., sloka-271-277	Putapakwa vishama jwaranthaka loha	Rasa Gandhaka., Swarna,Loha, Tamra, Abhraka, Vanga,Mukta sankh,Pravala			Ghritakumari
14	RSS Jwara. Chi., sloka-278-284	Brihat vishama jwaranthaka loha	Rasa Gandhaka, Rasasindura, Swarna, Rajatha,Loha,Tamra, Abhraka,Tala,Vanga,Makshika,Mukta,Pravala			Nirgundi,Nagavalli, Kakamachi,Parpati,Triphala,Karavella,Dasamla,Punarnava,Guduchi,Vasa,Bhringaraja
15	RSS Jwara. Chi., sloka-285-287	Seethabhanji rasa(oter) (baluka yantra paka)	Thalaka,parade, gandhaka, sila, tamra			Naga valli&maricha

Chart 5.4 Continued...

16	RSS Jwara. Chi., sloka-288-289	Chinthamani rasa (other)(gajaputa)	Thalaka,sulba,churna(sukthi), thutha,			sarkara
17	RSS Jwara. Chi., sloka-290-292	Jwarankusa rasa(bhudhara puta)	Tamra,Tala			Karavella,Vajripaya
18	RSS Jwara. Chi., sloka-293-294	Meghanada rasa (puta)	Aara,Kamsya,Tamra,Gandhaka			Meghanada
19	RSS Jwara. Chi., sloka-295-296	Seetha jwarahara rasa	Makshika,Talaka,Rasa,Gandhaka.		Bhallataka	Ravi snuhi
20	RSS Jwara. Chi., sloka-297-300	Seethsbhanji rasa	Rasaka,Talaka,Tutha,Tankana,Rasa,Gandhaka.			Karavella rasa
21	RSS Jwara. Chi., sloka-301-305	Panchana rasa	Rasaka,Talaka,Tutha,Tankana,Rasa,Gandhaka,Tamra.			Tulasi,Karavellaka
22	RSS Jwara. Chi., sloka-306	Vamana yoga		Kumari moola kalka		
23	RSS Jwara. Chi., sloka-307-308	Visweswa rasa	Darada gandhaka rasa			Aswatha,Kola,Nigadhika,Kakamachi.
24	RSS Jwara. Chi., sloka-309-310	Tryahikari rasa	Rasaka,Sanka Tutha			Go jihwa,Jayanthi, Tanduleeyaka
25	RSS Jwara. Chi., sloka- 311-313	Chaturthakari rasa	Tala ,sila,Tutha,Gandhaka,Sankha			Kumari
26	RSS Jwara. Chi., sloka-314-316	Chinthamani rasa	Rasa,Gandhaka,Sulba,Abhra	Trikatu,Triphala	Danthi visha	Drona pushpin rasa
27	RSS Jwara. Chi., sloka-317-322	Brihath chinthamani rasa	Rasa Gandhaka,Swarna,Rajatha,Loha,Tamra,Tala,Kharpara,Kamsya,Vanga,Makshika,Kaseesa,Sila,Tankana,Mukta,Vidruma	Karpura		Bharngi,Vasa,Nirgun di,Nagavalli,Jayanthi ,Karavella,Patola,Bhanga, Punarnava ,Ardraka
28	RSS Jwara. Chi., sloka-323-328	Maha jwarankusa rasa	Rasa Gandhaka,Loha,Tamra,Abhraka,Tala,Vanga,Makshika,Kharpara,Manasila, Abhraka,gairika, Tankana,hingula		Danthi	Jambira,Vijaya,Chitraka.Tulasi,Tinthidika
29	RSS Jwara. Chi., sloka-331-339	Sarvatho bhadra rasa	Abhraka.gandhaka,parada	Kesara,karpura,mamsi, teja patra,jathi kosha,sukshmaila, pippali, kushta, thalisa pathra, harithaki, dhathaki etc.		Madhu, sitha, parnakhanda
30	BR,Jwara. Chi., sloka-1077-1079	Vidya vallabho rasa	Rasa,Tamra,Sila,Talaka			Karavellaka
31	RSS Jwara. Chi., sloka-173-175	Chandra sekhara rasa	Rasa, gandhaka, tankana,manasila			Mathsya pitta

