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An exploratory review of therapeutic efficacy of antitoxic formulation in Ayurveda

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Abstract

Agada (Ayurvedic antidote) is one of the treatment modality described by Acharya Charaka. It is the specialty of Agadatantra (Ayurved toxicology). It is indicated not only in acute and chronic poisoning conditions but also in the disease conditions with various routes. They are used in clinical practice but there are certain hurdles like exact dose, mechanism of action due to which they are not preferred in acute conditions like anti snake venom, British Anti Lewisite, calcium edetate. There is lack of evidences for their use in acute conditions. But certainly they may prolong the survival time in emergency conditions saving the life of the patient. This review article is intended to compile all the Agada described in different reference books along with their contents, indications, routes of administration and pharmacological properties established through preclinical and clinical studies. It may help the physicians to use them widely and scholars to conduct researches and generate the evidences for their therapeutic efficacy.

Extensive literature search was conducted manually from different references in Ayurveda and text books of Agadatantra. Search engines like Pubmed, Scopus, Google scholar, AYUSH research portal, DHARA were used for research papers published online. The data was segregated, edited, consolidated and reviewed critically to explore the scientific importance of various Agada. It becomes easy to refer these formulations at a glance. In the present scenario, people are directly or indirectly exposed to various harmful toxins or chemicals. They may cause hazardous effects on body or certain disorder. Agada (Antitoxic formulations) mentioned in Samhita are useful in treating harmful effects of such chemicals or toxins and also useful in other fatal poisoning.

1. Introduction

Poisoning is one of the most common causes of deaths in India. Snake bite, scorpion bites, organophosphorous poisoning, suicidal and accidental poisoning are very common in rural India. The patients die due to delayed reporting to the hospital. Hence there is a need of awareness regarding certain easily accessible remedies for such emergency conditions so that the precious time of the patients could be saved to get the life saving treatment.

Agadatantra (Ayurveda toxicology) one of the eight branches of Ashtanga Ayurveda describes various antidotes or antitoxic formulations which are known as *Agada* (Shastri, 2014). There are various *Agada* preparations explained in different text books of Agadatantra. They are used in the management of various types acute, sub acute and chronic poisoning by the *Visha Vaidyas* of various regions of the India. *Agada* are not only indicated in poisoning but also beneficial in treating other disease conditions. They are used in clinical practice but there are certain hurdles like exact dose, mechanism of action due to which they are not preferred in acute conditions like anti snake venom, British Anti Lewisite, Calcium edetate. There is lack of evidences for their use in acute conditions.

But certainly they may prolong the survival time in emergency conditions saving the life of the patient. Some of the *Agada* are studied scientifically and proved to be efficacious like *Bihwadi Agada* in scorpion bite (Binorkar *et al.*, 2013), *Sindhuvaradi Agada* in doxorubicin induced cardiotoxicity (Karoshi *et al.*, 2018), *Siddhartakadi Agada* in malarial fever (Shukla *et al.*, 2018). But rest of the *Agada* still needs scientific exploration in terms of their dose, route and duration of administration because dose and duration are not described in most of the *Agada*. It has to be fixed for appropriate results. Route of administration are multiple which may provide a wide scope but a better route of administration is to be decided for its fast absorption. So it will be helpful for the physician to decide whether to use in acute or chronic condition depending upon the rate and time of absorption. Preventive and therapeutic importance of *Agada* needs to be explored. Hence, this review article attempts to explore such antidotes described by various Sages of Ayurveda. It provides compressive knowledge regarding *Agada* and their therapeutic utility. It may help the physicians to use them widely and scholars to conduct researches and generate the evidences for their therapeutic efficacy.

2. Materials and Methods

The data was located from treatise of Ayurveda and various text books of Agadatantra as well as articles in various journals. Extensive literature search was conducted manually from different reference books of Ayurveda and text books of Agadatantra. Search engines like Pubmed, Scopus, Google scholar, AYUSH research portal, DHARA were used for research papers published online. The data was segregated, edited, consolidated and reviewed critically to explore the scientific importance of various *Agada*.

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3. Results

3.1 Inclusion of *Agada*

Acharya Charaka has described different types of *visha*, their manifestation, diagnosis and management along with *Agada* (Tripathi

and Shukla, 2006). Acharya Sushruta has contributed whole Kalpanasthana for the same (Shastri, 2003). Acharya Vagbhata has described *Agada* extensively for the clinical practice (Gupta, 2005; Tripathi, 2012). They are also described in Rasagrantha like Yogaratnakara and Bharat Bhaishajya Ratnakara. (Table 1, 2, 3, 4, 5, 6).

