Int J Ayu Pharm Chem
ISSN 2350-0204
www.ijapc.com

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Comprehensive Literary Review on *Dhavadi Bhasma*

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ABSTRACT

Introduction:

Ayurveda literature explains the *panchamahabhuta* theory which is considered fundamental to our body and nature. Jala (water) is one of the *panchamahabhutas*. It is the most abundant and essential element of an ecosystem. About 70% of human body is composed of water. Currently availability of fresh water is a major concern. Water is said to be contaminated when it contains pathogens or harmful chemical substances and is said to be polluted.[3] Water contains impurities that are natural and manmade. Usage of polluted water may affect human, animals and birds such as intoxication and produces diseases. The concept of *jalashuddikarana* removing its contamination and make it consumable. Dushitajala lakshana, its treatment and its preventions are explained in *Samhitas* and *Nighantus*. *Dhavadi Bhasma* is one of the *jaladishudhikarana yogas* mentioned in the *Kriyakoumudi*-A Malayalam textbook of *Vishachikitsa*, which helps to enhance its properties and retain its benefits.

Materials and Methods:

The comprehensive review of Dhavadi Bhasma formulation is done from the literature, emphasizing its properties and actions in water purification.

Observation and results:

Dhavadi Bhasma explained by *Kriyakoumudi* contains eight drugs, all of which have *Vishahara* and Krimigna properties and can be used in water purification.

Key Words *Water, Jalashuddhikarana, Dhavadi bhasma*

Received 20th October 22 Accepted 15th November 22 Published 10th January 2023

INTRODUCTION

Water is considered the most valuable and natural source which sustains life. Ayurveda literature explains the *panchamahabhuta* theory which is fundamental to our body and nature. *Jala* (water) is one of the *panchamahabhutas.* Man can survive 5 weeks without food but not more than 5 days without water[1]. It is the most abundant and essential element of an ecosystem. Water pollution currently is burning question. Increased industrialization and globalization have contributed to the deterioration of water quality.

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Almost all the natural water resources have been contaminated up to varying degrees. The presence of biological impurities may prime to waterborne diseases and vector-borne diseases[2]. Usage of vishajusta jala (polluted water) not only confined humans it affects animals and birds such as intoxications and diseases[3]. To reduce the contamination of water purification is essential. A certain amount of self-purification does occur in the rivers by natural forces of purification such as dilution, sedimentation, aeration, oxidation, sunlight, by plant and animal life, but these are not sufficient to render the water potable[4].

Hence, to reduce such contaminations *jalashuddhikarana* is essential. Ayurvedic Samhita has explained much yoga in *dhushita Jala chikitsa and Jala prokshana yogas* are explained in *Susrutha Samhita kalpasthana*[5], *Astanga Sangraha sutrasthan*[6] *and Kriyakoumudi*[7].

Dhavadi Bhasma(refer for ingredients mentioned in Table1.1) is one such yoga used to reduce the poison or contaminations of the polluted water explained in Kriyakoumudi-A Malayalam textbook of *Vishachikitsa*, which may help to purify the water and retain its benefits[7].

Table 1 Drug profile of the *dhavadi bhasma*

Drugs	Botanical name	Family name	Synonyms
Dhava[8]	*Anogeissue latifolia (Roxb. ex DC.)*	*Combretaceae*	*Dhava, naditaka, bharodvaha, sthira, kashayamadhura, tvakka, sthira, goura, dhurandara*[9]
Arjuna[10]	*Terminalia arjuna*	*Combretaceae*	*Phalghuna, shwetavaha, nadisarja*[11]*, indradu, devasaalah,veeraruksha*
Paribhadra[12]	*Erythrina variegate Linn*	*Fabaceae*	*Kantaki palasa, Kantakikimshuka, Raktapuspa, Mandaraka, Nimbadruma*[13]*, Bahupushpa, Rakta kesara, Rakthakusuma*
Asana[14]	*Pterocarpus marsupium Roxb.*	*Fabaceae*	*Beejaka, Vijayasara, Kavya, Priya, Bandhukapaka, Shouri, karshya, Sarjaka, Mahasarja, Tishya, Sugandha neela niryasa , Peetashalaka, Krushna-sarjaka .*
Aragvada[15]	*Cassia fistula Linn.*	*Caesalpiniaceae*	*Aragvadha ,Rajavruksha , Shampaka, Chaturangula, Arevata, Suvarnaka, Deerghaphala, Suvarnabhusana, Krtamala, Vyadhighata, Kiramalaka, Kritamala*
Somavalka[16]	*Acacia Suma Roxb.*	*Mimosaceae*	*Kaidarya, Mahaphala, Mahavalkala, Katphala, swetasara, khadara*[17]
Nirgundi[18]	*Vitex negundo Linn.*	*Verbenaceae*	*Sindhuvara, sugandika, bhutakeshi, shitasaha, indrasurasa,*
Mushkaka[19]	*Schrebera swietenioides Roxb.*	*Oleaceae*	*Mushkaka, kshari, shikhari, mokshaka, ghantapatali, musti, ksharasrestha, golidha*[20]

