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Research Article

AN ANTIMICROBIAL EVALUATION OF *BHASMESHWARA RASA* ON SALMONELLA TYPHI

J M Urvashiba[1]*, BN Ashok Kumar[2], A Ravindra[3], V S Sushmitha[4], P R R Geethesh[2]

*[1]PG Scholar, [2]Associate Professor, [3]Professor & Head, [4]Assistant Professor, Dept. of PG & PhD Studies in Rasashastra & Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi, Karnataka.

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ABSTRACT

Infections can be caused by a wide range of pathogens and bacteria are one among them. Presently, we confront a significant challenge concerning antimicrobial resistance, leading the world to explore alternative medicine as a potential solution. *Bhasmeshwara rasa* is a formulation mentioned under *Sannipataja jwara chikitsa* in *Rasendra Chintamani* which acts on all three *Doshas*. It is a *Khalviya Rasayana* containing *Vanyopala bhasma* (cow dung cake *Bhasma*), *Maricha* and *Shuddha vatsanabha* and its *Anupana* is *Ardraka Swarasa.*

Even though there is no *Parada* used in this formulation, still this formulation is suffixed with "*Rasa*" in its name *Bhasmeshwara*. In vitro anti-bacterial study, the action of *Bhasmeshwara rasa* was tested against *Salmonella typhi* by well diffusion method. A combination of *Bhasmeshwara Rasa* and *Ardraka Swarasa* showed antibacterial activity against *Salmonella typhi*. Hence, with the present study, it can be concluded that *Bhasmeshwara Rasa* and *Ardraka Swarasa* combination shows mild to moderate anti-bacterial activity.

INTRODUCTION

Instinct, the inner compulsion guiding an animal organism in choosing what is beneficial for survival and protection, is a fundamental aspect of the intricate relationship between humanity and infectious diseases. The historical records of infections trace back to the earliest days of human existence, reflecting an inseparable connection between the human species and the adversities it has confronted. Over time, humanity has grappled with a diverse array of infectious maladies, leading to a continuous evolution in our understanding and management of these threats.

Jwara, recognized as the primary disease manifestation in any condition, encompasses a spectrum from simple *Prakrita Jwara* to complex *Sannipataja*. References to microorganisms are found in Ayurvedic classics under various names such as *Bhoota, Krimi*[1]*, Jantu*, etc. Infections can stem from a wide range of pathogens, with bacteria being one among them.

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Typhoid, caused by *Salmonella typhi*, exhibit symptoms akin to various manifestations. In *Sannipataja Jwara*, where all three *Doshas* are involved, a combination of symptoms is observed, including persistent fever with varying intensity, body ache, diarrhoea, and anorexia, which can be correlated with Typhoid fever[2] according to contemporary science.

In the current scenario, the classification of Ayurvedic formulations is based on the origin of drugs – Herbal Source, Animal Source, or Mineral Source. With countless permutations and combinations available, there is a pressing need to explore the therapeutic potential of Ayurvedic compound formulations comprehensively. Designing an effective formulation involves considering factors such as efficacy in low doses, rapid action, broad spectrum coverage, ease of administration, quick metabolism, high palatability, added nourishment, condition alleviation, non-iatrogenicity, minimal side-effects, pleasant odour, and colour coupled with potent pharmacodynamics.[3]

Sannipataja Jwara signifies fever arising from the simultaneous aggravation of *Vata, Pitta,* and *Kapha* in the body, portraying a complex condition with a combination of *Dosha*- associated symptoms. Infections are generally perceived as a consequence of

an imbalance resulting in a weakened immune system, creating an environment conducive to pathogen proliferation.

Bhasmeshwara Rasa, indicated for *Sannipataja Jwara Chikitsa* in *Rasendra Chintamani*[4], acts on all three *Doshas*. A *Khalviya Rasayana*, it comprises *Vanyopala Bhasma* (cow dung cake ash), *Maricha*, and *Shuddha Vatsanabha*. Despite the absence of *Parada* in this formulation, it is suffixed with *Rasa* in its name, *Bhasmeshwara*. Utilizing only three ingredients makes it not only cost-effective but also feasible for use.

Procurement of Ingredients

Gomaya or *Vanyopala* were collected from Udupi Shri Krishna temple Goshala, *Maricha* and *Vatsanabha* were collected from SDM Pharmacy and *Ardraka* was collected from local market of Udupi.

METHODOLOGY

This study delves into antibacterial efficacy, exploring compounds for their potential to inhibit or eliminate bacteria. Focused on evaluating the in-vitro antibacterial activity of *Bhasmeshwara Rasa* on *Salmonella typhi*, the research employs a well-structured approach. Materials include *Salmonella typhi* strain, distilled water, laboratory equipment, and growth medium. *Bhasmeshwara Rasa* and *Anupana (Ardraka swarasa)* samples are integral components. Data preparation occurred in the practical hall of S.D.M College of Ayurveda, Udupi, with subsequent antibacterial activity evaluation at S.D.M Centre for Research in Ayurveda & Allied Sciences. The well diffusion method, incorporating negative (distilled water) and positive (Ampicillin) controls, tests *Bhasmeshwara Rasa* and *Adraka Swarasa*. The experiment follows principles enabling agent diffusion through a solid medium, ensuring concentration efficacy. This study adopts a comprehensive methodology, combining traditional Ayurvedic formulation with contemporary microbiological techniques for a holistic evaluation of antibacterial potential.

