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A REVIEW ON CHANDRAMRITA RASA - AN AYURVEDIC HERBO-MINERAL FORMULATION

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ABSTRACT

Background: *Chandramrita Rasa* is a well-known herbo-mineral Ayurvedic formulation in different Ayurvedic classics and is also quoted in the Ayurvedic Formulary of India (AFI). It is a widely prescribed herbo-mineral preparation in Ayurveda for the management of *Shwasa* (asthma) and *Kasa* (cough). **Aim:** To screen and compile all available information of *Chandramrita Rasa* in terms of its composition, method of preparation, dose, indications and contribution of various texts regarding this particular formulation. **Materials and Methods:** References of *Chandramrita Rasa* were compiled from various Rasa texts, Ayurvedic Formulary of India, published literature in different databases like Pub Med; Scopus till October 2021. **Results & Conclusion:** A total of 14 references of *Chandramrita Rasa* have been found with a slight change in ingredients and their proportion. *Chandramrita Rasa* is recommended in *Kasa*, *Shwasa* disease conditions when screened through Rasashastra Texts. The safety of metallic and mineral ingredients of *Chandramrita* Rasa have been also reported. This work is anticipated to be handy for researchers and the Ayurvedic fraternity to gather all information including the therapeutic use of *Chandramrita Rasa*.

Keywords: Ayurveda, Chandramrita Rasa, Kasa, Rasashastra, Safety, Shwasa,

INTRODUCTION

Ayurveda mainly uses drugs originated from herbal, metal-mineral, animal and marine origin. Among these, *Rasaushadhis* (herbs-mineral formulations) occupies a significant seat in Ayurvedic pharmaceutics and therapeutics. *Rasaushadhis* mainly include a combination of one or more metal/minerals after certain processing along with several herbs which have supporting action like increasing the efficacy of formulation, minimizing toxic effects and relieving the disease condition. Metals and minerals are known to be toxic in their elemental form and Ayurvedic seers were also familiar with this fact. They have advocated different specific pharmaceutical procedures to nullify or minimize these toxic effects of various metals and minerals like mercury, copper, gold, iron, lead etc. They have given treatment for the ill effects if any, caused due to administration of these metallic formulations. These formulations are used in Ayurveda for ages without noticeable side effects. Despite this, many concerns have been raised by the scientific community on the safety aspects of these metallic and mineral formulations, especially on those containing heavy metals like mercury. These herbo-mineral complexes are found to be more stable and interactive as compared to plain herbs having additional benefits like quick therapeutic action in very minute doses and longer shelf life.[1] *Chandramrita Rasa* (CHR) is one such mercurial compound herbo-mineral formulation mentioned in different *Rasa* classics and also quoted in Ayurvedic Formulary of India (AFI).[2] This formulation contains integral metallic-mineral ingredients like mercury, sulphur, iron, and mica. *Chandramrita Rasa* is prescribed in the management of *Shwasa* (asthma), *Kasa* (cough), *Rajayakshma*, *Urahkshata*, *Jwara* (pyrexia). So, there is a need to compile all relevant information of CHR in terms of its composition, method of preparation, dose, indications and other contribution of this particular formulation from different Ayurvedic classics and published literature.

Methods: Brihatrayi (Charaka Samhita, Sushruta Samhita and Astanga Hridaya) with their commentaries, different Rasashastra texts were screened to compile references of CHR. Databases like pub med, Scopus and Google scholar were also searched for any published literature on CHR till October 2021. The keywords like Ayurveda, herbo-mineral, iron, mercurial, *Bhasma*, *Kajjali*, *Lauha*, *Abhraka*, *Tamaka Shwasa*, *Kasa* were used to finding the relevant information on CHR through databases. Published reports on the safety, anti-inflammatory and anti-tussive effect of ingredients of CHR were also included in the study.

Classical contribution: *Chandramrita Rasa* has been mentioned firstly in Rasa Ratnakara (13th Century) and the *Yoga* is different from AFI. In the market, CHR is available in powder and tablets dosage form and prepared as per the reference of AFI. Total 14 references were found in different Rasashastra texts which are depicted in Table 1.