Table 1.2 List of *Rasapanchaka* (factors determining the function of this formulation) of ingredients of the *dhavadi bhasma*

Drug	*Rasa (taste)*	*Guna (property)*	*Veerya (potency)*	*Vipaka*	*Karma(mode of action)*
Dhava	*Kashaya*	*Laghu Ruksha*	*Sheeta*	*Katu*	*Kaphapitta shamaka Vishaghna Raktashodaka*
Arjuna	*Kashaya*	*Laghu Rukasha*	*Sheeta*	*Katu*	*Hrudya Kapha pitta shamaka*

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					Raktasthambaka *vishaghna*
Paribhadra	*Katu* *Tikta*	*Laghu*	*Ushan*	*Katu*	*Kaphavata shamak* *Krimigna* *Kustagna*
Asana	*Kashaya* *Tikta*	*Laghu* *Ruksha*	*Ushna*	*Katu*	*Kaphapitta shamaka* *Krimigna* *Kustagna* *Raktashodaka*
Aragvada	*Madhura*	*Guru* *Mrudu* *Snigda*	*Sheeta*	*Madhura*	*Raktashodaka* *Kustagna* *Kandugna*
Somavalka	*Tikta* *Kashaya*	*Laghu* *Ruksha*	*Sheeta*	*Katu*	*Vata pitta shamaka* *Kapha pitta shamaka* *Krimigna* *Kustagna*
Nirgundi	*Katu* *Tikta*	*Laghu* *Ruksha*	*Ushna*	*Katu*	*kandugna* *Kaphavata shamaka* *Krimigna* *Shothahara*
Mushkaka	*Katu* *Tikta*	*Laghu* *Ruksha*	*Ushna*	*Katu*	*kustagna* *Kaphavata hara* *Visha ,* *medo -roga,* *gulma kandu,* *krimi,* *pliharoga, udararoga*

Here the method of preparation not mention the context, hence it is taken in the *anukta mana* of the mentioned drugs (refer Table 1.1) and these drugs burnt in the open air to prepare ash. Thus, the prepared formulation will be stored in clean and sterile glass bottles, then spread over the water reservoirs and lakes, or one *Anjali pramana bhasma* is spread over the pot containing drinking water.