Table 1: *Agada* described in the different *Samhita*

Charaka Samhita (Tripathi and Shukla, 2006).	Sushruta Samhita (Shastri, 2003).	Ashtanga Samgraha (Gupta, 2005)	Ashtanga Hridayam (Tripathi, 2012)	Other References
Gandhahasti Agada Mrita sanjivana Agada Mahagandhahasti Agada Rushabhakadi Agada Dhooma Agada Ksharaagada Param agada Sarvavishnashaka Agada Panchshirisha Agada Sitadi Agada	Ajitaagada Dhavadi Agada Drakshadiagada Dushivishari Agada Ksharaagada Kumkumadi Agada Kushthadi Agada Mahaagada Mahasugandhi Agada Manduka visari Agada Meshshrungyadi Agada Mushika vishari Agada Panchashirisha Agada Rajanyaadi Agada Rishabha Agada Sanjivana Agada Shirishadi Agada Shleshmataka Agada Tarksya Agada Vamshatwagadi Agada	Ajita Agada Ashtanga Agada Aushnasa Agada Balasurya Agada Bilwadi Agada Bramha Agada Dashanga Agada Dushivishari Agada Gandhahasti Agada Himavana Agada Kautilyadayita Agada Koshyatakadi Agada Kshara Agada Lodhradi Agada Mahaagada Mahasugandha Agada Maheshwara Agada Mritajivana Agada Mrita sanjivana Agada Murvadi Agada Paravatadi Agada Rushabha Agada Sanjivana Agada Sarvakarmika Agada Shleshmataka Agada Shivakruta Agada Sindhuvaradi Agada Sitadi Agada Sugandhi Agada Suryodaya Agada Tagaradi Agada Tarksya Agada Vachadi Agada Vajra Agada Vruschika Vishanashaka Agada Yapana Agada	Ashtanga Agada Bilwadi Agada Champak agada Chandrodaya Agada Dashanga Agada Dhavadi Agada Dhooma Agada Gandhamadana Agada Gomaya Agada Gonus Sarpa vishanashaka Agada Himavana Agada Katukadi Agada Kita vishari Agada Kumkumadi Agada Kushthadi Agada Lodhra sevyadi Agada Lutavishahara Agada Maheshwara Agada Mandara Agada Meghanada Agada Meshshrungyadi Agada Mushika vishari Agada Nakulyadi Agada Padmaka agada Sarvakarmika Agada Sankrantikari Agada Sitadi Agada Vachadi Agada Vajrachurna Agada	Churna Agada Tanduliyakadi Agada (Tripathi, 1994) Ghritadi saptaka Agada Dashanga Agada Shleshmatakadya Agada (Shastri, 2015) Manjishthadi Agada (Shah, 2005) Pippalyadi Agada (Shastri, 1994) Trimurti Agada (Prakash and Bharati, 2021; Thampuram, 1970; Cherukulappurath)

Table 2: Details of Agada mentioned in the Charaka Samhita (Tripathi and Shukla, 2006)

Yoga	Ingredients	Indication	Route of administration
Gandhahasti Agada	Shweta, Vacha, Asvagandha, Hingu, Amruta, Kushtha, Saindhava Lavana, Lasuna, Sarsapa, Kapittamadhya, Tantuka, Karanja, Shunthi, Pipali, Marich, Shirisha, Haridra, Daruharidra, Vamshalochana Goat urine, bile of cow and horse	Cures poison in head region, insanity, epilepsy, diseases of eyes, all types of fever, affliction by evil spirits, supernatural bodies, choleric diarrhea, indigestion, fainting, itching, Kshaya, Dourbhalya, Madatyaya, Pandu unconsciousness, ulcers caused by a poisonous arrow, Piles, Mudagarba (obstructed fetus), skin diseases etc.	Nasya, Local application, anjana (collyrium), pana (Oral administration)
Mritasanjivani Agada	Srkka, Palva, Kankshi, Saileya, Rochana, Tagara, Ela, Kunkuma, Mamsi, Agra, Khadira, Brihati, Suradaru, Chandana, Madhuka, Haridra, Hingu, Pippali, Hribera, Mudgaparni, Vidanga, Lodhra	Cures all types of poison	Oral administration
Mahagandhahasti Agada	Patra, Agar, Must, Ela, Twak, Utpala, Kanka, Balaka, Usira, Priyangu, Haritala, Manahshila, Sunthi, Rajni, Madhuka, Somaraji, Vaca, Ruha, Surasa, Marich, Ajaji, Aparjita, Dhyamaka, Nimba, Gairika Anjan, Harenuka, Vanyanakha	Rat poisoning, spiders poisoning, all types of snake bite, poisons from roots and rhizomes, Fever, Indigestion, Pruritus, Scabies, Eczema, Cholera etc	Oral administration, collyrium, local application
Panchashirisha Agada	Five parts of Shirisha (Albizia lebbek) (roots, flower, leaves, seeds, bark)	All types of poisons	Oral administration, local application
Parama Agada	Vacha, Vanshatwacha, Patha, Tagara, Surasa manjiri, Bala, Nagabala, Rasna, Kushtha, Shirisha, Haridra, Daruharidra, Pithavana, Sarivana, Shweta Aparajita, Ajagandha, Shilajatu, Katruna, Katabhi, Javakhara, Gruhadhooma, Manashila, Bile of Rohitaka fish	Keeta visha (Insect bite)	Snuff, collyrium, and local application
Sarva Vishanashaka Agada	Kakanda rasa and Tanduliyaka Kakanda rasa and Peacock's bile	All types of poison	Oral administration and local application
Rushabhakadi Agada	Rushabhaka, Jeevaka, Bhargi, Madhuka, Utpala, Dhanyaka, Nagakesara, Jeeraka, Aparajita, Kola	Dyspnoea due to poisoning, fever	Oral administration
Dhooma Agada	Mayura pankha, bones of Bakula, Sarshapa, Chandana, Ghee Tagara, kushtha, head of the snake, flower of Shirisha and ghee. Lakha, Khasha, Tejapatra, Guggulu, Bhallataka, flower of Arjuna, Raala, shweta Aparajita	Poison in house, clothes, all types of poison, inflammation, snake, rats, worms fever, affliction by evil spirits, supernatural bodies,	Fumigation
Ksharagada	Ash of Palasha, Haridra, Daruharidra, Surasamanjiri, Jatamansi, Hingu, Sariva, Madhuka, Shunthi, Maricha, Pippali, Kushta, Balhika, Laksha.	All types of poisons, inflammation, tumors, skin diseases, piles, fistula, spleen diseases Epilepsy, worms, hoariness of voice, Anaemia, Indigestion, cough, insanity, evil spirits	Oral administration
Sitadi Agada	Sita, Vaigandhika, Draksha, Payasa, Madhuka, Madhu	Shanka visha	Oral administration

