

CONCEPTUAL STUDY OF VISHAKRIYA – TOXICODYNAMIC STUDY IN AYURVEDA

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ABSTRACT

Visha acts deleteriously on body and proves fatal. On the bases of origin *Visha* has been classified in two categories viz, *Jangama visha* (Animal poison) and *Sthavara visha* (Plant and Mineral poison). Action of *Visha* mainly depends upon *Gunas*. *Guna karmas* of *Visha* is collectively known as *Visha kriya*. The branch of modern science which studies the action Poison is called as Toxicodynamic study. Mode of action of *Visha dravya* i.e. *Visha karma* mainly depends these *Visha gunas*. In spite of their fatal effects *Visha dravyas* are used in various *Ayurvedic* formulations due to its quick action and in relatively smaller dose. Study of *Visha kriya* is important during treatment of poisoning as well as therapeutic uses of *Visha kalpa*. *Agadtantra* a branch of *Ayurveda* explains *visha* in its all aspect. Various *Acharyas* explain aspect of *Visha* in scattered form. To study *Vishakriya* there is need to recollect the scattered information and arrange them. In this review article attempt has been made to understand *Vishakriya*.

KEYWORDS – *Visha*, Poison, *Vishakriya*, Toxicodynamic study in *Ayurveda*

INTRODUCTION

According to *Sushruta Samhita*, *Agadtantra* is a branch of *Ayurveda* which deals with signs, symptoms and management of poisoning resulting from the bites of Snakes, Insects, Worms, Spiders, Rodents, etc. and various other poisons produced by improper combination of substances.¹ This concept can be compared with Toxicology is the science which deals with poisons with reference to their sources, properties, mode of action, toxic symptoms produced by them, lethal dose, nature of fatal results, treatment to combat the toxic effects and methods of their detections and autopsy findings.² The word *Visha* is

derived from the root ‘*Vis*’ (*Vyaptau*) having ‘*kt*’ proportion, means *Vishvaka* – everywhere, to get occupied, to get fully pervaded, to encompass, to interpenetrate, mainly denotes spreading nature of *Visha*. Thus, the Substance which occupies the whole or interpenetrates body immediately after ingestion is called as a *Visha*.³ As per *Sushrut Samhita* the Substance that causes sadness (*Vishada*) to the world is called as *Visha*.⁴ This is another deviation of *Visha* (‘*Visha Vipryoge*’) i.e. creation of Sadness. This suggests the capacity of *Visha* to derange the body and mind. According to *Charaka Chikitsa*, *Visha* is defined as, a

substance which originates from water (*Ambusambhav*), is of two types mainly *Sthavar* and *Jangama*, posses fire like properties, has eight impulses, ten properties and 24 remedial measures.⁵ According to Modern Toxicology Poison is the substance which, when administered, inhaled, is capable of acting deleteriously on human body.⁶

Fatal activities of *Visha* mainly depend upon its properties, known as a *Guna*. These *Visha* guna is considered as a most toxic in action. Due to these, *Visha* acts deleteriously on the body and lastly causes Death. *Visha* guna also decide the nature and severity of toxic effect. Mode of action of *Visha dravya* i.e. *Visha karma* mainly depends these *Visha gunas*.⁷ Every *Visha guna* has got some action on *Dosha*, *Dhatu* and *Mala*, exactly opposites of the *Oja gunas*.⁸ Poison having entered the body vitiates the blood first, next the *Kapha*, *Pitta* and *Vata* along with their respective seats then it involve the heart and leads to the Death of body.⁹ The pathogenesis of production of poisonous effects in the body is collectively known as *Visha Kriya* i.e. Actions of poison. According to Modern science, the study of the actions and interactions of an exogenous compound within an organism, including the compound's effects on processes at the organ, cellular and molecular levels is known as Toxicodynamic.¹⁰