## 6. DISCUSSION

*Rasasastra* is a unique technique for converting poisonous metal, mineral, and herbal raw drugs into safer pharmaceutical preparations for the wellbeing of humanity. In comparison to conventional herbal formulations, herbo mineral formulations are more stable and interactive, resulting in faster therapeutic effect and a longer shelf life. It is well known that they offer significant therapeutic promise in the treatment of all diseases. The majority are *rasayanas* and *yogavahis*. They are extremely powerful for *aamadasha nirharana*. Because of their fine particle size, they have the ability to act in a subtle

level. Nowadays, nano particles are used to deliver drugs to specific cell types<sup>20</sup>. Particles are designed to attract diseased cells, allowing direct treatment of specific cells while minimizing damage to healthy cells<sup>21</sup>.

According to *Ayurveda*, *Pitha* regulates body temperature. *Pitha pradhana dosa dushti & ama dosha* are the main causes of *jwara*. As a result, *pitha hara, srotosodhaka, deepana pachana, and sweda janana* qualities should be present in *jwaraghna dravyas*. The most prevalent herbal constituents in these compositions include *sunti, pippali, maricha, kumari, and triphala*. They have all of the *jwaraghna*



qualities. On the other hand, *kajjali*, *rasa sindura*, *parada*, *hingula*, and other *rasoushadhies* act as bio enhancers to effectively augment the qualities of the above medications. *Rasaushadies* also have *sadyo deepana pachana* qualities and are particularly effective in *ama dosha nirharana*.

“Fever is defined as the elevation of body temperature above 37<sup>0</sup> C. This occurs as a result of hypothalamic “set point” for temperature. Once hypothalamic set point is raised neurons in the vasomotor centre are stimulated leading to peripheral vasoconstriction especially in the limbs, leading to decreasing the heat loss from the skin. Metabolic processes also being slow and the body temperature elevates gradually and steadily”<sup>22</sup>. The antipyretic drugs act centrally, resetting the mechanism and bringing the temperature back to normal. Antipyretic medicines work by preventing Prostaglandin production and release in the brain<sup>23</sup>. Increased heat dissipation is mostly caused by cutaneous vasodilatation, which is accompanied by perspiration, which aids in the decrease of body temperature<sup>24</sup>. Studies reveal that *Ayurveda* medicines which have antipyretic property also reduce the level of prostaglandins in body<sup>25</sup>.

There are some peculiarities among the *yogas* mentioned for *jwara chikithsa* in *rasasastra* classics. On considering *nava jwara*, they are mostly *kharaleeya rasayanas*. Because of their popularity, wide range of therapeutic usefulness, ease of preparation, and mode of administration, *Kharaleeya rasayanas* take the lead over the other three *rasayanas*, *parpati*, *pottali*, and *kupipakwa*. By the act of triturating, the entire phase of these preparations takes place in *khalva yanthra*, hence the name *kharaleeya* or *khalveeya rasayanas*. Triturating not only reduces particle size to a very fine level, but it also aids in the breakage and reunion of bonds between triturated particles. Hence, the finished product is a completely different compound in composition<sup>26</sup>.

Mineral ingredients present in majority of the *yogas* include *Parada*, *Gandhaka*, *Hingula*, and *Tankana*. To begin, *sodhitha parada* and *Gandhaka* are properly triturated and *kajjali* is prepared. Then check for colour, *varithrathwa*, *rekhapoornathwa*, as well as other *sidhalakshanas* of the *kajjali*. The remaining herbal and mineral ingredients, as well as the *kajjali* and appropriate *bhavana dravyas* specified in *yoga*, are triturated later<sup>27</sup>.

