**Agadtantra (Ayurveda Toxicology): Precious gift to Mankind**

Author :

Dr. Mamata P. Adhao (Ganorkar)

Associate Professor, P.G. Guide, Ph. D Guide

Department of Ayurveda Toxicology and Forensic Medicine

Bhausaheb Mulak Ayurveda Mahavidhyalay, Hospital and Research Centre

Nandanvan, Nagpur (Maharastra), India

Email: mamata.adhao@gmail.com

**Abstract:**

Agadtantra is one of the eight significant branches of Ayurveda called as Asthang Ayurveda deals with science of poison. It has been stated that every material in the universe becomes toxic when it is used indiscriminately. The potency of the toxins may vary. It is evident that elimination of toxins from the body is must for healthy life. Even though incidence of Plant toxicity for example (Arka) Calotropis poisoning or animal poisoning for example (Sarpa) snakebites is on the decline because of awareness. Still the number of patients reporting to Physicians with various skin diseases, allergic manifestations and manifold psychological problems caused by food, drug and pollution are increasing considerably which is the leading health problem of current era. Aayurveda studies problems caused by food, drug and pollution under Virruddha Aahar (Incomptible food), Aam Vish (endogenous toxin), Krutrim Visha (artificial poisons), Dooshi Vish(Denatured Poison) which are unique and significant concepts of Ayurveda and treats them accordingly by purification process and different Vishaghna yogas-Agadas (Antitoxic formulations). Thus we can find that Aayurvedic toxicology is far more relevant in the present and for the days to come than ever before.

**Key Words** : Agadtantra (Ayrveda toxicology), Ayurveda Concepts of Poisoning, Awareness about poisoning, Management

**Introduction**

**Ayurveda:**

Ayurveda is a branch of the Atharvaveda. The word Ayurveda is composed of two words Ayu and Veda. Ayu- life,Veda-sacred knowledge. **Ayurveda is sacred knowledge, science of life** [1]. In Ayurveda life is defined as the combination of mind, body, soul and senses. According to Ayurveda  **Dosha, Dhatu, Mala and**.A**gni** are four basics of the human body. There is enormous significance of all these ‘Mool Siddhant’ or the ‘basic fundamentals’ of the body in Ayurveda with special reference to ill health and its management. The three vital principles of **Doshas** ( humors) are vata, pitta and kapha, which together regulate and control the catabolic and anabolic metabolism. Seven **Dhatus** supports the body comprise as seven tissue systems in the body. They are as Rasa, Rakta, Mamsa, Meda, Asthi, Majja and Shukra which represent the plama, blood, muscle, fat tissue, bone, bone marrow and semen respectively. Dhatus provide the basic nutrition to the body and it helps in the growth and structure of mind. **Mala** means waste products. It is third in the trinity of the body i.e. doshas and dhatu. There are three main types of malas, e.g. stool, urine and sweat. Malas are mainly the waste products of the body so their proper excretion from the body is essential to maintain the proper health of the individual. All kinds of metabolic and digestive activity of the body takes place with the help of the biological fire of the body called **Agni.** The various enzymes present in the elementary canal, liver and the tissue cells. can be termed as Agni.

Balanced humors (Dosha), tissues (Dhaatu), normal excretion of mala (waste), normal desire for food (Agni) reflecting good digestion, ability to distinguish taste (Rasa), normal complexion, normal function of sensory and motor organs, mind and body synchronized these qualities denote one who has been **detoxified** [2].

There are eight significant branches of Ayurveda called as **Asthang Ayurveda** -.

1. Shalyatantra (Surgery), 2.Shalakyatantra (Medico-surgical system for supra clavicular region), 3.Kayachikitsa(General medicine), 4.Bhutviya (Psychosomatic disorder), 5.Kaumarabhrutya (Pediatric including midwifery), 6.Agadtantra(Toxicology), 7.Rasayantantra (Rejuvenation therapy), 8.Vajikarantantram (Andrology). **Agadtantra is one of the significant branch of Asthang Ayurveda which includes science of poison (Visha)**  with the synonyms Damstra, Visha chikitsa, Vishagaravairodhik- Prashamanam, Vishatantra [3].