General Method of preparation

Most of the classics have mentioned the CHR as *Kharaleeya Rasyana* (formulation prepared in mortar). Preparation of *Kajjali*[3] (a combination of mercury and sulphur) is by grinding processed mercury and sulphur using mortar and pestle, till it attains a lusterless black fine powder form. Add one part each of *Lauha Bhasma Abhraka Bhasma*, Powder of *Shunthi*, *Maricha*, *Pippali*, *Amalaki*, *Bibhitaki*, *Haritaki*, *Chavya*, *Dhanyaka*, *Krushna Jeeraka*, *Saindhava* to the *Kajjali* and triturated well using a *Khalwayantra*. After those 8 parts of *Shodhita Tankana* powder was added and triturated well to form a uniform fine mixture. This mixture was to be triturated seven times with the media of *Vasa Swarasa*. After the completion of seven *Bhavana*, the prepared final product dried under shade and stored in airtight glass container.

Dose and *Anupana*: A human dose of *Chandramrita Rasa* is 375 mg (3 *Gunja*) per day and the *Anupana* (vehicle) mentioned is honey.

Table 1: Comparison showing variation in Ingredients, Dose and Indication of CHR

Sr. No.	Reference	Ingredients		Quantity	*Bhavana Dravya* (Triturating Media)	Indication	Dose
1	Rasa Ratnakar[4] (13th Cent. AD)	1	*Pippali Churna* (*Piper longum* Linn.)	1 Part	No of *Bhavana Dravya*	All Type of *Jwara* pyrexia) and *Shwasa Yukta Kasa* (Coughing associated with Difficulty in breathing), *Bhrama* (Vertigo), *Trishna* (Thirst), *Daha* (Burning sensation), *Shool* (Pain), *Ruchikar* (Appetizer), *Agnidipaka*, (increase in power of *agni*) *Balavarnakar* (Promoting the strength and skin complexion), *Vrishya* (Aphrodisiac), *Jirna Jwara Vinashana* (Removal of chronic fever)	9 *Gunja*
		2	*Shunthi Churna* (*Zingiber officinale* Roxb.)	1 Part			
		3	*Maricha Churna* (*Piper nigrum* Linn.)	1 Part			
		4	*Amalaki Churna* (*Embilica officinalis* Gaertn.)	1 Part			
		5	*Bibhitaki Churna* (*Terminalia bellirica* Roxb.)	1 Part			
		6	*Haritaki Churna* (*Terminalia chebula* Retz.)	1 Part			
		7	*Chavya Churna* (*Piper retrofractum* Vahl.)	1 Part			
		8	*Dhanyaka Churna* (*Coriandrum sativum* Linn.)	1 Part			
		9	*Jeeraka Churna* (*Carum cyminum* Linn.)	1 Part			
		10	*Saindhava Churna* (Rock Salt)	1 Part			
		11	*Lauha Bhasma* (Incinerated Iron)	10 Part			
2	Rasakamadhenu[5] (16th Cent. AD)	1	*Shuddha Parada* (Processed Mercury)	1 Part	*Shamidala Swarasa* (Juice of *Prosopis cineraria* Leaves)	*Rajyakshma*	3 *Ratti*
		2	*Shuddha Gandhaka* (Processed Sulphur)	2 Part			
		3	*Saindhava Lavana* (Rock Salt)	1 Part			
3		1	*Shuddha Parada*	1 Part		*Aamaj Kasa*	