Table 3: Details of Agada mentioned in the Sushruta Samhita (Shastri, 2003)

Yoga	Ingredients	Indication	Route of administration
Ajita Agada	Vidanga, Patha, Triphala, Ajamoda, Hingu, Vakra, (Tagara), Trikatu, all (the five) kinds of salts, and chitraka pasted with honey, should be kept for a fortnight inside a cow's horn Covered with a lid of the same material	In all types of animate and inanimate poisons	Oral administration
Dushivishari Agada	Pippali, Pippalimoola, Dhyamaka, Jatamansi, Lodhra, Ela, Suvarchika, Kutannatam, Natam, Kushta, Yashtimadhu, Raktachandana, Gairika	Dushivisha (chronic/latent poison)	Oral administration
Drakshyadi Agada	Draksha, Sugandha, Nagavruttika, shweta, Samanga, Suraa, Kapittha, Bilva, Dadima, Sita sindhuvara, Ankotha, gairika, honey	Mandali visha	Oral administration
Gandhahasti Agada	Shweta, Vacha, Asvagandha, Hingu, Amruta, Kushtha, Saindhava Lavana, Lasuna, Sarsapa, Kapittamadhyha, Tantuka, Karanja, Shunthi, Pipali, Marich, Shirisha, Haridra, Daruharidra, Vamshalochana Goat urine, bile of cow and horse	Cures poison in head region, insanity, epilepsy, diseases of eyes, all types of fever, affliction by evil spirits, super-natural bodies, choleric diarrhea, indigestion, fainting, itching, Kshaya, Dourbhalya, Madatyaya, Pandu, unconsciousness, ulcers caused by a poisonous arrow, Piles, Mudagarba (obstructed fetus), skin diseases etc.	Oral administration
Ksharagada	Dhava , Asana, Tinisha, Madanaphala, Palasha, Amrataka, Arjuna , Paribhadra, Lodhra, Kapittha, Kutaja, Ankola, Karanja, Amalaki, Bujapatra, Shami, Shleshmataka, Ashmanta, Gojihwa, Kantaka, Chirabilwa, Arka, Shonyaka, Manjishtha , Shigru, Gopagontha, Karaveera, bhasmas of these drugs should be made; Gomutra is mixed in it filtered like the way of preparation of ksharajala and when it solidifies the powders of drugs of Pippali, Gajapippali, Koshamra, Saptaparna, Elavaluka, Varanga, Ela, Manjishtha, Kushta, Jalavetasa, Shyonaka, Vidanga, Atasi, Sariva, Sarshapa, Tanduliya, Devadaru, Saralakashtha, Plaksha, Gruhadhuma, Karanja, Nagadanti, Dravanti, Jalavetasa, Varuna, Vacha, Eranda, Bilwa, Loha these are added and stored in iron vessel	Sthavara and jangama visha (animal and plant poison), urinary gravel, calculus, piles, abdominal tumor, cough, pain, enlargement of abdomen, indigestion, duodenal disease, aversion of food, dropsy , ulceration of mouth and severe dyspnoea.	Pana (Oral administration), Nasya (nasal instillation) and Abhyanga (Massage), to be applied on musical instruments and other articles
Kushthadi Agada	Kushtha, Tagara, Vacha, Patha, Suvarchika, Gruhadhooma, Haridra, Daruharidra	Trikantaka Visha (Wasp bite)	-
Mahaagada	Trivruta, Langali, Haridra, Dariharidra, Madhuka, Manjishtha, Sunthi, Maricha, Pippali, Panchalavana, Ajamutra Bhavana	Visha vega (impulses of poison)	Oral administration, collyrium, local, Nasal, application, Massage

Mahasugandhi Agada	Chandana, Agru, Kushtha, Yavaphala, Bharangi, Jata, Nagara, Priyangu, Bala, Toya, Sarjrasa, Punnaga, Satpushpa, Elavaluka, Gairika, Dhyamaka, Katunnata, Silapushpa, Saileyapatra, Kalanusariva, Usira, Guggulu, Kumkuma, Bimbi, Sarpakshi, Musta, Haridra, etc. bile of cow, ghee, honey	Snake bite (Vasuki snake bite), Bended shoulders	Oral administration, local application
Mushika vishari Agada	Kustha, Trikatu, Dārvi, Madhuka, two kinds of salts (Saindhava and Sauvarchala), Mālati, Nagapuspa (flower the drugs of madhura gana (Kakolydi group) pasted with the expressed ts of the juice of Kapittha, mixed with sugar and honey.	Mushika visha (rat poison)	Oral administration
Panchashirishadi Agada	Five parts of Shirisha (Albizia lebbeck) (roots, flower, leaves, seeds, bark) and Trikatu, Rock salt, honey	Keeta visha (Insect bite)	Oral administration,
Rajanyadi Agada	Haridra, Gruhadhooma, Tagara, Kushtha, Palasha	Galagolika Visha	-
Rushabha Agada	Mamsi, Harenu, Triphala, Murangi, Rakta (Manjistha), Latā (Priyani Yastika (Madhu Yasti), Padmaka, Vidanga, Talisa, Sugandhika. Eu. Kustha, Patra, Chandana (Red Sandal wood), Bhragi, Paola, Kinihi (Apamārga), Mrgadani, Karkatik, Puras (Guggulu), Pāl Ina, Well Kramuka, flowers Of Surasya (Tulsi) And/ Or Aruskara (Bhallataka) well pasted with honey and with the bile of a boar, Godha, peacock, Shallaki, cat, deer and of mongoose, should be preserved inside a horn.	All types of poisoning	External administration
Sanjivana Agada	Laksha, Harenu, Nalada, Priyangu, Both Kinds of Sigru, Yastika, Prithvika, (Ela) and Rajani (Haridra) should be powdered, mixed with honey and ghrita, placed inside a cow's horn and covered as before.	Snake bite. Capable of reviving even forlorn (almost dead) persons.	Oral, collyrium, and snuff
Shleshmataka Agada	Shleshmantaka, Katphala, Matulunga rasa, Shweta Giriha, Kinihi, Sita, Tanduliyaka	Cobra and krait Snake bite	Oral administration
Tarkshya Agada	Prapoundarika, Suradaru, Musta, Kalanusary, Kaurohini, Sthouneya, Dhymaka, Guggulu, Punnaga, Talisa, Suvarchika, Kujannata (Shyonaka), Ela, Sita, Sindhuvara, Aaileya, Kustha, Tagara, Priyangu, Rodhra, Jala (Bālaka) Kañchana, Gairika, Magadha, Chandana And Saindhava salt taken in equal parts and powdered finely should be kept with honey inside a horn.	Tarkshya snake bite	Oral, Nasal, Collyrium, Massage
Vamshatwagadi Agada (Sarvakarmika Agada)	Scrapings of green bamboo, Amalaka, Kapittha, Katutrika, Haimavati, Kushtha, Karañja Seeds, Tagara and Shirisha flowers should be powdered, and pasted with cow's bile.	Spider, mouse, snake or (of any other poisonous) insect. Obstruction of stool, urine, flatus, foetus, pterygium, blindness, cataract, ulcers of sclera and cornea	Oral, Nasal, collyrium, suppository, local application, used as a plaster, snuff or as a drink

