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A critical review on poisoning of *Dhatura* in *Agada Tantra*

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ABSTRACT

Agada Tantra or toxicology is a branch of Ashtanga Ayurveda which includes the science of poisons.^[1] It is originated from the school of toxicology, which was founded and run by *Acharya Kashayapa*. It deals with various natural and artificial toxic substances and poisons in detail along with their antidotes, the signs and symptoms and also the management of poisoning resulting from the bites of snakes, insects, spiders, rodents etc as well as from the combinations of various other poisons & fatal doses of various poisons.^[2] It also deals with medicine in relation to the law, legal aspects of medical ethics and standards. *Damshtra* or *Visha Chikitsa*, as the *Agada Tantra* is popularly known, deals with various methods of cleaning the poisons out of the body as well as recommends antidotes for particular poisons. It deals with a wide range of natural toxins originating from wild lives like animals, birds, insects etc., plants including herbs (belladonna, aconite etc.), vegetables, minerals (leads, mercury, arsenal etc.) and artificial poisons prepared from poisonous drugs. *Dhatura* is one of the poisonous drug described in Ayurveda.^[3] Which is an one of the Deliriant poison.

Key words: *Dhatura* Poisoning, *Agada Tantra*, *Ayurveda*.

INTRODUCTION

Ayurveda is the science of life which deals with the various treatment modalities and principles for maintaining proper and good health. An ancient scholar of Ayurveda has classified poisonous drugs into two types i.e., *Sthavara* (plant origin) and *Jangama* (animal origin) *Visha*. *Dhatura* is described as one of the deliriant poisonous drug. The poisons in

the deliriant group are characterized by well marked deliriant stage.^[4] The poisons are; *Dhatura*, *Atropa belladonna*, *Hyoscyamus niger*, and *Cannabis indica*. *Dhatura* is commonly grown in waste places all over India. *Datura* is well known and commonly used drug for treating various ailments and it is an ingredient in most of the formulations in Ayurveda. There are 2 varieties; viz, *Dhatura alba*, a white flowered plant, and *Dhatura niger*, a black or purple flowered one. All parts of plant are poisonous but the seeds and fruits more so. The active principle contains the alkaloids, hyoscyne or traces of atropine. The synonyms of *Dhatura* are; *Unmata*, *Kanaka*, *Kantakaphala*, *Kitava*, *Shivapriya*.^[5]

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METHODOLOGY

Datura is well known and commonly used drug for treating various ailments and it is an ingredient in most of the formulations in Ayurveda.

The alkaloids of *Dhatura* stimulate the higher centers of the brain, and then the motor centers. They inhibit

secretion of sweat and saliva, dilate the cutaneous blood vessels, dilate the pupil and stimulate the heat regulating centre situated in the floor of the third ventricle. The initial stimulation is followed by depression and paralysis of the vital centers in the *Medulla*.^[6]

Datura^[7]

Datura consists of dried seeds of *Datura metel* Linn.; Syn. *D. fastuosa* L., *D. alba* Ramph; *D. cornucopaea* Hort. (Fam. Solanaceae); occurring wild throughout the country. Habit and Habitat A sub glabrous spreading herb, sometimes shrubby. Common in waste places throughout India and occasionally in gardens.

Properties and Action

Rasa : Madhura, Katu, Tikta, Kashaya

Guna : Guru, Ruksha, Ushna

Virya : Ushna

Vipaka : Katu

Karma: Kaphahara, Varnya, Madakari, Vishahara, Krumihara, Vranahara, Kanduhara, Bhramahara, Vamaka

Important Formulations

Kanakasava, *Suta*, *Shekhara Rasa*, *Jvarankusha Rasa*, *Lakshmi Vilasa Rasa* (Naradiya), *Kanakasundara Rasa*, *Dugdha Vati*, *Piyushavalli Rasa*

Therapeutic Uses - *Krumi*, *Yuka*, *Liksha*

Useful Part

Part used Root, fruit, seed, flower, leaf.

Datura Poisoning

An individual if poisoned by *Dhattura*, then visual perceptions become yellowish (sarvam pashyathi peetakam) and develop symptoms like *Kampa* (tremors), *Mada* (intoxicated), *Laala* (excessive salivation), *Chardi* (vomiting), *Smruthibhramsha* (amnesia) and *Bhrama* (giddiness) etc.^[8]

Symptoms and Signs^[9]

- The symptoms are described as “dry as a bone, red as a beet, blind as a bat, hot as a hare, and mad as a wet hen.

- They appear within half an hour if seeds are taken, or earlier, if a decoction of seeds are taken.
- The earliest symptom is a bitter taste in the mouth. Due to inhibition of salivation, there is dryness of the mouth and throat resulting in – difficulty in talking, dysphagia and thirst.
- Face - flushed due to dilatation of cutaneous blood vessels.
- The pupils are dilated, insensitive to light, and the power of accommodation for near vision is paralyzed.
- The body temperature is raised.
- Skin - dry and hot due to inhibition of sweat secretion and stimulation of heat regulating centre.
- Vomiting
- Giddiness and unsteady gait; the person staggering like a drunken individual.
- The mind is affected early, the patient being at first restless and confused, and later becoming delirious.
- He is subject to visual and auditory hallucinations.
- The delirium passes off an hour and the patient become drowsy.
- The drowsiness may progress to stupor or coma and rarely death from respiratory paralysis.