	Basarajiyam[6] (16th Cent. AD)	2	*Shuddha Vatsanabha* (Processed *Aconitum ferox* Wall.)	1 Part	*Arkamoola Kashaya* (Decoction of *Calotropis gigantea* (L.) Ait.f.) for 1 *Yama*		1 *Gunja*
		3	*Shuddha Gandhaka*	1 Part			
		4	*Shuddha Nepalam* (Processed *Croton tiglium* Linn.)	1 Part			
4.	Rasendra Sara Samgraha[7] (16th Cent. AD) *Chandramrita Lauha*	Same as Rasaratnakar (1)					
5.	Rasarajasundar[8]	Same as Rasaratnakar (1)					
6.	Rasendra Sara Samgraha[9] (16th Cent. AD)	1	*Shuddha Parada*	1 *Karsha*	*Chhaga Kshira* (Goat's Milk)	Various types of *Kasa* (Coughing), *Vataraktaja Kasa* (Coughing associated with Vata and Kapha), *Vatakaphaja* & *Pitta Kaphaja Jwara* (pyrexia associated with *Vata-Kaphaja* and *Pitta-Kaphaja*)	9 *Gunja*
		2	*Shuddha Gandhaka*	1 *Karsh*			
		3	*Lauha Bhasma*	1 *Karsha*			
		4	*Shuddha Tankana* (Processed Borax)	1 *Pala*			
		5	*Maricha Churna*	½ *Pala*			
		6	*Pippali Churna*	1 *Karsha*			
		7	*Shunthi Churna*	1 *Karsha*			
		8	*Maricha Churna*	1 *Karsha*			
		9	*Amalaki Churna*	1 *Karsha*			
		10	*Bibhitaki Churna*	1 *Karsha*			
		11	*Haritaki Churna*	1 *Karsha*			
		12	*Chavya Churna*	1 *Karsha*			
		13	*Dhanyaka Churna*	1 *Karsha*			
		14	*Jeeraka Churna*	1 *Karsha*			
		15	*Saindhava Churna*	1 *Karsha*			
7.	Bhaishjya Ratnavali[10] (19th Cent. AD)	Same as Rasendra Sara Samgraha (6)					
8.	Rasachandanshu[11] (20th Cent. AD)	Same as Rasendra Sara Samgraha (6)					
9.	Rasendra Sara Samgraha[12]	1.	*Shuddha Parada*	1 *Karsha*	No *Bhavana Dravya*	*Yakshma*	4 *Gunja*
		2.	*Shuddha Gandhaka*	1 *Karsha*			

	(16th Cent. AD) Brihat Chandramrita Rasa	3	*Abhraka Bhasma* (Incinerated Mica)	½ *Pala*			
		4	*Karpur Churna* (Cinnamomum camphora Nees.)	1 *Shana*			
		5	*Suvarna Bhasma* (Incinerated Gold)	1 *Karsha*			
		6	*Tamra Bhasma* (Incinerated Copper)	1 *Karsha*			
		7	*Lauha Bhasma*	1 *Karsha*			
		8	*Vriddhadaru Churna* (*Argyreia speciosa* Sweet.)	1 *Shana*			
		9	*Shweta Jeeraka Churna* (*Cuminum cyminum* Linn)	1 *Shana*			
		10	*Vidari Kanda Churna* (*Pueraria tuberosa* DC)	1 *Shana*			
		11	*Shatavari Churna* (*Asparagus racemosus* Willd.)	1 *Shana*			
		12	*Kshuraka Churna* (*Tribulus terrestris* Linn.)	1 *Shana*			
		13	*Bala Churna* (*Sida cordifolia* Linn.)	1 *Shana*			
		14	*Kapikachchu Churna* (*Mucuna prurita* Hook)	1 *Shana*			
		15	*Atibala Churna* (*Abutilon indicum* Linn.)	1 *Shana*			
		16	*Jatiphala Churna* (*Myristica fragrans* Houtt)	1 *Shana*			
		17	*Jatikosha Churna* (*Myristica fragrans* Houtt)	1 *Shana*			
		18	*Lavanga Churna* (*Syzygium aromaticum* Linn.)	1 *Shana*			

