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A REVIEW ARTICLE ON TOXICOLOGY IN *AYURVEDA*

Dr. Hinal Chaudhari[1] Dr. Akanksha[2] Dr. Akshay[3]

[1]*P.G. Scholar, P.G. Department of Agada Tantra, Rajiv Gandhi Government Post Graduate Ayurvedic College & Hospital Paprola, (H.P.)*

[2]*P.G. Scholar, P.G. Department of Agada Tantra, Rajiv Gandhi Government Post Graduate Ayurvedic College & Hospital Paprola, (H.P.)*

[3]*P.G. Scholar, P.G. Department of Agada Tantra, Rajiv Gandhi Government Post Graduate Ayurvedic College & Hospital Paprola, (H.P.)*

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ABSTRACT

Background: *The traditional medical method known as Ayurveda originated on the Indian subcontinent. Sthavara Visha, Jangama Visha, Gara Visha, Dushi Visha, Dhatu Visha, Aahara Vishaktata, Madyaja Vishaktata, Janpadodhwansa etc. These are included in the category of Ayurvedic toxicology. This branch focuses on Visha, including how it manifests and how to treat it.*

Aim: *Raising awareness about Ayurvedic toxicology is the aim of this study.*

Materials and techniques: *reviewed from a range of relevant papers, websites, and Ayurvedic literature.*

Result*: Agada Tantra is the branch that describe different sources of Visha, their signs and symptoms, complications and its treatment, plant poisons, animal poisons, environmental toxins, slow acting poisons, Viruddha Aahara, etc. are some of the examples.*

Discussion and conclusion*: The Agada Tantra describes "Chaturvimshati Upakrama" as a therapy modality that helps the body dissolve, neutralize, and get rid of toxins. Many people refer to "Agada yoga" as an antidote. The goal of therapy is to rehabilitate poison-injured individuals and protect healthy individuals against poisons.*

KEYWORDS: *Agada tantra, Visha, Poison, Treatment, Toxicology.*

INTRODUCTION

Ayurveda offers a number of strategies for maintaining and enhancing mental and physical well-being. In this connection *Ayurveda* described different branches which deal in specific area and *Agada Tantra* is one such branch of *Ayurveda* that works around poisons and management of pathological conditions associated with poisons. The *Ayurveda* toxicology (*Agada Tantra*) helps to identify poison, described types of poison and distinguish minerals, plant and animal poisons along with their treatment modalities.[1] A poison is commonly defined as a substance which when administered, inhaled or swallowed is capable of acting deleteriously on the body & hazardous damage to vital organs.[2] Etymologically, *Visha* is that which causes *Vishannatva* (distress) and / or *Vishada* (sadness) in the body.[3] According to *Acharya Charaka, Visha* is a substance that has ten distinct properties, produces eight stages, and has a genesis in *Jalamahabhoota*. It has effects similar to *Agnimahabhoota* and can be found in both inanimate and living substances. It should be addressed using twenty-four modalities.[4] Although poisoning can come from a variety of sources, the amount of a compound plays a significant influence in its consequences. For example, metals in trace amounts do not cause toxic effects until they build up to a lethal level. In addition to their toxic effects, some poisons can be utilized as medications if properly processed and used in response to medical emergencies. Following a purification and size reduction process, toxic minerals such as lead and mercury are employed in Rasa remedies. The foundation and processes for managing *Visha* (poisons) in Ayurveda are the 24 therapeutic measures of treatment that *Acharya Charak* described.[5]

General therapeutic principles of *Agada Tantra*-

- Removal of poison through faeces, urine, sweat and breath.
- Delaying effects of poisons
- Reveres the effects of poisons
- Stop the toxin from moving through the body too quickly.
- Administration of medicines of opposite qualities
- Poison is first adsorbed and then removed using a natural adsorbent to stop it from moving throughout the body.[1]