Agar Well Diffusion Method

Preparation of Nutrient agar media

Beef extract (1 g), yeast extract (2 g), peptone (5 g) and Sodium Chloride (5 g) were dissolved in 990 ml of distilled water. The pH was adjusted to 7.2 and the volume was made up to 1000 ml. Finally, 15 g agar was added to the media and autoclaved at 121°C for 20 minutes.

Preparation of the Inoculum

Salmonella typhi was procured from Microbial Type culture collection and Gene Bank (MTCC), IMTECH, Chandigarh. Loopful of 48h old culture from the slants was transferred to sterile saline and mixed well to prepare a homogenous inoculum.

Well Diffusion Method

The media was cooled to around 45-55°C, around 20ml each was poured into sterile Petri plates. One ml of the inoculum was immediately added to the plate, swirled for uniform distribution. Wells were bored using a sterile borer. The samples and the antibiotic were dispensed into the wells. Plates were incubated overnight at 37°C and observed after 24 h.

Drug Review

Table 1: Showing details about ingredients of *Bhasmeshwara rasa*

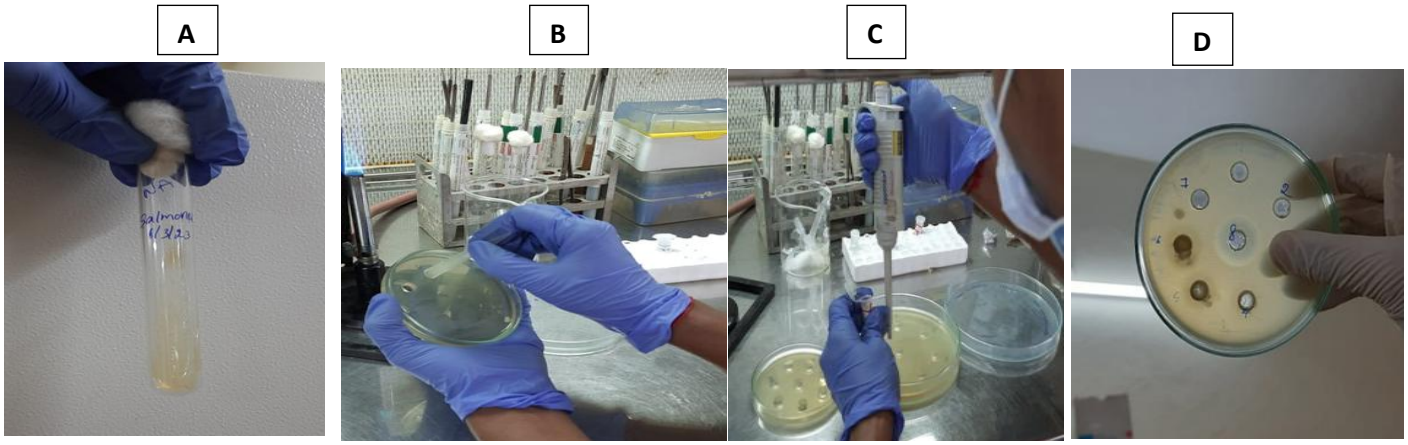
Drug Name	Latin Name	Family	Part Used	Dosage form	Ratio
Vanyopala[5]	-	Bovidae	Dried Dung	*Bhasma*	16 Parts
Maricha[6]	*Piper nigrum*	Piperaceae	Seed	*Churna*	3 Parts
Vatsanabha[7]	*Aconitum ferox*	Ranunculaceae	Rhizome	*Shu. Churna*	1 Parts

RESULTS

Bhasmeshwara Rasa and *Ardraka Swarasa* combination at 50 and 100µl volumes showed mild to moderate antibacterial activity against *Salmonella typhi* when compared to the standard drug.

Table 2: In vitro antibacterial activity of *Bhasmeshwara Rasa* and *Adraka Swarasa* against *Salmonella typhi*

Sample	Volume	Zone of inhibition – (Radius in mm)	
Bhasmeshwara Rasa and Distilled water	25 µl	0	0
	50 µl	0	0
	100 µl	0	0
Bhasmeshwara Rasa and *Adraka Swarasa*	25 µl	0	0
	50 µl	5	5
	100 µl	7	7
Control (DD water)	50 µl	0	0
Standard (*Ampicillin*) 1mg/1ml	30 µl	12	13



Pictures Depicting Antibacterial Study

Figure A- Test organism
Figure B- Well making on Nutrient agar plate
Figure C- Adding different Concentration of sample
Figure D- ZOI seen on the nutrient agar plate