*Kajjali* (black sulphide of mercury) is a one-of-a-kind remedy that can be used to treat a wide range of ailments when combined with the appropriate *anupana* and *sahapana*. *Sarvamayahara*, *vrishtya*, and *tridosahara* are the properties of this preparation<sup>28</sup>. *Kajjali* works synergistically and comprehensively with the herbal ingredients to provide a multi-targeted organ effect. In clinical practice, drugs containing *kajjali* have a higher rate of timed and sustained release than drugs without *kajjali*. *Vyosha*, *maricha*, *nagara*, and *pippali* are herbal ingredients with *agni deepana* and *kapha- vata samana* properties. Other ingredients include *katuki*, *thrivruth*, *harithaki*, *vasa*, and *nimba*. They have *kapha pitta samana* and *virechana* effects. *Tiktha* and *Katu rasas* are present in majority of these medicines. *Katu rasa* has *deepana* and *ushna veerya*, while *Tiktha rasa* has *jwarahara* quality. *Deepana*, *Pacana*, *Lekhana*, and *Krimighna* properties are present in majority of these medicines. *Sunti* is present in most formulations, and its excellent *ama pachana* property aids in the *samprapti vighatana* of *jwara*. The presence of *visha* and *upavishadravyas* is another unique feature of these *yogas*. The main ingredients in these formulations are *vatsanabhi*, *danthi*, *jayapala*, and *arka*. Their concentration is 2/4/8 times that of other ingredients in some of the formulations. In certain *yogas*, they are used as *bhavana dravyas*.

According to *Rasa Tarngini*, *vathsanabha* is a *sreshta rasayana* when paired with *rasa*. *Agnideepana*, *vatha kapha samana*, *seetha samana*, and *jwarahara* are

the properties of *Vathsanabhi*<sup>29</sup>. According to *Ayurveda Prakasa*, the toxic effects of the compound will be totally removed if the *vathsanabhi* is combined with an equivalent amount of properly *sodhitha tankana*.

Purified *Jayapala* has a powerful purgative effect and is useful in both *jalodara* and *navajwara*<sup>30</sup>. *Sodhitha dathura beeja* has *krimighna* and *kushta samana* properties and is used primarily in *jwara*<sup>31</sup>. In *jwara*, *arka ksheera* is purgative and helpful for reducing *srothorodha*<sup>32</sup>. *Madhu*, *sringaverambu*, and *ardraka swarasa* are recommended as *anupana* in almost all *yogas*. Specific *anupanas* are recommended for different *jwaravasthas* in some *yogas*. Dose of these formulations usually range from 1 *ratti* (125mg) to 1 *valla* (750mg). A detailed examination of the *yogas* mentioned in *nava jwara* reveals that they are all excellent combinations of drugs with antipyretic, antibacterial, and antiviral properties. Most of the formulations in *nirama jwara* include *Parada* and *Gandhaka* in *Kajjali* form. Other mineral ingredients include *tankana*, *abhraka*, *tamra*, and *loha*. Except in *Sithari rasa*, the *visha* and *upavisha* groups of drugs are not included in these formulations. Different *anupanas* mentioned depending on the *dosha* of the *jwara*, for example, *pathya sunti amrutha kwatha* and *thaptha thoya* in *vatha- kapha jwara*, *ksheera* and *sitha* in *paithika jwara*, and *madhu*, *kakamachi*, and *saindhava* in *kapha jwara*. In *Rasa Rathna Samucchaya*, *Vagbhata* does not mention *visha kalpas* for *nirama jwara*.

Almost all metallic and mineral *bhasmas* are used in *sannipatha jwara hara yogas* such as *Rasa*, *Gandhaka*, *Manasila*, *Thalaka*, *Hingula*, *Tamra*, *Loha*, *Makshika*, *Naga*, *Vanga*. *Vathsnabha*, *upavishas* such as *dhathura*, *arka*, *jaipala*, *bhallathaka*, *danthi*, *jangama visha*, such as *sarpavisha*, and toxic minerals such as *manasila*, *harithala*, and *gouri pashana* are used in almost all formulations. Since the ingredients in *sannipatha jwara yogas* are highly toxic, the majority of these *yogas* are

formulated as *kupi pakva rasayanas*, which are much safer due to their special preparation technique, or prepared with *bhudhara puta* or *gaja puta*<sup>33</sup>. Herbs used for *bhavana* include *nirgunti*, *thulasi*, *girikarnika*, *agni valli*, *ardraka*, *vahni*, *vijaya*, *jaya*, *kakamachi*, *drona pushpi*, *nagavalli*, *bhringa raja*, *trikatu*, and *thalamuli*. For *bhavana*, *pancha pithas*, (*mathsya*, *barhi*, *varaha*, *mahisha*, and *gavya*<sup>34</sup>) are also used. *Pancha pithas* (pithas obtained from many animal sources) are utilised for *bhavana* in *sannipatha jwara yogas*. According to *Rasendra Sara sangraha* by using such medicines, one should follow *jala seka* in *moordha*, *jala parisheka* *avagaha*, such as cold therapy regimens, which helps to balance the *theekshnatha* of medicine in the body<sup>35</sup>. *Krishna sarpa visha* is very *theekshna* and *ushna* in nature. So it is indicated in *seethanga sannipatha*, *seethe gathratha* (coldness of body in *sannipatha jwara*) by *RasaTarangini*. Along with *karaskara*, and *kasthuri* it is effective in various *sannipatha avasthas* like *sanja nasa* (unconsciousness), *swasa krichratha* (dyspnoea), *indriya saithilya* (unable to perceive sensations). This combination is found in *Kasthuri bhairava rasa*, and *Brihath kasthuri bhairava rasa*<sup>36</sup>. However the *Krishna sarpa visha* is not advised for *jeerna jwara*, *sanyasa*, other *jeerna vikaras* and *rakthapitha*<sup>37</sup>.