Table 4: Details of Agada mentioned in the Ashtanga Sangraha (Gupta, 2005)

Yoga	Ingredients	Indication	Route of administration
Ajita Agada	Vidanga, Patha, Triphala, Ajamoda, Hingu, Vakra, (Tagara), Trikatu, all (the five) kinds of salts, and chitraka pasted with honey, should be kept for a fortnight inside a cow's horn Covered with a lid of the same material	In all types of animate and inanimate poisons	Oral administration
Ashtanga Agada	Bark and seeds of Vamsa, Katuka, Patala, Sunthi, Shirisha, Ativisha, Gavedhuka, Vacha, Cow urine	Snake bite (gonasa)	Oral administration
Aushnasa Agada	Surala, Pavaki, Soma, Bhogwati, Amruta, Tagara, Adhaki, Kinihi, Somaraji.	-	-
Balasurya Agada	Manahshila, rochana, Chanda, Twaka, Ela, Sarshapa, Sprukka, Hingula, Kasmira and Kanta	Destroy the effect of poison, bestows wealth, protection, victory and property	-
Bilvadi Agada	Bilwa, Surasa, Karanja, Tagara, Surahwa, Amalaki, Haritaki, Vibhitaki, Shunthi, Maricha, Pippali, Haridra, Daruharidra	Snake bite, Spider, Scorpion, Rat and Garavisha (low potent poisons), Visuchika (Cholera), Ajeerna, Jwara	Oral, Nasal administration, Collyrium, Local application
Bramha Agada	Roots of katukalabu, Gopitta (bile of cow)	All poisons	To wear on body
Dashanga Agada	Jatamamsi, Twaka, Patra, Tulasi, Manahshila, Chandana, Nagakeshar, Haridra, Vyaghranakha, Sunthi.	Poison, bad omen, enlarged glands, eruptions, wound caused by poisoned weapons, traumatic wounds	-
Dushivishari Agada	Pippali, Pippalimoola, Dhyamaka, Jata-mansi, Lodhra, Ela, Suvarchika, Kutannatam, Natam, Kushta, Yashtimadhu, Raktachandana, Gairika	Dushivisha (chronic/latent poison)	Oral administration
Gandhahasti Agada	Shweta, Vacha, Asvagandha, Hingu, Amruta, Kushtha, Saindhava Lavana, Lasuna, Sarsapa, Kapittamadhya, Tantuka, Karanja, Shunthi, Pipali, Marich, Shirisha, Haridra, Daruharidra, Vamshalochana Goat urine, bile of cow and horse	Cures poison in head region, insanity, epilepsy, diseases of eyes, all types of fever, affliction by evil spirits, super natural bodies, choleric diarrhea, indigestion, fainting, itching, Kshaya, Dourbhalya, Madatyaya, Pandu, unconsciousness, ulcers caused by a poisonous arrow, Piles, Mudagarba (obstructed fetus), skin diseases etc.	Nasya, Local application, anjana (collyrium), pana (Oral administration)
Himavana Agada	Panchvalkal (Shirisha, Pipala, Vata, Plaksha, Vetasa), Vacha, Yastimadhu, Nagapushpa, Ela, Jeevaka, Rishabhaka, sheeta (Chandana), Utpala, Kshoudra, Sita, Padmaka	Snake bite (mandali snakes), Shwathu, Visarpa, Visphota, Jwara, Daha	External and Oral administration
Kautilyadayita Agada	Priyangu, Tagara, Laksha, Manjishtha, Madhuka, Madhu, Haridra	Unconsciousness caused to poison, blows, hanging, drowning	Oral administration
Koshyatakadi Agada	Koshataki, Chitraka, patha, Suryawalli, Amruta, Abhaya, Shirisha, Kinihi, Haridra, Daruharidra, Punarnava, Trikatu, Bruhati, Sariva, Bala, ghee, honey.	Vishavegantara (between stages of poisoning)	Oral administration
Ksharagada	Dhava , Asana, Tinisha, Madanaphala, Palasha, Amrataka, Arjuna , Paribhadra,	Sthavara and jangama visha (animal and plant poison), urinary gravel,	Pana (Oral administration) Nasya (nasal instillation)