Two types of *Visha—Sthavara* and *Jangama*—are mentioned in the *Atharvaveda*, and their management through *Mantra Chikitsa* is described. In the *Ramayana*, *Vaidya* Sushena used four different kinds of Himalayan herbs in addition to *Sanjeevani Vidyaa* to

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treat *Rama* and *Lakshmana* for poisoning. In the *Mahabharata*, the *Sarpavisha* healed the poisoned *Bhima*. Additionally, the *Mahabharata* records a discussion between *Kashyapa* and *Takshaka* about the treatment of poisoning (vishachikitsa). Brahmavaivarta Purana (3/51) also narrates the conversation between *Dhanvantari* and *Nagadevi* which gives information about condition of *Vishachikitsa* at that time.[2]

AIM

The purpose of this study is to make awareness about the Toxicology in *Ayurveda.*

MATERIALS AND METHODS

Reviewed from pertinent publications, internet, and a variety of Ayurvedic literature.

LITERATURE OF AGADA TANTRA [31]

Table no.1.

Charak samhita	***Chikitsasthana***	***Adhyaya 23***
Sushruta samhita	***Kalpasthana***	***Adhyaya 1-8***
Ashtangasamgraha	***Uttarsthana***	***Adhyaya 40-48***
Kashyap samhita	***Sarvavidhivishapratipadika***	***---***
Harita samhita	***Tritiyasthana***	***Adhyaya 56***
Madhava nidana	***---***	***Adhyaya 69***
Bhavaprakasha	***Chikitsasthana***	***Adhyaya 67***
Sharangdhara Samhita	***Yatra- Tatra***	***---***

Vasvarajyam	***---***	***Prrakaran 21- 22***
Bhashajyaratnavalli	***Visharogachikitsaprakaran***	***---***
Yogaratnakar	***Uttarardha***	***Vishadhikar***
Chikitsakalika	***Vishachikitsa***	***---***
Vangsen samhita	***Visharogadhikar***	***Page no. 885- 907***
Chakradatta	***Vishachikitsa***	***---***
Vrindmadhava athva siddhayoga	***Vishadhikar***	***Adhyaya 68***
Rasatarangini	***Tarang sankhya 24***	***---***

CLASSIFICATION

The *Ayurveda Samhitas* state that the origin (*yoni*) and site (*Adhishtana*) of a *Visha* determine its classification. According to *Rasashastra*, *Vishas* are divided into two categories, *Mahavisha* and *Upavisha*, according to their qualities (*Guna*). *Acharya Charaka* classified *Visha* into three, *Sthavara Visha* (inanimate poison), *Jangama* (animate poison), and *Samyogaja* (artificial poison including *Gara* and *kritrima*)[6] *Sushruta Samhita* classified *Visha* into *Sthavara*, *Jangama*, and *Kritrima*.[7] *Acharya Vagbhata* says about two types of *Visha*, *Kritrima* (*Garavisha*) and *Akritrima* (*Sthavara* and *Jangama*).[8] According to *Bhavaprakasha Akritima Visha* and *kritrima Visha*. *Kritrima Visha* includes *Garavisha* and *Dushivisha*.[9]

STHAVARA VISHA

A chemical that is harmful to life and has qualities like *Ushna, Tikshna, Ruksha, Sukshma, Vyavayi, Vikasi, Ashukar, Anirdeshya rasa / Apaki,* etc. is called *Visha*. And the drugs which possess these properties are called *Vishas*[10] and those which are less in virulence than *Vishas* are called *Upavishas*[11] (sub-poisons). A number of drugs of plant origin have been used to treat various disorders, e.g. reserpine, atropine, etc. by modern system of medicine. Though, many of them were withdrawn or are outdated due to their toxicity.[2] *Acharya Sushruta* explains the 55 different kinds of *Sthavara Vishas*. Of these, 53 are of vegetable origin, while only two are of mineral origin. Some of the twenty-one examples given by *Acharya Charaka* can still be recognized today.

