

Review Article

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A CRITICAL REVIEW OF PATA NAGARA AGADA - IN THE CONTEXT OF VISAJA ATISARA

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Abstract

Pāṭhā nāgarā agada is an anti poisonous formulation mentioned in *Ashtanga Samgraha viṣopadrava pratiṣeda*, in the context of *viṣaja atisāra*. The yoga is advice to taken in choorna form along with dadhi and madhu as anupana. Aim of this study is focus on the compilation of rasa panchakas of the ingredients and standardisation of pata nagara agada by organoleptic evaluation, phytochemical screening, HPTLC profiling.

Key words: *Pata nagara agada*, *viṣaja atisāra*, rasa panchaka, HPTLC Profiling

INTRODUCTION

Food poisoning is an unpleasant illness which is caused by eating contaminated food. Food borne illnesses are usually infectious or toxic in nature and are caused by bacteria, viruses, parasites or chemical substances entering through contaminated food or water. The main cause of food borne illness are bacteria which constitutes 66% of the problem. Agadtantra as, a branch dealt with Ayurvedic toxicology consider the microbes as site of toxin or viṣaadhiṣṭana. Pata nagara agada is mentioned in *Ashtanga Samgraha viṣopadrava pratiṣeda* in the context of *viṣaja atisāra* caused by the intake of poisonous food¹. The yoga

mainly composed of two ingredients pata and nagara. The individual characteristics of the drugs are available. So, this study is mainly focusing on the standardisation of the yoga as a whole through phytochemical screening and HPTLC profiling. This may be very useful for further studies on this yoga

AIMS AND OBJECTIVES:

To review the Pata nagara agada for their action in *viṣaja atisāra* caused by the intake of poisonous food.

MATERIALS AND METHODS

Literature Review: A comprehensive literature review was conducted to identify pertinent sources related to the study's objectives. Relevant literature was systematically gathered, critically analyzed, and organized to provide a robust foundation for the research.

Collection of Raw Drug: The raw drug material was sourced from Arya Vaidya Sala, Kottakkal, renowned for its authentic and high-quality Ayurvedic products. Stringent measures were taken to ensure the purity and authenticity of the raw materials, adhering to established standards and protocols.

Study Setting: The study was conducted at the Toxicology Laboratory, situated within the Department of Agad Tantra at Vaidyaratnam P S Varier Ayurveda College in Kottakkal. This esteemed institution provided the necessary infrastructure and expertise to facilitate rigorous scientific investigation in the field of Ayurveda.

Extract Preparation: The extraction process employed successive cold maceration techniques, meticulously carried out to maximize the yield of bioactive compounds while preserving their inherent properties. This methodological approach ensured the production of high-quality extracts essential for subsequent analyses and experimentation.

OBSERVATIONS AND RESULTS

Table no: 1 Ingredients of pata nagara agada¹

Sl. No	Drug	Binomial Nomenclature	Family	Parts used	Proportion
1	<i>Pata</i> ²	<i>Cissampelos pareira.L</i>	Menispermaceae	Root	1
2	<i>Nagara</i> ³	<i>Zingiber officinale.R</i>	Zingiberaceae	Root	1
3	<i>Dadhi</i> ⁴	<i>Bos taurus.L</i>	Bovidae	Fermented milk	1
4	<i>Madhu</i> ⁵	<i>Apis mellifera.L</i>	Apidae	Regurgitate	2

Dadhi (curd)

Dadhi is commonly used *kṣīra vikṛiti* in day to day dietary habit, because of its quality of enhancing the taste of food.

Rasa: amla

Vipāka: amla

Vīrya: Uṣṇa

Karma: abīṣyandakaraka, grahi, balakara, kaphakara, medakara when it is used properly it is *pathya* in conditions like *aruci, viṣamajvara, pīnasa, mutrakṛchra*. In *Yogarātnakara dadhi* is considered best in disorders like *atisāra, arucic& karṣya* if administered during afternoon.

Madhu (Honey)

Honey is one of the most important drugs used since ancient times.

Latin name: *Mel depuratum*

Rasa: madhura, kaṣaya

Guṇa: guru Rūkṣa

Vīrya: uṣṇa

Vipāka: Katu

Doṣaghnata: tridoṣahara

According to *Aṣṭāṅga Hṛidaya*, honey incorporates into the *madhura gana*. Although it is in sweet taste it does not increase the *kapha doṣa*. Therefore, it has *kapha* reducing property. It is the best *yogavāhi* substance, which means without changing its own properties; honey carries the effects of the drugs that are added to it. Therefore, honey enhances the properties and actions of the substances with which it combines. It is useful to reduce toxicity, stops hiccups, for bleeding disorders, in urinary tract disorders and diabetes, skin diseases, worm infestations, bronchial asthma, cough, diarrhea and nausea, vomiting, cleanse the wounds, it heals wounds, helps in quick healing of deep wounds.