	Lodhra, Kapittha, Kutaja, Ankola, Karanja, Amalaki, Bujapatra, Shami, Shleshmataka, Ashmanta, Gojihwa, Kantaka, Chirabilwa, Arka, Shonyaka, Manjishta , Shigru, Gopagontha, Karaveera, bhasmas of these drugs should be made; Gomutra is mixed in it filtered like the way of preparation of ksharajala and when it solidifies the powders of drugs of Pippali, Gajapi ppali, Koshamra, Saptaparna, Elavaluka, Varanga, Ela, Manjishta, Kushta, Jalavetasa, Shyonaka, Vidanga, Atasi, Sariva, Sarshapa, Tanduliya, Devadaru, Saralakashtha, Plaksha, Gruhadhuma, Karanja, Nagadanti, Dravanti, Jalavetasa, Varuna, Vacha, Eranda, Bilwa, Loha these are added and stored in iron vessel	calculus , piles , abdominal tumor, cough, pain , enlargement of abdomen, indigestion, duodenal disease, aversion of food, dropsy, ulceration of mouth and severe dyspnea.	and Abhyanga (Massage), to be applied on musical instruments and other articles
Lodhradi Agada	Lodhra, Shirisha flowers, Samanga, Hingu, Renuka, Kana, Ushana, Ela, Nepali, vacha, yashtimadhu, utpala, sinduvaraka, roots of Mandara, karanja seeds, jyotishmati, Nata, Kushtha, Shweta, Girikarnika, Kanya, honey, gopitta	Poisons of Snake, rat, wasp, jackal, cat and python, evil spirits, fever, epilepsy, insanity, abdominal tumors, indigestion, cholera.	Oral administration
Mahaagada	Trivruta, Langali, Haridra, Dariharidra, Madhuka, Manjishtha, Sunthi, Maricha, Pippali, Panchalavana, Ajamutra Bhavana	Visha vega (impulses of poison)	Oral administration, collyrium, local, Nasal, application, Massage
Mahasugandhi Agada	Chandana, Agru, Kushtha, Yavaphala, Bharangi, Jata, Nagara, Priyangu, Bala, Toya, Sarjrasa, Punnaga, Satpushpa, Elavaluka, Gairika, Dhyamaka, Katunnata, Silapushpa, Saileyapatra, Kalanusariva, Usira, Guggulu, Kumkuma, Bimbi, Sarpakshi, Musta, Haridra, etc.bile of cow, ghee, honey	Snake bite (Vasuki snake bite), Bended shoulders	Oral administration, local application
Maheshwara Agada	Ajagandha, Gruhadhuma, Guggulu triturated with Gomutra (cows urine)	In all types of poison	-
Mrutajivana Agada	Nimba, Gruhadhuma, Phanita, Bruhati fruit mixed with Gopitta (bile of cow)	In all types of poison	Oral use
Mrutasanjivana Agada	Gopitta (bile of cow), Kushtha, Surasa, Madhuka, Haridra, Daruharidra, Vishala, Rajani, Kushtha, Ashwa pitta, vyosha, tumbaru, Vacha, five parts of Shirisha	In all types of poison	Oral use
Murvadi Agada	Moorva, Amruta, Tagar, Pippali, Patola, Chavya, Chitraka, Musta, Vidanga, Vacha with buttermilk, warm water, kanji or amla rasa	Agnimandya due to Garavisha	Oral use
Paravatadi Agada	Paravaat shakrut (fecal matter of pegin), Tagar (veleriana wallichii), Haritaki (terminallia Chebula),	Scorpion bite	Local application

Rushabha Agada	Vishwabhaishajyam (zingiber officinale), Bijpuraka Swaras (Juice of Citrus Medica) Mamsi, Harenu, Triphala, Murangi, Rakta (Manjistha), Latā (Priyani Yastika (Madhu Yasti), Padmaka, Vidanga, Talisa, Sugandhika. Eu. Kustha, Patra, Chandana (Red Sandal wood), Bhragi, Paola, Kmihi (Apamārga), Ph, Mrgadani, Karkatik, Puras (Guggulu), Pālīna, Well Kramuka, flowers Of Surasya (Tuls) And/ Or Aruskara (Bhallataka) well pasted with honey and with the bile of a boar, Godha, peacock, Shallaki, cat, deer and of mongoose, should be preserved inside a horn.	All types of poisoning	External administration
Sanjivana Agada	Chandana, Kumkuma, Kustha, Kamkshi, Laksa, Priyangu, Musta, Sthauneya, Shaileya, Rochana, Madana, Plava, Srivestaka, Vidanga, Ela, Vishala, Ala, Manashila, Surasa, Sprukka, Haridra, Daruharidra, Valaka, Hingu, Siddhart-haka, Padmucharini, Padmakesara, Jati pushpa, pravala, Arkapushpa, Shirisha, Rodhra, Bruhati, Kaunti, Madhuka, Gandhanakuli, Mudgaparni, Kana, Shyama, Dhyamaka, Nalada, Nata, Sinduvara, Shamyaka, Devadaru, Mayuraka.	Regains consciousness to the person affected by the poison.	Oral, collyrium, and snuff, inhalation, fumigation, local application, wearing on body
Sarvakarmika Agada	Karavira, Arka, Langali, Kana, Patha, Maricha, Sour gruel	Snake bite (Vyantara snakes.)	Oral administration
Shivakruta Agada	Gajapippali, Kasis, Kshara, Yashtimadhu, Mayuraka, Rakta, Nata, Vacha, Danti	-	-
Shleshmataka Agada	Shleshmantaka, Katphala, Matulunga rasa, Shweta Giriha, Kinihi, Sita, Tanduliyaka	Cobra and krait Snake bite	Oral administration
Sinduvaradi Agada	Sinduvara roots, Vacha, Aparajita, water	Darvikara (Cobra) Snake Bite	Oral administration
Sitadi Agada	Sita, Vaigandhika, Draksha, Payasa, Madhuka, Madhu	Shanka visha	Oral administration
Sugandhi Agada	Srivestaka, Manovaha, Ala, Sarjarasa, Valaka, Nagapushpa, Harenu, Kutan nata, Shatavha.	Destroy the poison caused by sight, touch.	To be applied on umbrella, kettledrum, flags, festoon
Suryodaya Agada	Gandhabiroja (Shriveshtaka), Haridra, Daruharidra, Kanchnara, Manahshila, Pippali, Patali, Padma, Shweta, Girikarnika, Manjistha, Bruhati, Vakra, Yashtimadhu, Maricha, Kesara, Phalini, Kinihi and Go-Pitta.	All the poisons	Oral administration
Tagaradi Agada	Tagara, Sunthi, Nagakesara and Maricha	Insect bite (Makshika visha)	Oral administration
Tarkshya Agada	Prapoundarika, Suradaru, Musta, Kalanusary, Kaurohini, Sthouneya, Dhymaka, Guggulu, Punnaga, Talisa, Suvarchika,	Tarkshya snake bite	Oral, Nasal, Collyrium, Massage