		19	*Vijayabeej Churna* (*Cannabis sativa* Linn.)	1 *Shana*			
		20	*Shweta Sarjarasa* (Gum resin part of *Shorea robusta* f.)	1 *Shana*			
10	Rasayogasagar[13] (20th Cent. AD) *Chandramrita Vati/Gutika*	1	*Maricha Churna*	1 *Tola*	*Chhaga Kshira* (Goat's milk)	5 Types of Kasa *Jwara* and *Shwasayukta Kasa*, *Trishana*, *Daha*, *Bhrama*, *Agnidipana*, *Balavarnakara*, *Pliharoga* and *Gulma roga nashaka*, *Anaha*, *Pandu*, *Krimiroga*, *Jirna Jwara*	9 *Gunja*
		2	*Pippali Churna*	1 *Tola*			
		3	*Shunthi Churna*	1 *Tola*			
		4	*Amalaki Churna*	1 *Tola*			
		5	*Bibhitaki Churna*	1 *Tola*			
		6	*Haritaki Churna*	1 *Tola*			
		7	*Saindhava Churna*	1 *Tola*			
		8	*Shuddha Parada*	1 *Tola*			
		9	*Shuddha Gandhaka*	1 *Karsha*			
		10	*Lauha Bhasma*	1 *Karsha*			
		11	*Suddha Tankana*	1 *Pala*			
		12	*Maricha Churna*	½ *Pala*			
11	Rasamrita[14] (20th Cent. AD) / AFI[15]	1	*Maricha Churna*	1 *Karsha*	*Vasa Swarasa* (Juice of *Adhatoda vasica* Nees)	All type of *Kasa* (cough), *Shwasa* (Difficulty in breathing) associated with Jwara	3 *Gunja*
		2	*Pippali Churna*	1 *Karsha*			
		3	*Shunthi Churna*	1 *Karsha*			
		4	*Amalaki Churna*	1 *Karsha*			
		5	*Bibhitaki Churna*	1 *Karsha*			
		6	*Haritaki Churna*	1 *Karsha*			
		7	*Chavya Churna*	1 *Karsha*			
		8	*Dhanyaka Churna*	1 *Karsha*			
		9	*Jeeraka Churna*	1 *Karsha*			
		10	*Saindhava Churna*	1 *Karsha*			
		11	*Shuddha Parada*	1 *Karsha*			
		12	*Shuddha Gandhaka*	1 *Karsha*			
		13	*Lauha Bhasma*	1 *Karsha*			
		14	*Abhraka Bhasma*	1 *Karsha*			
		12	*Shuddha Tankana*	2 *Pala*			
12	Ayurveda Sara Samgraha[16] (20th Cent. AD)	Same as Siddha Prayog Samgraha				*Jwara* (Pyrexia) and *Shwasayukta Kasa* (Coughing with Breathing difficulty), *Trishana* (Thirst), *Daha* (Burning sensation), *Bhrama* (Vertigo)	3 *Gunja*

13	Rasatantrasara evam siddha Prayoga samgraha[17] (Prathama Khanda) (20th Cent. AD)	Ingredients Same as Siddha Prayoga Samgraha	*Chhaga Kshira* (Goat's Milk)	*Jwara* (Pyrexia) and *Shwasayukta Kasa* (Coughing with Breathing difficulty), *Trishana*, *Daha*, *Bhrama*, *Agnidipana*, *Balavarnakara*, *Pliharoga* and *Gulmaroganashaka*, *Anaha*, *Pandu*, *Krimiroga*, *Jirna Jwara*	2 *Ratti*
14	Siddha Yoga Samgraha[18] (20th Cent. AD)	Same as Rasamrita		All types of *Kasa*, *Shwasa* associated with Jwara	3 *Gunja*

1 *Gunja*/*Ratti*= 125 mg, 1 *Shana*= 3 g, 1 *Tola*/*Karsha*= 12 g, 1 *Pala*= 48 g,

The safety aspect of *Chandramrita Rasa* and its ingredients:

Published safety profile work of CHR is not reported till date. So, it becomes necessary to analyze the safety profile of various metal and mineral ingredients of CHR. After a thorough screening, few research works have been found on the safety of *Kajjali*, *Lauha Bhasma*, *Abhraka Bhasma* and *Tankana*. Sub-acute toxicity study of *Kajjali* has revealed no toxic symptoms when administered orally at the dose of 10mg/kg.[19] *Lauha Bhasma* is safe at Therapeutic Equivalent Dose (4.16 mg/kg) and is 5 times higher than the therapeutic dose in the sub-acute toxicity study. [20] *Abhraka Bhasma* was found to be safe when administered at the dose of 1280 mg/kg.[21]*Tankana* (processed borax) has shown histopathological changes in the normal cytoarchitecture of the kidney at 112.5 mg/kg which was 5 times higher than the therapeutic dose. Vice versa it is found to be completely safe at the therapeutic dose level.[22]