Table: 2 Chemical constituents present in *Pāṭhā nāgarā agada*

SL NO	DRUG	CHEMICAL CONSTITUENT
1	<i>Pāṭhā</i>	Fangchinoline, cyclopeltine, cycloadrine, cycloacurine, cycleanorine, peripamine, cycloamine, burmannaline
2	<i>Nāgarā</i>	α -curcumene, β -D-curcumene, β -bourbornene, d-borneol, citral, gingerol, α & β zingiberenes, zingiberol, ginger glycolipids

Table: 3 Rasapanchaka of *Pāṭhā nāgarā agada*

SL NO	DRUG	RASA	GUṆA	VĪRYA	VIPĀKA	DOṢAGHNATA
1	<i>Pāṭhā</i>	<i>tikṭha</i>	<i>Laghu, tīkṣṇa</i>	<i>uṣṇa</i>	<i>katu</i>	<i>Vata-kaphahara</i>
2	<i>Nāgarā</i>	<i>katu</i>	<i>Guru, rūksa, tīkṣṇa</i>	<i>uṣṇa</i>	<i>madhura</i>	<i>Vata-kaphahara</i>

Table: 4 Pharmacological actions of ingredients in *Pāṭhā nāgarā agada*

SL NO	DRUG	PHARMACOLOGICAL ACTION
1	<i>Pāṭhā</i>	<i>Viśaghna, grahi, balya</i>
2	<i>Nāgarā</i>	<i>Dīpana, bhedana, śūlahara</i>

Organoleptic evaluation of *Pāṭhā nāgarā agada***Table 5: Organoleptic evaluation of *Pāṭhā nāgarā agada***

SOLVENT	COLOUR	TEXTURE	SMELL
Cyclohexane	Amber	Thick sticky	Characteristic
Chloroform	Amber	Oily	Characteristic
Ethyl acetate	Brown	Thick sticky	Characteristic
Methanol water	Dark brown	Sticky	Characteristic

Physicochemical characters of *Pāṭhā nāgarā agada***Table 6: Physicochemical characters of *Pāṭhā nāgarā agada***

SL NO.	PARAMETER	PNA
1	Total ash	6.06%
2	Acid insoluble ash	0.53%
3	Water insoluble ash	3.35%
4	Sulphated ash	8.06%
5	Loss on drying	5.34%
6	p ^H	6.3

Phytochemical analysis of *Pāṭhā nāgarā agada*

Table 7: Phytochemical analysis of *Pāṭhā nāgarā agada*

Test		Cyclohexane	Chloroform	Ethyl acetate	Methanol water
Alkaloids	Dragendroff's test	+	++	+	+++
	Hager's test	+	+	-	++
	Wagner's test	-	-	+	+
	Mayer 's test	+	-	+	+++
	Froehdes test	-	-	+	++
	Marquis test	-	-	+	+
Carbohydrates	Molisch test	-	-	-	-
	Fehling test	++	+	++	++
Phenols	Ferric chloride test	-	-	+	+
Glycosides	Keller-killiani test	+++	++	++	++
Saponins	Froth test	-	-	+	+
	Foam test	-	+	-	+
Phytosterol	Salkowski test	+++	+++	++	++
Tannins	Ferric chloride	-	+	+	+
Flavonoids	Alkaline reagent	+	+	-	+
	Lead acetate	+	+	+	+

HPTLC profiling

The phytochemicals in *Pāṭhā nāgarā agada* were further standardised by performing high performance thin layer chromatography. The chromatogram obtained from the CAMAG scanner was analysed using the software provided by the manufacturers.

Table 8: Rf value & %area of PNA sample at 254nm

PEAK NO	Rf VALUE	AREA(AU)	%AREA(AU)
1	0.07	219.1	0.75
2	0.16	5094.0	17.38
3	0.32	230.1	0.79
4	0.33	205.4	0.70

5	0.59	606.0	2.07
6	0.65	1744.8	5.95
7	0.75	2837.2	9.68
8	0.83	13823.6	47.17
9	0.93	4543.4	15.50

Total peak no – 9, Total area – 29303.6 (AU)



Figure 1: *Pāṭhā nāgarā agada*

Figure 2: HPTLC Analysis of *Pāṭhā nāgarā agada*(PNA)