Visha kriya in the context of its *Guna* associated *Karma*, *Vega utpatti*, *Vega lakshana* and *Dhatugat lakshana* is elaborately explained in Various *Ayurvedic* classics.^{11,12,13,14} This explanation follows the treatment of *Visha*, which is described in a systemic manner in the form of 24

modalities.¹⁵ This all types of *Visha lakshana* depends upon *guna* and *Gati*.¹⁶ So for the conceptual study of *Visha kriya* or for Toxicodynamic study in *Ayurveda* there is need to first understand *Visha Gunas* and their association *Karma*. In *Ayurvedic* texts, after proper *Shodhana* process many *Visha dravyas* are used as *Aushadha*, because dose differentiates *Visha* from Medicine. In a smaller dose *Visha* serves as a Medicine and in a larger dose Medicine acts as a *Visha*. *Visha* when used in a small dose by proper *Yukti*, it can act as Good *Bheshaja* like *Amruta*.¹⁷ *Charakacharya* explains use of *Visha* in the treatment of 7th *Visha vega* and named as *Prativisha* a 21st *Upkarma*.¹⁸ Here he explain use of *Sthavar Visha* in case of Animal bite poisoning i.e. *Jangama Dasha* and vice a versa.¹⁹ *Vagbhatacharya* also explain utility of *Visha* in different types of diseases.²⁰ To understand therapeutic effects of these *Visha* there is need to study concept of *Visha kriya* first. Authors of different *Ayurvedic* text described their view regarding *Visha kriya* in scattered form. In the present review article an attempt has been made to disseminate the concept of *Visha guna*, *Karma*, *Lakshana* in *Ayurvedic* parlance by presenting then in a single manner.

MATERIALS AND METHODS

This Literary Study mainly based upon review of *Ayurvedic* classical texts mainly *Bruhatrayee* and Books related to Modern Toxicology. To study action of *Visha*, there is need to understand *Visha Gunas* first, because according to *Ayurvedic* classics action of *Dravya* means *Visha* is mainly based upon the *Guna* (Properties).⁷ Properties of *Visha* and their associated

action are explained in detail as follows.

1. *Visha Guna (Properties of Visha) -*

Acharya Sushruta and *Charaka* have enumerated ten *Visha guna* with slight alteration. *Charaka*²¹ explain *Anirdeshrasa* while *Sushruta*²² explain *Apaki guna*. *Vagbhatacharya*^{23,24} has attributed eleven *Gunas* by including *Apaki* and *Avyaktarasa* instead of *Anirdeshrasa*. *Sharangdhara* explains certain extra *Gunas* like *chhedhi*, *Madavaha*, *Yogavahi* and *Jivitahara*.²⁵ A *Visha dravya* having all ten *Gunas* to its maximum extent is called as a *Mahavisha* while those having to a smaller extent or less than ten *Gunas* are termed as *Upavisha*.²⁶

2. *Visha Kriya (Action of Visha) -*

Visha Karmas or *Kriya* means probable mode of Action of *Visha* and is systemically explained in various texts which are shown in Table No. 1

As all poisons contain all properties generally in drastic state they aggravate all *Doshas* which affected by poison leave their normal functions. Poison does not get digested. It obstructs *Prana* (Vital function) Respiration, with the channels being blocked by *Kapha*. Such affected person stays unconscious in spite of living.²⁷ Poison having entered the body vitiates the blood first, next the *Kapha*, *Pitta* and *Vata* along with their respective seats. Then it involves the Heart and leads to the Death of the body.²⁸ The Poison first gets into and vitiates that specifically predominant *Dosha*. It gets localized in those organs which are related to that particular *Dosha* and produces diseases born from that *Dosha*.²⁹ Poison present in *Vatasthana* produce

disease of *Vata* as well as disease of *Kapha*. The Poison present in *Pittashaya* produces *Pitta-kaphaj* disease. Poison present in seat of *Kapha* creates *Kapha-pittaj Vikara*.³⁰ Thus, spreading all over the body causes obstruction to the channels, the poison expels the life of the person very quickly.³¹

3. *Visha Balavardhak Hetus (Factors modifying action of Poison) -*

As per *Ayurvedic* context *Visha* karma are mainly depends upon the *Gunas*. In modern literature the severity of action of Poison is mainly depends upon Dose and Time of Contact. Although many factor interfere routine activity of Poison. Ancient and Modern Science explains various factors which exert effect on action of Poison.