These formulations even have *kasthuri* and *karpura* in them. Plenty of *yogas* are used for *nasya* and *anjana* in *sannipatha avastha*. *Theekshna* and *ushna* are the characters in the *bhavana dravyas* used for applying *nasya* and *anjana* formulations. *Nasya karma* is performed with preparations such as *Nasya bhairava*, *Jayamangala rasa*, *Kula vadhu rasa*, *Mohandha surya rasa*, and *Unmatta rasa*. *Anjana karma* is performed using *Anjana bhairava rasa 1&2* and *Jaya mangala rasa*. Eyes and nostrils are being the convenient route of drug administration in unconscious patients. So, in *Sanniatha avastha*, medicines are administered as *Nasya* and

*Anjana*, they function directly on the CNS. *Pippali*, *maricha*, *vacha*, and herbs with *theekshna* properties are also used for *anjana* and *nasya*. The way *Suchikabharana* rasa is administered is also unique. It can be applied to the scalp, the *brahma randhra*, or the *talv*. Otherwise, for the administration of *Suchikabharana* rasa, a slight needle prick or scratch would be made in the *brahma randhra* or *talv pradesa*. *Nalikerodaka*, *vyosha*, *ardraka swarasa* are commonly used *anupanas* in *sannipatha jwara*.

Mineral ingredients used in *jeerna* and *vishama jwaraavastha* include *loha*, *tamra*, *gandhaka*, *swarna*, *abhra*, and *rajatha*. *Muktha*, *muktha sukthi*, *pravala*, and *sanka* are special calcium carbonate-based ingredients used in these *yogas*. These drugs have *vahnimandya hara*, *deepani*, *pleeha roga hara* properties which are the main *lakshanas* of *jeerna jwra*<sup>38</sup>. The key herbal ingredients are *raktha chandana*, *hreebera*, *pata*, *usira*, *kana*, *siva*, *nagara*, *uthpala*, *dhathri*, *maricha*, *trikatu*, and *triphala*. Two *abhra yogas* and many *loha kalpas* are specially mentioned for *jeerna* and *vishama jwara chikithsa*. *Chandanadi louha*, *vishama jwaranhaka louha*, *sarva jwaranthaka louha* etc. are some of the most popular *loha kalpas*.

On analyzing the *yogas*, it is clear that much care was given in selection of drugs, preparation and administration of them (*bhavana* and *anupana*) to achieve maximum potency for each condition. These mineral-based compositions are ideal for the corresponding *jwara avsthas*. Similarly, the mode of administration and method of preparation are particularly adaptable to a variety of scenarios. Medicines for *nava jwara avastha*, for example, are easier to make and administer. They're mostly *kharaleeya rasayanas*. Whereas in *sannipatha jwara*, the majority of the *yogas* are *kupipakva* or *puta* preparations that can be delivered by a variety of routes, including *nasya*, *anjana*, sublingual, scalp, and so on. These *yogas* are finer than *kharaleeya rasayanas* since they are made by sublimation of ingredients. We may

conclude that *Rasasastra* is a unique methodology for the bimolecular remodeling of metal, mineral, and herbal medicines for the benefit of humanity.

## 7. CONCLUSION

Things being so, the herbal ingredients in combination with the appropriate *Rasaoushadhis* have the ability to effectively treat various *jwara avasthas*. An examination of these textbooks revealed that they contain a wealth of herbo-mineral formulations capable of treating from minor symptoms to severe complications of *jwara* such as *vathika navajwara avastha* to complex *sannipatha* conditions. Since they are not packaged and marketed by pharmaceutical companies, many of them are unfamiliar with standard practice. As a result, *Rasasatra's* absolute potency is unable to address society's fever issues effectively. Therefore, our health-care system must adopt these medications which meet all of the requirements of a superior medicine for the community's wellbeing.