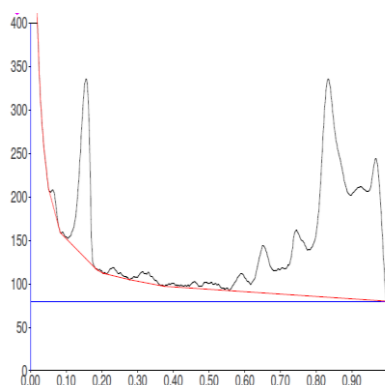


Figure 3: Overview graph of PNA sample at 254 nm

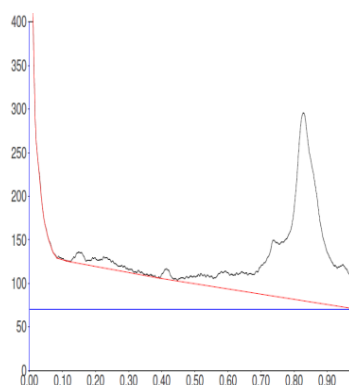


Figure 4: Overview graph of PNA sample at 366 nm

DISCUSSION

All viśahara drugs mainly act due their prabhāva. Phytochemical screening of Cyclohexane, Chloroform, Ethyl acetate, and methanol water extracts of *Pāṭhā nāgarā agada* indicates the presence of phytoconstituents such as alkaloids, carbohydrates, phenols, glycosides, phytosterols, fixed oils, resins, tannins, saponins and flavonoids. However, resins and flavonoids are more in non-polar extracts while carbohydrates, glycosides present equally in all the extracts. The effect of the drug may be due to the prabhāva of the yoga than the effect of its individual ingredients. To neutralize the poison internal administration of viśahara drug is essential. Also, the ācārya described the importance of complete elimination

or neutralization of the poison; as partial neutralization or elimination can cause delayed effects on the body. Mode of action of drugs depends on many factors like rasa, guna, vīrya, vipāka, prabhāva, karma, doṣagnata.

Pāṭhā (*Cissampelos pareira*) contains bioactive compounds like alkaloids and flavonoids, which possess anti-inflammatory properties. These compounds may help reduce inflammation in the gastrointestinal tract, potentially alleviating symptoms associated with conditions like inflammatory bowel diseases (IBD), including Crohn's disease and ulcerative colitis.⁶ Some studies suggest that extracts of *Cissampelos pareira* possess antimicrobial properties, which may help inhibit the growth of pathogenic bacteria and fungi in the gut. By promoting a healthier balance of gut microbiota, *Cissampelos pareira* may support overall digestive health and reduce the risk of gastrointestinal infections.⁷

In traditional medicine, *Cissampelos pareira* has been used to treat diarrhea and dysentery. It is believed to have astringent properties that help reduce intestinal motility and fluid loss, thereby relieving diarrhea and promoting intestinal healing.⁸ Some research suggests that *Cissampelos pareira* extracts may have gastroprotective effects, helping to protect the stomach lining from damage caused by factors like alcohol, nonsteroidal anti-inflammatory drugs (NSAIDs), and gastric acid. This protective effect may help prevent or alleviate conditions such as gastritis and gastric ulcers.⁹ *Cissampelos pareira* contains antioxidants such as flavonoids and phenolic compounds, which can help neutralize free radicals and reduce oxidative stress in the gut. By protecting cells from oxidative damage, *Cissampelos pareira* may contribute to overall gut health and reduce the risk of gastrointestinal disorders.¹⁰

Ginger is perhaps best known for its anti-nausea properties. Several studies have demonstrated that ginger can help alleviate nausea and vomiting associated with motion sickness, morning sickness during pregnancy, and chemotherapy-induced nausea. Its ability to soothe the stomach and reduce nausea makes it a popular remedy for various digestive issues.¹¹ Ginger may help regulate gastrointestinal motility, the movement of food through the digestive tract. By promoting the rhythmic contractions of the digestive muscles, ginger can aid in digestion and reduce symptoms of indigestion, bloating, and discomfort.¹²

Ginger contains bioactive compounds such as gingerols and shogaols, which exhibit

anti-inflammatory properties. Chronic inflammation in the gut is associated with various digestive disorders, including inflammatory bowel diseases (IBD) like Crohn's disease and ulcerative colitis. By reducing inflammation, ginger may help alleviate symptoms and promote gut health.¹³