Poison of hooded snake causes Death quickly. All Poison become doubly powered during hot condition, So also in those having indigestion, suffering from increases of *Pitta* and Sunlight, children, diabetics, pregnant women old persons who are sick and emaciated who are hungry, dry and fearful and when bitten on sunless days.³² The person bitten in cremation ground, religious tree, ant hill, sacrifices, hermitage, temple, on last days of fortnight and also in places of *Tantrika* practices do not recover.³³ Poison aggravates in people who are afraid, drunken weak and afflicted with heat, hunger, thirst as well, also if the body constitution and time are similar otherwise it has mild effect.³⁴ The troubles gets increased due to hunger, thirst, heat, general debility, anger, fear, fatigue, indigestion, watery stools, increase of *Pitta* and *Maruta* (*Vata*) smelling of *Tila*, *Pushpa* (flowers), *Phala* (fruits) and fumes from the earth, hearing of thunder, trumping of elephant,

squeaking of mice, sound of musical instrument, during *Vishasankata* (critical period), eastern breeze or heavy breeze, plying with *Utpala* (lily) and *Madana* (sexual activities)³⁵ *Vagbhatacharya* explains *Vishasankat* means the period when the effect of Poison is maximum. *Vishasankat* is the combination of natural quality of the Poison constitution of the person the type, food, *Dosha* and *Dushya*. When these all conditions come together the prognosis of Poisoning patient is very bad.³⁶

According to Modern Toxicology factors that are modified action of Poison are 1.Dose, 2.Form of Poison, 3.Method of Administration and 4.Condition of body.³⁷

1. Dose - Generally small dose produce therapeutic action and large are exerts toxic effect; except, idiosyncrasy action, Allergic reaction, Habit, Combination of particular Poisons, etc. Emetic effects of Poisons may be reduces severity. The Poisons like arsenic, mercury are eliminated slowly from body and gets accumulated. Their repeated

administration even in small amount may result chronic Poisoning

2. Form of Poison - Gases and vapors act more rapidly the fluid act more solid one. Pure metals are non-poisonous, but their compounds are toxic. Water insoluble compounds are less toxic than soluble ones, whereas substance soluble in hydrochloric acid is most fatal.

3. Method of Administration - A Poison acts most rapidly when inhaled in gases or vapors from or when injected intravenously, next when injected intramuscularly or subcutaneously and least rapidly when swallowed. Snake venom is highly toxic when injected but harmless when ingested.

4. Condition of Body – Poisons have greater effect at two extreme ages. Persons in poor health are more susceptible to Poison. If a person goes to sleep after taking poison, the rate of metabolism of that poison slow down. Thus the Action of the Poison is delayed in this case.

Table 1 - Visha karma i.e. Action of poisons Mentioned in following Ayurvedic classics- Sushruta Samhita (Su.S.),³⁸ Charak Samhita (Ch.S.),³⁹ Ashtanga Sangraha (A.S.),⁴⁰ Sharangdhar Samhita (Sha.S.)⁴¹

VISHA GUNA	ACTION OF VISHA
Ruksha (Dryness)	Vitiates Vata ^{38,39,40}
Ushna (Hot)	Vitiates Pitta and Rakta ^{[39] [40]} ; Vitiates Pitta ³⁸
Tikshna (Sharp)	Disturbance of Marma points Intellectual confusion ^{38,39} Vitiates Pitta and Rakta ⁴⁰
Sukshma (Minute)	Vitiates Rakta ³⁸ Enters smallest organ and produces disease ³⁹ Enters smallest portion of Dosha, Dhatu, Mala etc ⁴⁰
Ashu (Quick action)	Immediately spreads all over body ^{38,40} Rapidly fatal ³⁹
Vyavayee (Spread without digestion)	Decidedly fatal or causes death ³⁹ Spreads quickly in interim body ^{38,40} Spreads without transformation ⁴¹