Vachadi Agada	Kujannata (Shyonaka), Ela, Sita, Sindhuvara, Aaileya, Kustha, Tagara, Priyangu, Rodhra, Jala (Bālaka) Kañchana, Gairika, Magadha, Chandana And Saindhava salt taken in equal parts and powdered finely should be kept with honey inside a horn. Vacha, Vamsha, Pata, Tagara, Tulasi, Bala, Atibala, Rasna, Kushta, Shirisha, Haridra, Daruharidra, Shalaparni, Prushnaparni, Ajagandha, Shilajatu, Katruna, Katabhi, Yavakshara, Gruhadhuma, Manahshila, Rohitaka	In Keetavisha (insect poison)	As an ointment, collyrium, internal usage
Vajra Agada	Twaka, Manohva, Haridra, Daruharidra, Tagara, Parada, Lion's nail, Tamala patra, Kesara, Chandana, Tandula Jala	Snake bite, all types of poison	Oral administration
Vruschika Vishanashaka Agada	Shunthi (zingiber officinale), Gruhaka pota shakruta (fecal matter of pегion), Bijpuraka Swaras (Juice of Citrus Medica), Haratala, Saindhava	Scorpion bite	Local application
Vruschika Vishanashaka Agada	Seeds of Shirisha triturated with Arka ksheera, Pippali	Scorpion, Insects, Snake, spider, Rat bite	Local application
Yapana Agada	Chandan, Valaka, Musta, Dhyamaka, Katuka, Nata, Dadima, Kumkuma, Sunthi, Kapithha, Vatsaka, Karanja, Maricha, Utpala, Kamala dala, roots of Nala, Apamarga, Karavira Anjana, Laksha, Malati, Ahicchatra, Nagapushpa, Amlavetasa, Vishala, Rochana, Shyama, Ajaji, Sariva, Kushtha, Ajamoda, Kurandaka, Vayastha, Sinduvar, Ela, Kayashtha, Charati, Vaca, Karkati, Putana, Keshi, Shweta, Girikarnika, Golomi, Simhalomi, Varshabhu, Gajapippali	To regain the consciousness of the person affected by poison.	Oral administration

Table 5: Details of Agada mentioned in the Ashtang Hridaya (Tripathi, 2012)

Yoga	Ingredients	Indication	Route of administration
Champaka Agada	Haridra, Daruharidra, Patanga, Manjistha, Nata, Kesara, Honey and ghee	Spider and other insect poisons	Internal administration and local application
Chandrodaya Agada	Anjana, Tagara, Kustha, Haritala, Manahshila, Trikatu, Nagapushpa, Nagakeshar, Harenu, Madhuka, Jatamamsi, Rochana, Kakamalika, Srivestaka, Sarjarasa, Satahva, Bala, Ushira	Snake bite	Oral, Nasal administration, Collyrium, Local application, Manibandha
Dashanga Agada	Vacha, Hingu, Vidanga, Saidhava, Gajapippali, Patha, Prativisha, Shunthi, Marich	all kinds of insects bites	Oral administration
Dhavadi Agada	Dhava, Ashwagandha, Atibala, Bala, shaliparni, prushniparni	Insects bites	-
Dhooma Agada	Mayura pankha, bones of Bakula, Sarshapa, Chandana, Ghee Tagara, kushtha, head of the snake, flower of Shirisha and ghee. Lakha, Khasha, Tejapatra, Guggulu, Bhallataka, flower of Arjuna, Raala, shweta Aparajita	Poison in house, clothes, all types of poison, inflammation, snake, rats, worms fever, affliction by evil spirits, supernatural bodies,	Fumigation