DISCUSSION

Total 14 references of CHR were compiled and found containing almost the same ingredients with a slight change in proportion. Rasakamdhenu has mentioned only 3 ingredients i.e. *Shuddha Parada*, *Shuddha Gandhaka* and *Saindhava Lavana*. Basavarayajiyam, Rasendra Sara Samgraha and Rasarajsundar texts have quoted poisonous plants like *Shuddha Vatsanabha*, *Jayapala* and *Bhanga Beeja* as an integral ingredient in CHR. *Swarna Bhasma*, *Tamra Bhasma*, *Shweta Sarjarasa* and *Karpura* are given as ingredients in *Brihata Chandramrita Rasa* by Rasendra Sara Samgraha. Internal use of *Shweta Sarjarasa* is very rarely mentioned in Ayurvedic classics and *Chandramrita Rasa* is one such example of the same. *Vasa Swarasa*, *Chhaga Kshira* (Goat's milk), *Shamidala Swarasa*, *Arkamoola Kashaya* are used as *Bhavana Dravya* of CHR. *Vasa* has *Tikta-Katu Rasa*, *Katu Vipaka* and *Laghu Ruksha Guna* and indicated as *Jwarahara*, *Shwasahara*, *Kasahara* and *Kshayahara*[23]. *Shamidala* is also *Katu Rasa*, *Katu Vipaka* and *Laghu Guna* recommended in *Kapha*, *Kasa*, *Shwasa*[24].

Chhaga Kshira is *Kashaya*, *Laghu* in properties and exclusively recommended for *Kshaya* and *Kasa* disease conditions[25]. Through the *Bhavana* process, active principles of the specified liquid media are retained in the particles of drugs and result in potentiation of the drug efficacy. Almost in all the references, ingredients are levigated with particular *Bhavana Dravyas* for a specific time and converted into suitable dosage form either powder or *Vati* (circular shape). Rasakamdhenu has given a very specific procedure of *Paka* (heating process) in the preparation of CHR. In this method, levigated material is subjected to heat in *Patana Yantra* for 1 day and is to be collected from the upper part of *Yantra*. Basavarajiyam stated that CHR can be prepared in *Dolayantra*. Due to the contact with heat, the drug becomes more *Laghu*, easy to digest in the body and ultimately show better therapeutic efficacy. The dose of CHR is ranging from 125 mg to

1125 mg. Most of the authors have quoted a 375 mg dose of CHR which can be considered as a therapeutic dose for a human being. *Madhu*, *Chhaga Kshira* and *Pippali* are mostly cited as a vehicle of CHR. CHR is mainly indicated in *Pranvaha Strotasagata Vyadhis* especially *Rajayakshma*, all types of *Kasa*, *Shwasa* associated with *Jwara* (fever). When analyzing the properties of ingredients, most of the drugs have *Katu Rasa* (Pungent taste), *Tikta rasa* (Bitter taste), *Ushna Virya* (hot potency) and *Kaphavatahara* (diminished vitiated *Kapha* and *Vata*). The main ingredient *Tankana* having *Katu Rasa*, *Ushna Virya*, *Sara Tikshna Guna*, along with *Kaphanissaraka* (mucolytic) and *Srotoshodhana* (cleansing) property and is indicated in *Kasa* and *Shwasa*[26]. These properties may help for easy expectoration of *Kapha* (mucoidal secretion) in the case of *Kasa* and *Shwasa*. Srinivas B. *et al* (2013) has documented the anti-inflammatory activity of *Tankana Bhasma*.[27] *Lauha Bhasma* is known for its *Rasayana Karma* and is also indicated in *Shwasa* and *Kasa* (Respiratory disorder)[28]. Balkrishna *et al* (2021)[29] has accredited anti-inflammatory activity of *Abhraka Bhasma* and demonstrated that it may reduce airway inflammation which is one of the distinct features observed in Asthma. The *Bhavana Dravya* used in CHR is *Vasa* which is well reported for its anti-tussive action[30], bronchodilator action[31] and anti-inflammatory action[32]. Other certain drugs like *Trikatu* (Combination of *Shunthi*, *Maricha* and *Pippali*) possess *Katu Rasa*, *Laghu*, *Ruksha* and *Tikshna Guna*, *Katu Vipaka* and *Ushna Virya* effective in *Jwara*, *Agnimandhya*, *Kasa* and *Shwasa*. Considering this *Chandramrita Rasa* can be considered the drug of choice for *Shwasa*, *Kasa* and *Kshayaroga*.