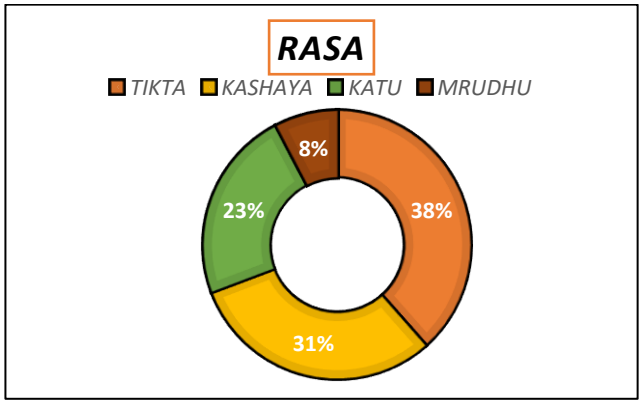

Diagram 1 Analysis of *rasa* of ingredients of *dhavadi bhasma*

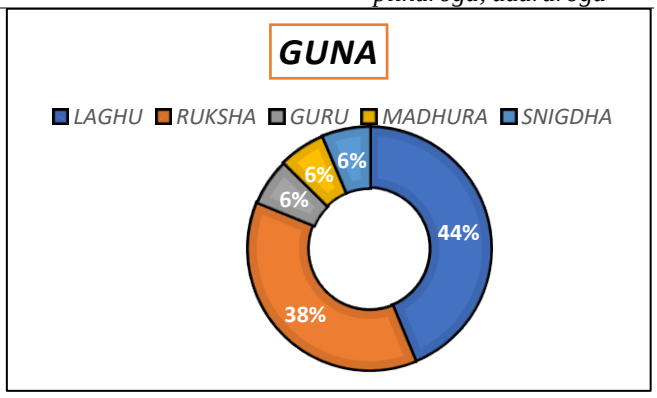

Diagram 2 Analysis of *guna* of ingredients of *dhavadi bhasma*

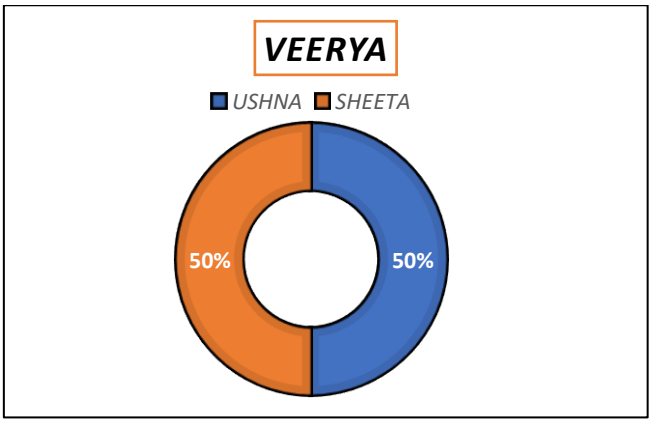

Diagram 3 Analysis of *veerya* of ingredients of dhavadi bhasma

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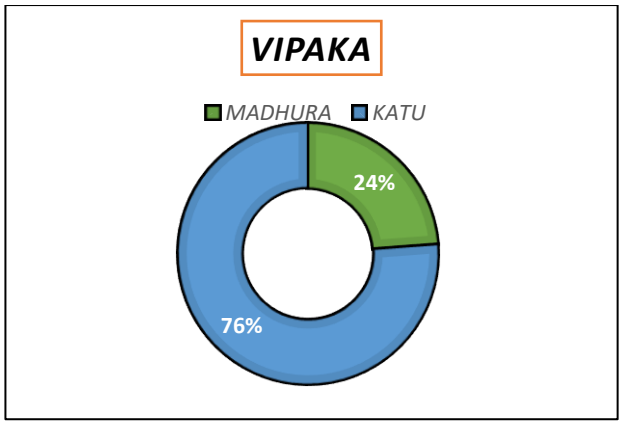

Diagram 4 Analysis of *vipaka* of ingredients of *dhavadi bhasma*

DISCUSSION

Acharya Susruta has mentioned the qualities of polluted water covered with slush, algae, lotus leaves, having a bad smell, colour, taste, etc. should be considered defective. *Dhavadi Bhasma* explained by *Kriyakoumudi* contains eight drugs, the combination of these eight drugs in the *bhasma* form and obtained through the burning of all drugs which have (Table1.2) *Vishahara*, *Krimigna,* and *Kustagna* properties and can be used in water purification.

Most of the drugs having tikta, kashaya, *katu and madhura rasa* (refer to Diagram 1). *Katu, tikta, kashaya rasa* pacifies *kapha dosha*[21]. *Katurasa* helps to eliminate waste products (malas), kills the krimi and helps in removal of toxic substances and also tikta rasa has *krimighna* and *vishaghna* property.

Based on *gunas* (refer to Diagram 2), most of the drugs having laghu and ruksha guna helps to spread the medicine and help in fast diffusion of *dravyas* to provide quicker action on *visha reduction*, guru guna act as tarpana and balavardaka. Mrudhu and snigdha guna have vatahara properties.

Based on *veerya* (refer to Diagram 3) the active principles in this formulation, most of the ingredients have sheeta veerya, and it acts as *pittahara, sthambaka, raktaprasadaka, and prahladana (refreshing). Ushna veerya* and it's on *kapha* and *vata dosha hara* helps in the pachana of *Dravyas*.

Based on the *vipaka* (refer to Diagram 4) almost 76% of ingredients have *katu vipaka* which pacifies *kapha dosha* and 24% of the drugs have *madhura vipaka* which pacifies *pitta* and *vata dosha*[22].

Most of the ingredients have *kapha vata hara, vishagna, kandugna, kustagna, raktashodaka,* and *raktaprasadak and* exhibit their antitoxic action. The *bhasma* will help in removing as well as neutralizing the polluted water by retaining its natural qualities. Also, the chemical constituents of all the ingredients ellagic acid, pterosupin, marsupinol, lupeol, kinotannic acid, lapachol, apigenin, p-coumaric acid, triacontanol[23], in *dhavadi bhasma* will possess a depurative effect on the water thereby maintaining the purity. The drugs in the *dhavadi bhasma* possess pharmacological actions like anti-bacterial, anti-fungal, anti-poisonous, depurative action, etc. Hence, with the help of *Vishaghna* property of Dhavadi Bhasma it is acting on toxin and reduces and removes the impurities and toxins from polluted water.

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CONCLUSION

In detailed information, dhavadi bhasma is one of the effective anti-poisonous formulations that should be tried for experimental and clinical trials *in jalashuddikarana.* This formulation is mentioned in *Kriyakoumudi* for the purification of the water, as the method of preparation does not mention the context, it should be taken in anukta mana of the mentioned drugs and prepared Bhasma. It is observed that the combined action of these drugs along with its chemical constituents, *gunas, rasapanchakas, bhasma* form, etc. will result in the removal of impurities from the water. The action of this group of drugs may be in the form of killing dangerous organisms, decontaminating harmful chemicals, upholding the pH of the water, etc. Categorizing an economic and easily available system for refining the quality of water remains essential for any remote community. This method is cost-effective and easily reproducible with the lowest ill- effects on wildlife and human health also. So these methods need to be re-energized and brought into practice. All the above-mentioned ingredients are safe, harmless, easily available, and cost-effective. So further studies and standardization of this formulation can be conducted to see the effect of these combinations in water purification.

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