Gandhamadana Agada	Nata, Rodhra, Vacha, Katvi, Patha, Ela, PAtra, Kumkuma	Poison of spiders	-
Gomaya Agada	Gomaya (Cow dung) rasa, Sharkara, honey and ghee	Loota (Spider) poison	Oral
Gonus Sarpavishan-ashaka Agada	Vansha twaka, Vansha seeds, Kutaki, Patali seeds, Nagara, Ativisha, Shirisha seeds, Gaveduka seeds, Vacha should be powdered, and pasted with cow's urine.	Gonus Snake bite	Oral administration
Kitavishari Agada	Decoctions of the roots, flowers, sprouts, bark and seeds of Shirisha tree, taken with a large quantity of trikatu powder, salt (all the five types) with honey	Poisonous insect bite	Oral administration
Kumkumadi Agada	Kumkuma, Tagara, Shigru, Padmaka, Haridra, Daruharidra	Centipede poisoning	Local application
Kushthadi Agada	Kushtha, Tagara, Vacha, Patha, Suvarchika, Gruhadhooma, Haridra, Daruharidra	Trikantaka Visha (Wasp bite)	-
Lodhra sevyadi agada	Lodhra, Ushira, Kaliyakya (Haridra), Padmaka (Patranga) Shwetha Chandana, Raktha Chandana, Kanthapushpa (Priyangu), Dugdinika (Alabu) Padmrenu (Lotus stamen) Mrunala (Lotus stalk)	Lootha visha (spider poisoning)	Pana (internal administration), Nasya (nasal instillation) and Anjana (collyrium)
Lutavishahara Agada	Hribera, Vikankata, Sariva, Musta, Shami, Chandana, Shyonaka, Shaiwala, Nilakamala, Tagara, Yashtimadhu, Twaka, Nakuli, Padmaka, Madanphala seed	Pittaja Lootha visha (spider poisoning)	Pana, Nasya, Anjana, Lepa, Seka
	Haridra, Musta, Sarpalochana, Pippali, shunthi, Pippali moola, Chitraka, Varuna, Agar, Bilwa, Patala, Neema, kushtha, shelu, kesara	Kaphaja Lootha visha (spider poisoning)	Pana, Nasya, Anjana, Lepa, Seka
	Bilwa, Chandana, Tagara, Kamala, shunthi, Pippali, Jalavetasa, Amlavetasa, Kushtha, Shukti, Jayantishaka, Patala, Bhargi, Sinduvara, Madanphala, Dalchini	Vataja Lootha visha (spider poisoning)	Pana, Nasya, Anjana, Lepa, Seka
Mandara Agada	Apamarga, Manovaha, Ala, Darvi, Dhyamaka, Gairika, Nata, Ela, Kustha, Maricha, Yastyahva, ghee and honey	Spider poison	-
Meghanada Agada	Tanduliyaka, Kashmari, Kinihi, Girikarnika, Matulungi, Sita, Shelu,	Cobra and krait snake bites	Oral, Nasal administration, Collyrium
Meshshrungyadi Agada	Meshshrungi, Vacha, Patha, Nichula, Rohini, Balaka	Frog poisons	-
Mushika vishari Agada	Sinduvara roots, bones of cat, Visha (Vatsanabha), Tagara, water	Mushika visha (rat poison)	Oral, Nasal administration
Nakulyadi Agada	Sugandha, Mrudwika, shweta, gajadantika, Surasa, Kapitha, Bilwa, Dadima, honey	Viper snake bite	Oral administration
Padmaka Agada	Priyangu, Haridra, Daruharidra, Madhu, Ghrita	Spider bite and insects of all kinds	Oral, Nasal administration, Local application
Sankrantikari Agada	Shirisha flowers, Karanja seeds, Kesara, Kushtha, Manashila	Scorpion and Ucchitinga (Insect) bite	-
Tanduliyakadi Agada	Tanduliyak, Kashmarya, Kinihi, Girikarnika, Matulungi, Sita, Shelu.	Rajimant Snake bite	Oral administration

Table 6: Details of Agada mentioned in the other references

Yoga	Ingredients	Indication	Route of administration
Churna Agada (Tripathi, 1994)	Ushira mula, Nimba patra, Tagara, Lodhra, Kushtha, Musta, Kutaja, Saptaparna, Suvarnamakshika Bhasma, honey.	Snake bite, all types of poisons, Garavisha, Root poisons	Oral administration and local application
Ghritadi saptaka Agada (Shastri, 2015)	Ghrita, Madhu, Navaneeta, Pippali, Maricha, Shunthi, Saidhava Lavana	Snake bite	Oral administration
Manjishthadi Agada (Shah, 2005)	Manjishtha, Ela, Draksha, Nisha, Jatamansi, Yashtimadhu, Harenuka	All types of poisons	Oral administration
Pippalyadi Agada Shastri, 1994)	Pippali, Marich, Jatamansi, Dhanyaka, Lodhra, Sookshma Ela, Bruhat Ela, Balak (Sugandhi Wala), Suvarchika, Gairika, Madhu	Dooshivisha Kwatha form	Oral administration
Shleshmatakadya Agada (Shastri, 2015)	Shleshmataka, Apamarga, Guduchi, Nrupadruma, two types of bruhati	All types of poisoning	Oral administration
Tanduliyakadi Agada (Tripathi, 1994)	Tanduliyak, Kashmarya, Kinihi, Girikarnika, Matulungi, Sita, Shelu.		
Trimurti Agada (Prakash and Bharati, 2021; Thampuran, 1970; Cherukulappurath)	Roots of Nimba, Neelini and Karanja in equal quantity triturated with their own leaf juice.	All types of poisoning	Oral administration

4. Discussion

Vishaghna yogas and *Agada* (Antitoxic formulations) are found especially in Samhita. Acharya has narrated various *Agada* which are mentioned in these different sections of the Samhita. They are indicated in particular poisoning as well as in disease conditions. Also, the routes of administration of these formulations are mentioned very specifically. The poison acts on the body according to the properties present in it. If poison or venom possesses all ten properties, that poison or venom becomes fatal to Human being. Hence for treating these poisoning, formulations must be potent with faster and specific actions. *Agada* are the formulations which counteract the deleterious effects of poison. *Agada* are administered through various routes like oral, nasal, collyrium, local application etc. depending upon action of poison. *Vishaghna Mahakashaya* (group of anti toxic drugs) is one of the fifty *Mahakashaya* (group of drugs). All ten drugs in *Vishaghna mahakashaya* are used singular or in various combination for the management of poisonings.