CONCLUSION

Reviewing of Rasashastra classics reveal that *Chandramrita Rasa* is recommended in *Kasa*, *Shwasa* disease conditions. Total 14 references of *Chandramrita Rasa* have been found with a slight change in ingredients and their proportion. The safety of metallic and mineral ingredients of *Chandramrita* Rasa have been also reported. This work is anticipated to be handy for researchers and the Ayurvedic fraternity to gather all information including the therapeutic use of *Chandramrita Rasa*.

REFERENCES

1. Singh VC. Nicholas Piramal India Ltd, Mumbai, Herbal (Ayurvedic) Drug Industry for Compliance to Quality parameters, Regional Training Course at India International Centre, New Delhi.
2. Anonymous. The Ayurvedic Pharmacopoeia of India, Part I 20:16.,2nd edition, New Delhi: Department of Ayurveda, Yoga, Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry of Health and Family Welfare, Government of India; 2003. p. 262.
3. Acharya Sadananda Sharma; Rasa tarangini 6/108; Translated by Shri Kashinatha Shastri, 11th ed. Reprint. Motilal Banarsidas, New Delhi, 2012; P-124
4. Ayurvedodharaka Shaligram, commentator Bhasha tika, Rasaratnakar of siddha Nityanath, Ch. Rajyakshma Chikitsa, Verse 106-114, edition 2013, Mumbai, Khemraj Shrikrishnadasa, Pg No. 270.
5. Shri Chudamani Mishra; Rasa Kamadhenu, Fourth Chikitsapada 33/245; edited by Acharya Shree Gularaj Sharma Mishra, Chaukhambha Orientalia, Varanasi, Reprint- 2019; P-69
6. Vaidhvarashree Basavaraja; Basavarajiyam chap. 8; edited by Shri Govardhan Sharma Chhangani, 2013 Reprint. Chaukhambha Sanskrita Pratishthaana, Delhi, P-144
7. Vaidh Satyarth Prakash, editor of Satyarth Prakashika Hindi commentary, RasendraSaraSamgraha of Shrimad Gopal Krushna Bhatt, Ch. 02, Kasa Chikitsa, Ver.81-86, 1st edition. Varanasi: Krushnadas Academy; 1992. pp.465
8. Pandit Dattaram Chaube, editor of Rasarajsundar, Kasa rogadhikar, reprint,Varanasi, Chaukhambha Orintalia; 2000. pp. 418.
9. Vaidh Satyarth Prakash, editor of Satyarth Prakashika Hindi commentary, RasendraSaraSamgraha of Shrimad Gopal Krushna Bhatt, Ch. 02, Kasa Chikitsa, Ver.81-86, 1st edition. Varanasi: Krushnadas Academy; 1992. pp.466.
10. Prof. Siddhinandan M, Editor Bhaishjya Ratvali of Govind Das. (Siddhiprada Hindi vyakhya). Varanasi: Chaukhambha surabharti Prakashana; 2015. Kasarogadhikar 121- 126. P-449.
11. Anonymous. Rasachandasu, New Delhi: Department of Ayurveda, Central Council for Research in Ayurvedic