Ginger has long been used as a remedy for indigestion and dyspepsia (discomfort or pain in the upper abdomen). Studies suggest that ginger may help accelerate gastric emptying, reduce stomach discomfort, and improve overall digestion, making it an effective natural treatment for these conditions.¹² Ginger exhibits antimicrobial properties that may help inhibit the growth of harmful bacteria and viruses in the gastrointestinal tract. By promoting a healthy balance of gut microbiota, ginger supports digestive health and reduces the risk of gastrointestinal infections.¹⁴ Some research indicates that ginger may stimulate bile production and improve gallbladder function. Bile plays a crucial role in the digestion and absorption of fats, and inadequate bile flow can lead to digestive problems. By enhancing bile secretion, ginger may help improve fat digestion and alleviate symptoms like bloating and discomfort after fatty meals.¹⁵

Ginger contains antioxidants that help neutralize free radicals and reduce oxidative stress in the gut. By protecting cells from damage caused by oxidative stress, ginger may support overall gut health and reduce the risk of gastrointestinal disorders

Curd, also known as yogurt in many parts of the world, is a dairy product made by fermenting milk with beneficial bacteria. It is rich in nutrients like calcium, protein, vitamins B2 (riboflavin), B12, potassium, and magnesium. The bacteria used in the fermentation process, such as *Lactobacillus bulgaricus* and *Streptococcus thermophilus*, are known as probiotics and are beneficial for gut health. Curd contains live cultures of beneficial bacteria that can help replenish the gut microbiota. These probiotics can improve digestion and promote a healthy balance of bacteria in the gut. The live cultures in curd can help break down lactose, the sugar found in milk, making it easier for people with lactose intolerance to digest dairy products. Additionally, curd can aid in the digestion of other foods by promoting the growth of beneficial bacteria in the gut.¹⁶ The gut plays a crucial role in the body's immune system, and maintaining a healthy balance of gut bacteria is essential for optimal immune function. Probiotics found in curd may help strengthen the immune system and

reduce the risk of infections. Consuming curd regularly may help prevent or alleviate digestive disorders such as diarrhea, constipation, irritable bowel syndrome (IBS), and inflammatory bowel disease (IBD) by promoting a healthy gut microbiota and improving overall digestive function.¹⁷ A healthy gut microbiota is essential for proper nutrient absorption. Probiotics in curd can enhance the absorption of nutrients from food, ensuring that the body receives the full nutritional benefits of the foods consumed. Some studies suggest that probiotics found in curd may have anti-inflammatory properties, which can help reduce inflammation in the gut and throughout the body. This may be beneficial for conditions like Crohn's disease, ulcerative colitis, and other inflammatory conditions of the digestive system.¹⁸ Antibiotics can disrupt the balance of bacteria in the gut, leading to antibiotic-associated diarrhea. Consuming curd with live cultures during and after antibiotic treatment may help restore the balance of gut bacteria and reduce the risk of developing diarrhea.¹⁹

Honey has been valued for its potential health benefits for centuries, and its effects on gut health are among its most intriguing properties. Here are some ways in which honey can positively impact gut health. Honey contains oligosaccharides, which are types of carbohydrates that act as prebiotics. Prebiotics are compounds that nourish beneficial bacteria in the gut. By serving as food for probiotic bacteria, honey supports a healthy balance of gut microbiota.²⁰ Honey has natural antimicrobial properties due to its high sugar content, low pH, and the presence of hydrogen peroxide and other compounds. These properties can help inhibit the growth of harmful bacteria in the gut, potentially reducing the risk of gastrointestinal infections. Some studies suggest that honey may have anti-inflammatory effects in the gut. Chronic inflammation in the gastrointestinal tract can contribute to various digestive disorders, including inflammatory bowel diseases (IBD) like Crohn's disease and ulcerative colitis. By reducing inflammation, honey may help alleviate symptoms associated with these conditions. Honey has been used for centuries as a remedy for digestive issues, including diarrhea and gastritis. Its soothing properties may help promote healing of the gut lining and reduce irritation, providing relief from gastrointestinal discomfort. Honey contains various antioxidants, including flavonoids and phenolic acids, which can help protect cells from damage caused by free radicals. By reducing oxidative

stress in the gut, honey may support overall digestive health and reduce the risk of gastrointestinal disorders.²¹

CONCLUSION

Pāṭha nāgarā agada mentioned in Ashtanga sangraha utharasthana 47th chapter, viṣopadrava pratiṣedham in the context of viṣajathisāra. It can be used in atisāra caused as a complication of Viṣa. Tikta rasa of *Pāṭha* is viṣahara in nature. The katu rasa is having pacāna and dīpana action which helps in preventing the growth food poisoning causing bacteria and associated clinical symptoms like ama, ajīrna, agnimandhya etc. laghu , rūksha , tīkṣṇa guna makes the drug potent in action and it also helps the speedy action of drug. Uṣṇa vīrya of both the drug may contribute to kṛimihara action of the yoga.

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