Classification of *Sthavara Visha*

Rasatarangini claims that the *Sthavara Visha* is divided into two types: *Mahavisha,* which has a high potency, and *Upavisha,* which has a lower potency. The *Mahavisha Saktuka, Haridraka, Brahmaputra, Sringaka, Pradeepana, Saurashraka, Vatsanabha,* and *Halahala* are the nine of them. In actuality, *Vatsanabha* is currently the only *Mahavisha* that is known to exist.

Upavisha

All poisons are categorized as *Mahavisha* and *Upavisha* in Ayurvedic classics and medieval writings. There is a less dangerous class of drugs known as *Upavisha*. Despite not being hazardous, they can produce certain toxic effects when taken or delivered. Based on a few fundamental factors, such as source, base, qualities, potency, etc., therapeutic treatments can control the

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poisonousness of *Upavisha's* symptoms, which are less severe, less toxic, and typically not life-threatening. *Bhrittrayi* and *Laguttrayi* make no explicit mention of the *Upavisha* category.
Moola (Root), Pathra (Leaf), Ksheera (Milky Latex), Dhatu (Mineral)Phala (Fruit), Pushpa (Flower), Twak (Bark), Sara (Hardwood), Niryasa (Latex), and Kanda (Tuber) are the ten *Adhishtanas* of *Sthavara Visha* that are described in the *Sushruta Samhita*.[1]
Dhatu Visha

Khanija or *Dhatu Visha* (mineral or metallic poisons) are minerals and metals that are extracted from the earth's interior and have poisonous qualities when utilized inappropriately.[23]
For instance, *Parada*, *Naga*, *Vanga*, *Tamra*, *Yashada*, and so forth.
Ayurvedic formulations use a lot of metals and minerals after correct *Shodhan*, however faulty *Shodhan*, large doses, etc., can cause toxicity in the body.

As part of the *Rasa Shastra* tradition, Ayurvedic formulations often contain hazardous metals and other substances, even though their primary ingredient is herbal. These components are utilized on purpose because, according to Ayurvedic tradition, lead, mercury, copper, gold, iron, silver, tin, and zinc may aid in restoring the body's normal function and overall health.[24]

JANGAMA VISHA
Jangama Visha means animal poisoning which includes; snake poisoning, insect poison, spider poison, mosquito poison and bee or fly poison, etc.
Aacharya Charak has enlisted faunae that are poisonous, he quotes- *Sarpa, Keeta, Undura, Loota, Vrischika, Grahagodhika, Jalauka, Matysa, Manduka, Kanabha, Krkantaka, Sva, Simha, Vyaghra, Gomayu, Tarakshu* and *Nakula* and other such creatures with teeth, Visha enclosed in their dentures and poisoning caused by their bites is termed as *Jangama Visha*.[13]
Acharya Sushruta in the third chapter of *Kalpasthana*, has listed sixteen sites of *Jangama Visha* these are-

- *Drishti*
- *Nihsvasa*
- *Damstra*
- *Nakha*
- *Mutra*
- *Purisha*
- *Shukra*
- *Lala*
- *Artava*
- *Mukha- sandamsa*
- *Visardhita*
- *Tunda*
- *Asthi*
- *Pitta*
- *Shuka*
- *Sava*[14]

GARA VISHA
According to our Classics, *Gara Visha* is a *Krtrima Visha* (Artificial Poison), which is created by combining non-poisonous components, or *Nirvisha Dravya Samyoga*.[15] *Gara Visha* is a mixture of various animal parts and excrement, incompatible medications, ashes, and mildly toxic substances.[16] In the past, ladies would provide food laced with their perspiration or menstrual blood to win over their husbands. They would also give food and *Gara Visha* to rulers who were being influenced by their adversaries.[17]

The word "*Gara*" comes from the root word "*gru*" and the suffix "*ach*," which means to diglute or possibly deglutinate, and typically denotes the liquid state. From one perspective, the term "*Gara*" also means "poison."[18-19]