Sciences, Department of Ayurveda, Yoga, Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry of Health and Family Welfare, Government of India; 2011. Pg.No. 244.
12. Vaidh Satyarth Prakash, editor of Satyarth Prakashika Hindi commentary, RasendraSaraSamgraha of Shrimad Gopal Krushna Bhatt, Ch. 02, Kasa Chikitsa, Ver.74-79, 1st edition. Varanasi: Krushnadas Academy; 1992. pp.443.
13. Vaidya Pandit Hariprapannaji, Rasayoga Sagar Prathama Khanda, Chakaradi Rasa Verse 250-254, Reprint 2010 Varanasi Chaukhmbha, Krushnadas Academy, Pg No. 431
14. Acharya Yadavji Trikamji; Rasamrita 9/64-67; Translated by Dr. Devnath Sinh Gautam, 1st ed. Varanasi, Chaukhmbha Surabharati Prakashan, 2008; Pg. No.122
15. Anonymous. The Ayurvedic Pharmacopoeia of India, Part I 20:16.,2nd edition, New Delhi: Department of Ayurveda, Yoga, Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry of Health and Family Welfare, Government of India; 2003. p. 262.
16. Anonymous. Ayurveda Sara Samgraha. Reprint, Krushnagopal Ayurved Bhavana (Dharmarth Trust) Kaleda (Rajsthan), Part 1; 2010. p. 217.
17. Anonymous. Rasatantrasaraand Siddhaprayog Sangraha. 19th edition, Krushnagopal Ayurved Bhavana (Dharmarth Trust) Kaleda (Rajsthan), Part 1; 2010. p. 217.
18. Vaidya Yadavji Triakamji Acharya, Siddhyoga Samgraha,11th Edition, Shree Baidyanath Ayurved Bhavan Limited, Naini, Allahabad,2003. P-69
19. Therasilin Louis et & all: A Study Of Subacute Toxicity Of Kajjali, A Combination Of Mercury And Sulphur On Albino Rats
20. Namrata Joshi, Manoj Kumar Dash, Laxmikant Dwivedi and G. D. Khilnani, Toxicity study of Lauha Bhasma (Calcined iron) in albino rats, Anc Sci Life 2016; 35(3): 159–166.
21. Gopinath H, Shivashankar M. A study on toxicity and anti-hyperglycemic effects of Abhrak Bhasma in rats. J Ayurveda Integr Med. 2021 Jul-Sep;12(3):443-451.
22. Prasanta K. Sarkar, Pradeep K. Prajapati, Vinaj J Shukla, Basavaiah Ravishankar, Evaluation of acute, sub-acute toxicity and cardiac activity of processed borax, Indian Journal of Natural Products and Resources Vol. 8(4), December 2017, pp. 299-305.
23. Acharya Bhavamishra, Bhavaprakash Nighantu, Guduchyadi Varga Verse 90, Commentary by Prof. KC Chunekar, Reprint, Varanasi, Chaukhambha Bharati Academy, 2010, P-306
24. Acharya Bhavamishra, Bhavaprakash Nighantu, Vatadi Varga Verse 73, Commentary by Prof. KC Chunekar, Reprint, Varanasi, Chaukhambha Bharati Academy, 2010, P-534
25. Agnivesha, Charaka Samhita with Ayurveda Dipika commentary of Chakrapanidatta, Sutrasthana Chapter 27, Edited by Yadavji Trikamji Acharya. Edition 2014, Varanasi. Published by Chaukhamba Surbharati Prakashan. P-165
26. Acharya Sadananda Sharma; Rasa tarangini 13/79-80; Translated by Shri Kashinatha Shastri, 11th ed. Reprint. Motilal Banarsidas, New Delhi, 2009; P-319
27. Kumar et al., In vitro anti-inflammatory activity of Tankana churna, Food and Feed Research 40 (1), 17-20, 2013
28. Acharya Sadananda Sharma; Rasa tarangini 20/84-89; Translated by Shri Kashinatha Shastri, 11th ed. Reprint. Motilal Banarsidas, New Delhi, 2012; P-508
29. Acharya Balkrishna et al Biotite-Calx Based Traditional Indian Medicine Sahastraputi-Abhrak-Bhasma Prophylactically Mitigates Allergic Airway Inflammation in a Mouse Model of Asthma by Amending Cytokine Responses. Journal of Inflammation Research 2021 Sep; 14:4743-4760.
30. Dhuley JN. Antitussive effect of Adhatoda vasica extracts on mechanical or chemical stimulation-induced coughing in animals. J Ethnopharmacol. 1999 Nov 30;67(3):361-5. DOI: 10.1016/s0378-8741(99)00074-4. PMID: 10617073.
31. AMIN AH, MEHTA DR. A bronchodilator alkaloid (vasicinone) from Adhatoda vasica Nees. Nature. 1959 Oct 24;184(Suppl 17):1317. [doi: 10.1038/1841317a0. PMID: 13793186.]
32. Singh B, Sharma RA. Anti-inflammatory and antimicrobial properties of pyrroloquinazoline alkaloids from Adhatoda vasica Nees. Phytomedicine. 2013 Mar 15;20(5):441-5. DOI: 10.1016/j.phymed.2012.12.015. Epub 2013 Jan 26. PMID: 23357363.

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