**Acknowledgement:** None

**Conflict of Interest:** None

**Source of Funding:** None

**Ethical Approval:** Not required

## REFERENCES

1. Anuja Susan Varghese, The New Indian Express, "Fever kills scores in Kerala every year, but such deaths go unreported" Published: 30<sup>th</sup> July 2020, Reported at Kochi.
2. Prof. Priyavratha Sarma, Editor and Translator, Charaka samhitha vol.II, Chikithsa sthana, Chaukhambha orientalia, Varanasi, Edition-7<sup>th</sup>; Chapter- 3, Page - 53, Sloka -11
3. Prof. Priyavratha Sarma, Editor and Translator, Charaka samhitha vol.II, Chikithsa sthana, Chaukhambha orientalia, Varanasi, Edition-7<sup>th</sup>; Chapter- 3, Page - 53, Sloka -12
4. Prof. Priyavratha Sarma Editor and Translator, Charaka samhitha vol.II,

- Chikithsa sthana, Chaukhambha orientalia, Varanasi, Edition-7<sup>th</sup>, Chapter- 3, page - 54,sloka -26
5. Dr. Kanjiv Lochan., Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India), Edition –first,2006, Chapter-5, Page-97, Sloka-12
  6. Sri. P. M. Govindan Vaidyn's Malayalam Translation of Ashtanga hridaya , Nidana Sthana, Published by Devi book stall, Sringeri puram, Kodungalloor- 680664, Chapter-2, Sloka -3,4,5
  7. Prof. Priyavratha Sarma, Editor and Translator, charaka samhitha vol.II, Chikithsa sthana, Chaukhambha orientalia, Varanasi, Edition-7<sup>th</sup>,Chapter- 3, Page -55, Sloka -32-35
  8. Prof. Priyavratha Sarma Editor and Translator, C-haraka samhitha vol.II, Chikithsa sthana, Chaukhambha orientalia, Varanasi, Edition-7<sup>th</sup>, Chapter- 3, Page - 57,Sloka -51
  9. Dr. Kanjiv Lochan., Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India), Edition –first, 2006, Chapter-5, Page-95, Sloka-5
  10. Dr. Kanjiv Lochan., Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India), Edition –first, 2006, Chapter-5, Page-95, Sloka-6
  11. Dr. Kanjiv Lochan., Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001 (India), Edition –first, 2006, Chapter-5, Page-104, Sloka-43
  12. Dr. Kanjiv Lochan, Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India),Edition –first,2006, Chapter-5, page-399,sloka-1434
  13. Prof. Priyavratha Sarma, Editor and Translator, Charaka samhitha vol.II, Chikithsa sthana, Chaukhambha orientalia, Varanasi, Edition-7<sup>th</sup>, Chapter- 3
  14. Dr. Kanjiv Lochan., Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India),Edition –first,2006, Chapter-5, page-160,sloka-213
  15. Dr. Kanjiv Lochan., Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India),Edition –first,2006, Chapter-5, page-160,sloka-214
  16. Prof. Priyavratha Sarma Editor and Translator, charaka samhitha vol.II, Chikithsa sthana, Chaukhambha orientalia, Varanasi, Edition-7<sup>th</sup> Chapter- 3, page - 59,sloka -73
  17. Dr. Kanjiv Lochan, Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Chapter-5, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India),Edition –first,2006, page-104,sloka-45
  18. Dr. Kanjiv Lochan., Bhaishajya Ratnavali of Sri Govind Dasji , English translation vol-1, Published by Chaukhambha Sanskrit Bhawan, Post Box No. 1160, Varanasi-221001(India),Edition –first,2006, Chapter-5, sloka-1393
  19. Dr. Parimi Suresh, Rasendra Sara Sangraha of Sri Gopala Krishna Bhatt, English Translation, Published by Chaukhambha Sanskrit Sansthan,post box no.1139,K37/116, Gopal Mandir Lane, Varansi-221001(India), Edition: First, 2007, Chapter-2, p- 110 onwards
  20. Vanna Sanna, Nicolino Pala, and Mario Sechi, Targeted therapy using nanotechnology: focus on cancer, International Journal of Nano medicine, ncbi.nlm.nih.gov
  21. Vanna Sanna, Nicolino Pala, and Mario Sechi, Targeted therapy using nanotechnology: focus on cancer, International Journal of Nano medicine, ncbi.nlm.nih.gov
  22. K. V KrishnaDas, Textbook of Medicine, Published by Jitendar P Vij, Jaypee Brothers publishers(P) Ltd, 5<sup>th</sup> Edition,2008,Chapter-34-Diseases caused by infections, p- 176
  23. K. V KrishnaDas, Textbook of Medicine, Published by Jitendar P Vij, Jaypee Brothers publishers(P) Ltd, 5<sup>th</sup> Edition,2008,Chapter-34-Diseases caused by infections, p- 177
  24. K. V KrishnaDas, Textbook of Medicine, Published by Jitendar P Vij,