DISCUSSION

The preparation of *Bhasmeshwara Rasa* involves combining specific amounts of *Vanyopala Bhasma, Maricha churna,* and *Shuddha Vatsanabha churna* in a clean *Khalva yantra. Mardana* is then used to meticulously blend these ingredients until achieving a consistent mixture. As per Acharya Dhundhukanatha, the *Anupana* for *Bhasmeshwara Rasa* is *Adraka Swarasa*, with a *Matra* of five *Gunja* (725mg), specifically indicated for *Sannipataja Jwara. Vanyopala Bhasma*, derived from large cow dung cakes, undergoes a burning process to collect carbonless ashes, forming *Gomaya Bhasma*. This preparation exhibits various properties, including purification, wound healing, appetite stimulation, and anti-parasitic effects. *Maricha*, or black pepper, with its pungent taste, possesses qualities such as digestive and anti-parasitic actions. *Vatsanabha*, classified as a *Vishadravya*, showcases *Rasayana* and analgesic properties, with purification enhancing therapeutic effects, even without *Shuddha Tankana* in this formulation. *Bhasmeshwara Rasa*, a *Khalviya Rasayana*, is named with the suffix *'Rasa'* denoting disease-alleviating and life-saving properties, falling under *Nirparadiya, Nirgandha Mardita Khalviya Rasayana*. The absence of *Shuddha Tankana* is justified by the concept of *Visha Marana*, where *Dwiguna Maricha* is used for *Vatsanabha Visha Marana*. In the context of *Jwara*, a manifestation of *Rasavaha sroto vikara* caused by *Agnimandya*, *Sannipataja Jwara* involves mixed symptoms like body ache, diarrhoea, anorexia, along with persistent fever with varying intensity. *Gomaya Bhasma* is said to be *Shodhaka, Vranaropaka, Rochaka, Durgandhanashaka, Krimikeetaghna and Sheetanivaraka. Maricha* has vermicidal, anti-colic, and analgesic characteristics as well as the ability to stimulate hunger and *Vatsanabha* is categorized within the *Visha varga*, which represents toxic substances in Ayurveda. It is *Katu, Tikta* and *Kashaya* in *Rasa*, *Ushna Virya, Katu Vipaka* and it has *Vyavayi* and *Yogavahi Gunas* and it is highly regarded for its application in *Rasa Karma* and as a *Rasayana* treatment.

CONCLUSION

Bhasmeshwara Rasa stands out as a unique formulation designed for *Sannipataja Jwara* in *Rasendra Chintamani*, comprising *Vanyopala Bhasma*, *Maricha*, and *Vatsanabha*. The distinctive ratio of these ingredients makes it an excellent remedy to address *Agnimandyata*, *Asweda*, and *Santapa* associated with *Atisaradi* symptoms. Its *Vyavayi, Vikasi, Sukshma*, and *Teekshna Guna*, coupled with *Lavana-Katu-Kshara rasa, Katu Vipaka, Ushna Virya*, and *Tridosha Shamaka* properties, contribute to its effectiveness. Furthermore, it exhibits *Krimighna, Rakshoghna, Swedajanana,* and *Amapachaka karma*. Alongside its *Anupana*, the formulation demonstrates mild antimicrobial activity against Salmonella typhi, offering a comprehensive approach to combat various symptoms and imbalances associated with *Sannipataja Jwara.*

REFERENCES

1. Shastri K, Chaturvedi G, editors, Elaborated Vidyotini Hindi Commentary on Charaka Samhita of Agnivesha. Chikitsasthana; Jwarachikitsa: Chapter 3, Verse 92-109. Varanasi: Chaukhamba Bharti Academy, 2018; 613
2. Golwalla AF, Golwalla SA. Golwallas Medicine For Students. 25th ed. New Delhi: Jaypee Brothers Medical Publishers (p) Ltd; 2017. 743-46
3. Shastri K, Chaturvedi G, editors, Elaborated Vidyotini Hindi Commentary on Charaka Samhita of Agnivesha. Siddhisthana; Vamanvirechan

vyapatsiddhi: Chapter 6, Verse 15-16. Varanasi: Chaukhamba Bharti Academy, 2018; 1564

4. Mishra S, editor, Siddhiprada Hindi Commentary on Rasendra Chintamani of Dhundhukanatha, Jwaradhikara: Chapter 9, Verse 133-34. Varanasi: Chaukhamba Orientalia, 2000;189
5. Shankar Dajipade Shastri, translated by Vyas Harikrushna Bhagvanlal Aryabhisak Sastu Sahitya Vardhak Karyalaya, Ahmedabad, 2015. p.646. pp 808
6. Lucas D S, Dravyaguna Vijnana-2, 2015, Varanasi: Chaukhambha Vishwabharati, p.358-361 pp.911.
7. Kashinathshastri, Sampadita. Rasatarangini of Shri Sadanada sharma. Delhi: Motilal Banarasidas; 2014; p.653. pp.772.

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***Address for correspondence**
Dr. J M Urvashiba
PG Scholar
Department of PG & PhD Studies in Rasashastra & Bhaishajya Kalpana, Sri Dharmasthala, Manjunatheshwara College of Ayurveda, Udupi.
Email: jhala.urvashiba@gmail.com