The victim of this kind of artificial poison does not die right away since it takes time for it to be processed and start having harmful consequences. This *Chirakaari Rogajanaka* has both psychological and physical effects. The manifestation of *Gara Visha* might occur suddenly, gradually, or over an extended period of time.[20]

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Gara Visha Adhisthana[21]
The following items are described in the *Sushrut Samhita* as ways to poison that can be regarded as *Gara visha Adhisthana: food (Anna), drink (Pana), brush (Dentakastha), decoction (Kasaya), nasal drops (Nasya), fumigation (Dhuma), ornaments (Abharana), application (Anulepana), massage (Ustadana), bath (Parisheka), application (Anjana) (eye lids), Vastra (clothes), Sayya (beds), and paduka (footwears).*

DUSHI VISHA
According to *Acharya Sushruta,* there is a portion of poison called *Sthavara* (inanimate), *Jangama* (animate), or *Kritrima* (artificial) that has collected and is unable to be eliminated from body entirely because of its cumulative and chronic characteristics or loses potency during digestion or counteraction antidotes and remains in the body for an extended amount of time and vitiating the body slowly is called *Dushi Visha.* There isn't a fatality right away because *Dushi Visha* has less *Veerya.* However, it is covered *(Avritta)* by *Kapha* (lipophilic binding) and remains in that state for a long time. *Dushi Visha* have the following characteristics-

- Less potent after digestion or counteraction of antidotes;
- Naturally devoid of property;
- Cannot be excreted from the body;
- *Alpaveerya* (less potent)
- *Swabhavto guna vipraheenam* (naturally devoid of property)
- *Vashagananubandhi*—stays in the body for years—and *Kaphaavrita*, which is covered by *Kapha*.

Aggravating factors of *Dushi Visha*
Dushi Visha symptoms are aggravated and precipitated by *Dushit (polluted), Desha (land), Kala (time or season), Anna (food), and Divaswapna (sleeping during the day).*[22]

***JANAPADODHWANSA* (Environmental toxicity)**
The concept of *Janapadodhwamsa* in Ayurveda explains environmental toxicity and pollution. "*Janapad*" refers to a community or group of individuals, but "*Dhwamsa*" signifies demolition. The combination of these two terms is "*Janapadodhwamsa*." According to Ayurveda, there are four types of *Janapadodhwamsa*: *Vayu (air), Jala (water), Desha (location), and Kaala (climate). Kaala* is regarded as the most deadly of these elements, and its risk increases gradually. Many persons in *Janapadodhwamsa* are afflicted with diseases that share identical signs and symptoms at the same time. In *Charak Samhita*, A different chapter in *Viman Sthana* has been devoted to *Janapadodhwamsa*. *Adharma*, which means immorality or being unrighteous, is the primary cause of *Janapadodhwamsa*. The main reason behind the unrighteous behaviour is *Pragyaapradh*. *Prgya* word denote the *Dhee* (intellect), *Dhriti* (patience), and *Smriti* (memory).[25] *Janapadodhwamsa* management are explained through *Panchakarma* (Detoxification therapy) and *Sadvritta* & *Achar Rasayana* (Right moral conduct). It can be curative and preventive also.[26]

MADYA VISHA
Madya (alcohol) is a *Dravya* that causes *Mada* (intoxication); *Madatyaya* (alcoholism) is an illeffect of *Madya* (alcohol) abuse. *Madya* (alcohol) is described at length in the subject "*Bhaishajyakalpana Vijnana*" under the chapter of *Sandhana Kalpana* (fermented products).