- Jaypee Brothers publishers(p) LTD, 5<sup>th</sup> Edition,2008,Chapter-34-Diseases caused by infections, p- 176
25. Manoj J. Timbadia, K. Nishteswar and Mukesh B. Nariya, "Experimental evaluation of antipyretic and analgesic activities of *Amalakyadi Gana*: An Ayurvedic Formulation", Wolters Kluwer-Medknow Publications, AYU, ncbi.nlm.nih.gov
  26. Dr.Ravindra Angadi, A Textbook of Rasasastra, Published by Chaukhambha Surbharati Prakashan, Varanasi, Chapter 13, Page-140
  27. Dr.Ravindra Angadi, A Textbook of Rasasastra, Published by Chaukhambha Surbharati Prakashan, Varanasi, Chapter 13, Page-141
  28. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, Murchanadi vijnaneeya 6<sup>th</sup> Tharanga, sloka no. 112,page no. 126
  29. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, 24<sup>th</sup> Tharanga, sloka no. 26-27,page no. 653
  30. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, Vishopavisha vijnaneeya 24<sup>th</sup> Tharanga, sloka no. 315-316, page no. 706
  31. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, Vishopavisha vijnaneeya 24<sup>th</sup> Tharanga, sloka no. 350-351, page no. 711
  32. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, Vishopavisha vijnaneeya 24<sup>th</sup> Tharanga, sloka no. 511-512, page no. 743
  33. Dr. Parimi Suresh, Rasendra Sara Sangraha of Sri Gopala Krishna Bhatt, English Translation, Published by Chaukhambha Sanskrit Sansthan,post box no.1139,K37/116, Gopal Mandir Lane, Varansi-221001(India), Edition: First, 2007, Chapter-2, p- 110 Onwards
  34. Dr. Parimi Suresh, Rasendra Sara Sangraha of Sri Gopala Krishna Bhatt, English Translation, Published by Chaukhambha Sanskrit Sansthan,post box no.1139,K37/116, Gopal Mandir Lane, Varansi-221001(India), Edition: First, 2007, Chapter-2, sloka- 168 p-157
  35. Dr. Parimi Suresh, Rasendra Sara Sangraha of Sri Gopala Krishna Bhatt, English Translation, Published by Chaukhambha Sanskrit Sansthan,post box no.1139,K37/116, Gopal Mandir Lane, Varansi-221001(India), Edition: First, 2007, Chapter-2, sloka- 168,p-156
  36. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, Vishopavisha vijnaneeya 24<sup>th</sup> Tharanga, sloka no. 538-546, page no. 748
  37. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, Vishopavisha vijnaneeya 24<sup>th</sup> Tharanga, sloka no. 547-548, page no. 749
  38. Pandit Kasinatha Sasthri, Rasa Tarngini of Pranacharya Sadananda Sarma,published by Mothilal Banarasi Das, 41 U M. Banglow road, Jawahar Nagar, New Delhi, Sankadi vijnaneeya 12<sup>th</sup> Tharanga, page no. 285-306

How to cite this article: Akhila Retnam. A, Keerthi V. R, Mathew R et.al. A critical review of herbo-mineral formulations in *jwara chikitsa*. *Int J Health Sci Res*. 2021; 11(7): 394-406. DOI: <https://doi.org/10.52403/ijhsr.20210754>

\*\*\*\*\*