In overall *Agada* formulations, antitoxic drugs are included from *Vishaghna Mahakashaya* like *Shirisha*, *Tagara*, *Lodhra*, *Vacha*, *Haridra*, and *Daruharidra*. Most of the drugs are blood purifier. Mostly *Pippali* and *Marich* is used which increase bioavailability of the formulation. Some drugs are having antioxidant (Binorkar and Parlikar, 2016), anti-inflammatory (Bhavani *et al.*, 2018), and analgesic (Binorkar *et al.*, 2013), antihistaminic, anti allergic properties. The ingredients and indications of *Dashanga Agada* described in Ashtanga Sangraha and Ashtanga Hridaya are different. Acharya Charaka has advised to collect all the drugs and prepare *Agada* in *Pushya Nakshatra* (Tripathi and Shukla, 2006). Most of the *Agada* are in powder or tablet form. *Panchshirishadi Agada* (Shastri, 2003), *Pippalyadi Agada* (Shastri, 1999), *Lodhrasevyadi Agada* (Tripathi, 2012) and *Trimurthi Agada* (Prakash and Bharati,

2021) are in *kwatha* (decoction) form. For internal use, they are administered orally with honey and or ghee as vehicle. Both vehicles have antitoxic properties. *Agada* which are in powder form and indicated for oral administration can be modified in the dispersible tablet or logenzes form so that they can be absorbed quickly. The *Agada* which are used for external application, they can be modified in ointment, gel or lotion for convenience as well as better and quick absorption. The exact dose of the *Agada* is not described anywhere. It is to be administered according the age, weight, condition of the patient and ideology of the physician. Still it needs to be estimated so as to get the appropriate results in acute condition of poisoning. This gap has to be filled with dose escalation study. However some preliminary work related to *Agada* has been conducted in the field of Ayurveda.

Analytical standards are established for *Dashanga Agada* (Bhavani *et al.*, 2018), *Dushivishari Agada* (Deepa *et al.*, 2022), *Paravatadi Agada* (Baraskar *et al.*, 2019), *Murvadi Agada* (Hiremath *et al.*, 2022), *Shleshmataka Agada* (Chalakh *et al.*, 2022), *Panchshirishadi Agada* (Manyala and Chalakh, 2020), *Sindhuvaradi Agada* (Karoshi *et al.*, 2016), and *Mahaagada* (Soanare and Chalakh, 2019). Nephroprotective activity of *Bilwadi agada* is proved in gentamycin induced nephrotoxicity in male wistar rats (Khanna *et al.*, 2015). *Bilwadi Agada* is also effective in reducing burning, pain and inflammation in scorpion bite (Binorkar *et al.*, 2013). It also possesses the antimicrobial and anti fungal activity at higher concentration (Binorkar *et al.*, 2013). *Dashanga Agada* is proved to have anti inflammatory activity in Carrageenan Induced Anti-Inflammatory model (Bhavani *et al.*, 2018), antimicrobial properties and free radical scavenging potential (Binorkar and Parlikar, 2016). Moreover, it is efficacious in reducing burning, pain and inflammation in scorpion bite (Binorkar *et al.*, 2013).

Dushivishari Agada has cytoprotective effect on ovary and follicles in MSG induced reproductive toxicity (Rani and Savalagimath, 2017). *Dushivishari Agada* is efficacious in the management of urticaria in comparison with cetirizine (Lohe and Chalkh, 2018). In animal model, *Dushivishari Agada* was found to prolong nadir time of Hb, WBC and RBC with early recovery in comparison with Carboplatin (Patil *et al.*, 2022). It may contribute to reduce the chemotoxic effects of the Carboplatin in patients of cancer. It also possesses the inhibitory activity Butryl cholinesterase Ellman's method for Alzheimer's disease (Anushree *et al.*, 2022). *Dushivishari Agada* has been effective in reducing weight and height of fetus when studied in mice exposed to teratogenic agents (Hukkeri *et al.*, 2014).

Padmaka Agada is efficacious in reducing symptoms of honey bee sting (Chauhan *et al.*, 2017) and *Bhallataka* contact poisoning (Mehar *et al.*, 2017). *Paravatadi Agada* is found efficacious in scorpion bite but Anti scorpion venom is more efficacious in its comparison (Deshmukh *et al.*, 2020). *Sindhuvaradi Agada* is found efficacious in reducing CPK-MB, SGOT, and maintaining Lipid profile and minimizing cardiac myocyte damage in doxorubicin induced cardiotoxicity in wistar rats (Karoshi *et al.*, 2018). *Siddhartakadi Agada* is observed to be efficacious in malarial fever (Shukla *et al.*, 2018). Moreover, studies on *Mritasanjeevana Agada* (Wadnerwar, 2021) *Shleshmatakadhya Agada Shyamadi Agada* and *Sitadi Agada* (Patil and Wadnerwar, 2022) are in pipeline.

5. Conclusion

The *Agada* have lot of potential not only in treating the poisoning but also other disease conditions and infections. As the burden of life style disorders is increasing day by day, use of *Agada* in prevention and treatment of lifestyle disorders may prove beneficial to the society. Some *Agada* are established for their standards and quality control through physicochemical and phytochemical analysis. Pharmacological and clinical properties of *Agada* are also validated in some preclinical and clinical studies. However, there is much need of clinical researches on *Agada* so as to create avenue for the use of these *Agada* in clinical practice efficiently and safely throughout the nation.

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Conflict of interest

The authors declare no conflicts of interest relevant to this article.

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