Vikasee (Muscle relaxant)	Death causing ³⁸ Vitiates and destroys <i>Dosha, Dhatu</i> and <i>Mala</i> ³⁹ Create disturbance in <i>Marma</i> points and altered intellect ⁴⁰ Creates pathogenesis in <i>Oja</i> and relaxation in Joints ⁴¹
Vishada (Clear)	Overpowers body strength ³⁹ Immediately spreads and not stopped by the body ^{38,40}
Laghu (Light)	Diminished response to treatment modalities and is difficult to treat ^{38,40} It is difficult to remove from body ³⁹
Apakee (Indigestible)	Difficult to remove from the body, Does not get assimilated certainly fatal ³⁸
Anirdesha rasa (Undetectable taste)	Vitiates <i>Kapha</i> ³⁹
Avyakta rasa (Indistinct taste)	Vitiates <i>Kapha</i> ⁴⁰
Chedee (Sacrificants)	Over powers body Humors, Tissues, Excreta, Mind ⁴¹
Madavaha (Produces Intoxication)	Intoxicates and alters consciousness ⁴¹
Yogavahi (Catalyst)	Enhances rasa in food accompanying substances ⁴¹
Jivithara (Fatal)	Certainly fatal ⁴¹

DISCUSSION

The Substance which disturbs all body functions and finally results fatality, is known as *Visha* (Poison). As per *Ayurvedic* texts *Visha* is originated from Ocean. This mythological process of origin of *Visha* leads to some scientific conclusion as follows, which proven helpful in understanding the action of poisons, signs and symptoms produced by poison, treatment of that particular poison and lastly deciding progress of patient i.e. *Sadhyasadhyatva* as well *Pathyapthya*.

1. *Ambusambhava* - *Amruta* and Poison (*Visha*) both are originated from *Jalamahabhuta*. It means that *Visha* in a small amount acts as a lifesaving regime like *Amruta*

2. During Poisoning treatment, *Jala* i.e. Water plays important role as it is *Yoni* (Origin) of *Visha*

3. Because of its watery nature *Visha* gets liquefied and flows like jiggery in rains and becomes mild after appearance of *Agastya*. This means in Rainy seasons Poisons are more fatal as compare to other season and more curable in *Sharad rutu*.

4. Poison and fire both has similar properties like *Ushna, Tikshna*, vitiates *Pitta dosha* predominantly

5. Poison is a creature of Sadness. It affects body and minds both. So during treatment assurance (*Satwavajaya* or *Aashvasana chikitsa*) plays important role.

Death causing properties of *Visha* as mainly depends upon its *Guna*. All body parts vitals are get influenced by the effect of *Visha*. As per *Ayurvedic* texts – *Tridosha* namely *Vata*,

Pitta, Kapha are vitiated by *Rooksha, Ushna* and *Agneya Guna* and *Anirdesha* rasa respectively. Because *visha guna Ashu* and *Vyavayee* it easily spread all over body. *Sukshma, Ashu* and *Vyavayee gunas* are responsible for penetration of *Visha* in each and every part of body. *Tikshna, Vikasee* and *Chedee* guna causes disturbance in marma points. Intellect alerted due to *Tikshna, Vikasee, Madavaha, Chedee*, properties of *Visha*. *Rakta dhatu* gets vitiated because of *Suksha* and *Tikshna guna*. *Anirdesha* rasa and *Yogavahi guna* is responsible for Enhancement of rasa of Food. *Vyavayee* is responsible for no transformation while *Apaki* causes no assimilation in the body. Due to *Laghu Visha* diminished therapeutics response. *Apaki* and *Laghu guna* makes *Visha* difficult to treat. *Vishada* and *Chedee guna* leads to overpowering of body and mind. *Ashu, Vyavayee* and *Vikasee guna* of *Visha* is responsible for rapid Death. All properties of *Visha* are exactly apposite to that of *Oja Guna*, which ultimately destroys *Oja* and proves fatal rapidly.

CONCLUSION

Toxico-dynamic study of a drug gives us information about action of the drug within body, which may be local, remote, both (local and remote) or general. Therapeutic property of the drug mainly depends on its action. As per *Ayurvedic* classics the action of *Dravya* (drug) depends upon *Gunas* (properties). This *Gunas* decided the therapeutic value of the drug. Except *Visha Dravyas* all *Aushadhis* possess maximum five or six *Gunas*. With the help of ten *Gunas*, *Visha* works fast than any other *Aushadhis*. These properties increase

therapeutic value of the *Visha*. The general treatment of the poisons as well the fatality of *Visha* is depends upon toxico-dynamic action (*Visha kriya*) of poison, so the knowledge of *Visha kriya* is important while treating toxicity as well during therapeutic uses of *Visha dravya*. Understanding *Visha kriya* help us to combat complication of *Visha dravya* in both condition.

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