The word *Madya* (alcohol) is derived from the root '*mat'* with '*yat'* as a suffix.[27]
Our classics have also described a malady called *Madatyaya* (alcoholism), which arises from consuming too much *Madya*, as a significant issue that society has faced from ancient times. They have also provided information on the types of *Madya* (*Bheda*), its symptoms (*Lakshana*), and its cure (*Upakrama*). As a *Tridoshaja Vyadhi, Madatyaya* mostly encounters *Dushti* and *Agni* in the *Kapha Sthana*. Yet, *Charakacharya* mentions four types—*Pittaj, Kaphaj, Sannipataj, and Vataj*—based on the *Doshas'* relative prominence. Throughout history, alcoholism has been a significant social issue. Therefore, it was decided that I would research *Madya's* de-addiction in order to perform my fair share of this. Although drinking alcohol is not forbidden in *Ayurveda*, there are guidelines in place to help you benefit from it and prevent its negative effects.[28]

AAHARA VISHA
Acharya Charaka quotes, for all the living beings, *Anna* (food) is the sustainer of *Prana* (life), but when taken incompatibly, it causes death. Likewise, *Visha* (poison) which causes death works like *Rasayana* when used suitably.[29]
The *Ashtanga Sangraha* text by *Acharya Vagbhata* describes *Viruddha* Ahara, or incompatible food. *Viruddha Ahara* refers to substances that, when ingested, aggravate *Doshas* without eliminating them from the body and result in abnormalities in the *Dhatus* (body tissues). Several forms of *Viruddha Ahara* have been described in the classic Ayurvedic texts. A "incompatible diet" is a diet that includes eating two different foods at the same time or sticks to a particularly harmful diet. If the incompatible diet is taken concurrently and consistently, it may be compared to poison and artificial poisoning. Because of the western lifestyle, there is a high prevalence of toxicity exposure.

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Nidana Parivarjna (prophylactic measures) is the main line of treatment. Diseases caused by *Viruddha Ahara* (incompatible diet) can be treated by *Vamana (Emesis), Virechana (purgation) and Shamana Chikitsa (palliative therapy)* and by the prior use of beneficial substances.[30]

DISCUSSION AND CONCLUSION

Agada tantra was defined by *Ayurveda* as a branch of poisoning and the treatment of poison-related clinical disorders. Both natural and manufactured poisons were described in the *Agada Tantra*. There are many different sources of poison, such as *Viruddha Ahara*, metals, minerals, plants, animals, and environmental pollutants. When it comes to handling poisons, *Acharya Charaka's* explanations of *Chaturvimshati Upakramas* are unique. They each play a unique role in handling the toxin in various ways. It's clear that most of them are based on the same contemporary medical thinking. For all forms of *Visha*, including *Sthaavara*, *Jangama*, *Gara*, *Dushi Visha*, and others, *Chathurvimshathi Upakrama* is typical. The doctor should usually choose *Upakramas* based on the type of *Visha*, *Prakruti*, *Saatmya*, *Rtu*, *Sthaana*, *Vega*, and *Balaabala*. *Anjana*, *Lepa*, *Dhupana*, *Leha*, *Upadhana*, *Prashamana*, *and Prathisarana* are the pacifying procedures of *Chathurvimshathi Upakrama*. The following measures prevent poison from entering the bloodstream: *Arishta*, *Uthkarthana*, *Nishpidana*, *Chushana*, *Agni*, *Parisheka*, and *Avagaha*. *Nasya*, *Vamana*, *Virechana*, *and Rakthamokshana* are the elimination therapies. *Mrthasanjivani*, *Sanjasthapana*, *and Hrdhayavarana* are the supportive symptomatic treatments. The counteracting drugs are *Prathivisha*, *Aushadha*, *and Mantra*. According to the doctor's *Yukti*, the *Upakrama* must be chosen based on the patient's situation.

Both *Visha Chikitsa* and *Kaya Chikitsa* disorders benefit greatly from the *kalpa/Agada* noted in several classical books. In addition to treating poisoning, these drugs are used to treat a variety of systemic illnesses and problems brought on by poisoning or deadly insect, snake, or other bites. For instance, *Mritsanjeevan Agada*, *Dashanga Agada*, *Bilwadi Agada*, *and Dushivishari Agada*. *Agada* is a drug that slows the progression of negative health consequences brought on by exogenous substances like toxins, metals, and medications. The use of agada depends on the availability and indications of the drug.

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