The important signs and symptoms can be summarized under 9 Ds;

- Dryness of mouth and throat
- Difficulty in talking
- Dysphagia
- Dilatation of cutaneous blood vessels
- Dilatation of pupils
- Dry hot skin
- Drunken gait
- Delirium
- Drowsiness

Fatal dose and Fatal period^[9]

This is about 100 to 125 seeds.

The lethal dose for the alkaloids is about 60 mg for adult and 4mg for children.

Death usually occurs within 24 hours.

Treatment of *Dhatura* Poisoning**Ayurvedic Antidotes**

- Changeri swarasa internally
- Administration of milk and sugar
- Chandana mixed with tender coconut water for internal administration Haridra choorna with
- Karpasa patra swarasa (*Gossypium herbaceum* Linn.) and administer internally Mrunaala (stalk of lotus) kwatha or swarasa
- *Vamana* / Stomach wash: the stomach should be evacuated to remove the remnants of the crushed seeds by a stomach wash with either a weak solution of potassium permanganate or 4 – 5 % tannic acid.
- *Virechana, Nasya*
- Physostigmine : dose of 1-4 mg
- Neostigmine: 2.5 mg IV every 3 hours; acts as a physiological antidote.
- Purgatives: are beneficial.
- Diazepam – 10 mg IM
- Pilocarpine – 15 mg Sub-cutaneous

Postmortem appearance

These are those of asphyxia. *Dhatura* seeds may be found in the stomach. There is congestion of the gastrointestinal tract. *Dhatura* seeds resist putrefaction and are found even when the body is decomposed. In rare cases mucous membrane of stomach may be found slightly inflamed.

Medico-legal aspects^[10]

In India, *Dhatura* is employed mainly as a stupefying person prior to robbery, kidnapping, and rape. It is sometimes known as a 'Road poison' as it is

commonly encountered during a journey. The powdered seeds are mixed with food, tea, drink or in Paan (betel leaf) and given to an un way traveler by an apparently obliging person. On ingestion of such material, the traveler becomes very drowsy. If he goes to the police station to lodge a complaint, he is taken to be a drunkard on account of his drunken gait and difficulty in talking. Generally, the railways and pilgrims' places put warning boards asking the travelers not to accept any food or Prasad from strangers to obviate such mishaps. A small dose either due to inhalation of smoke, smoking, or from ingestion deprives the person of his reasoning ability. At times, he appears to be in the right state of mind but does not know with whom he is talking, nor remembers what has happened when the alienation is over.

DISCUSSION

The main of Ayurveda is prevent from diseases and cured from a disease. For that Ayurveda explains various treatment modalities and principles for maintaining a good & proper health. *Agada Tantra* is also known as '*Danshra Chikitsa*', where there is study of various *Visha* and its *Chikitsa*. *Dhatura* is one of the common and deliriant poisonous drugs explained in Ayurveda. Its signs and symptoms resemble to that of drunken person. It deals with various natural and artificial toxic substances and poisons in details along with their antidotes, the signs and symptoms and the management of poisoning resulting from the bites of snakes, insects, spiders, rodents etc. as well as from the combinations of various other poisons & fatal doses of various poisons. *Datura stramonium* (DS), known as Jimson weed is a wild-growing herb. The entire plant especially the foliage and seeds, is toxic due to its content of tropane alkaloids. The contained atropine, L-hyoscyamine and L-scopolamine cause anticholinergic syndrome, which results from the inhibition of central and peripheral muscarinic neurotransmission. The main purpose or aim of the *Dhatura* poisoning is for robbery etc while in travelling. It is the most common type of poisoning used for robbery, kidnapping purpose. All parts of plant are poisonous but the

seeds and fruits more so. The active principles of *Dhatu* contain the alkaloids, hyoscyne or traces of atropine. The *Prabhava* of *Dhatu* is explained as a *Madaka*. The important signs and symptoms have been summarized under the concept of 9D's. *Vamana* or Stomach wash is the basic *Chikitsa* in *Dhatu* poisoning and later purgatives are given for proper escape of poison from the body. It is sometimes known as a 'Road poison' as it is commonly encountered during a journey.

CONCLUSION

In Ayurveda, *Agada Tantra* is one of the important among the *Ashtanga Ayurveda*. *Acharya Sushruta* has also described that the various definitions according to *Ashtanga Ayurveda*. In which, *Sushruta* mentioned that *Agada Tantra* is the science of *Sarpa*, *Kita*, *Luta* etc. description of *Visha* is described. Various poisonous drugs are also mentioned in which *Dhatu* is one of the important common poisonous drugs which is specially used for the purpose of Robbery, kidnapping etc. *Dhatu* is commonly found in everywhere so it is easy to use for robbery, kidnapping / rape cases. It is one of the deliriant type of drug. The symptoms are described as "dry as a bone, red as a beet, blind as a bat, hot as a hare, and mad as a wet hen". In Ayurveda, *Vamana* or stomach wash is one of the important treatments for that.

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