**Agadtantra (Toxicology):**

Agadtantra deals with various natural and artificial toxic substances and poisons in detail along with their antidotes, deals with various methods of cleaning the poisons out of the body. The signs and symptoms and also the management of poisoning resulting from the bites of snakes, insects, spiders, rodents etc as well as plants including herbs (Aconite, Strychnine, Calotropis, Nerium etc.), vegetables, minerals (leads, mercury). It deals with poisoning by artificial poisons prepared from poisonous drugs or occurred by combination of two non poisonous substances and their remedial measures. This branch also deals with soil, air and water pollution, which are basically the causes of various dangerous epidemics. This discipline finds a parallel in the modern discipline of Toxicology .

**Aims of Agadtantra and its utility:**

* Protection of healthy individuals from poisons and
* Management of individuals afflicted from poisons.

Present food habits, life style and mental attitudes etc. are entirely different from that of the past. The basic essentials of life - air, food and water are all polluted and the hazards paint a gloomy picture for the coming generation. Similar gloom, mentioned from ancient period by Ayurveda through the discipline Agadtantra. In present scenario, as compared to plants, minerals and venom poisoning, cases of poisoning due to Garvisha(Concocted poison), Dushivisha (Denatured/ Latent poisons), Virruddhaahar (Incompatible food), Aamvish, Environmental poisoning are increased, the toxic manifestation and the remedial measures of which is **unique** and **significant concept** of Ayurveda. The greatest gift we can offer to the mankind is a clean and healthy world which is possible through Ayurveda toxicology. [4,5,6]

Awareness of toxicology is essential to improve quality and longevity of life, this chapter illustrate the source, development and toxic manifestations of **endogenous and exogenous poisoning**, hints on the remedial measures and concept of treatment.

**Definition of Visha (Poison):**

The very sight of one that causes vishada (depression) among the living being is a visha (poison), alternately the one that entraps human being in Mrutupasha (death rope ) and destroy the person is a Visha.[7]. Poison is defined as any substance taken into or formed in the body that destroys life or impairs health [8]. Poison (Visha) is defined as any substance that gains entry into the body (exogenous) or formed in it (endogenous) that is capable of endangering life or that can impair health [9].

**Concept On the Origin Of Visha (Poison) :**

Mythological origin of Visha - Two concepts exist on the origin of Visha (poison) :

- In the days of yore, while the Samudra (ocean) was being churned by the Suras (gods) and Asuras (demons), to obtaining Amruta ( Ambrosia), the divine potion for eternal life. Even prior to production of Amruta, a horrible creature, resembling a man arose from the sea, who was resplendent with Teja (aura) and had four larger curved canine teeth (Damshtra), green hairs, fiery eyes and the body emitted fierce fire. The world become Vishanna (despaired) at his sight and cast a deep shadow of gloom to the universe. **Sorrow (Vishaada) is generated by it and hence the name Visha.** Lord Brahmaa dispersed and dispatched this creature to immobile (Sthaavara) and mobile (Jangama) substrata by uttering a HUM sound. On reaching the substrates the creature merged with them, lost its shape and became indistinguishable [10].

Therefore Visha originated from Ambu (water) and resembles to Pavaka(Agni).

- While Lord Brahma was engaged in the process of creation of the universe, the task was hindered and obstructed by a demon (Asura) known as Kaitabba. Naturally, Lord Brahman was angered the abode of powers, from mouth of whom the anger in physical form, a terribly fierce one, fell down. It burnt to ashes the roaring demon, mighty and like death god. There after its miraculous luster developed further which on the very sight produced languor in gods, because of producing vishada (languor),it came to be known as Visha (Poison). Then after creating the progeny the Lord put the remnant anger in beings immobile [Sthavara] and mobile [Jangama] -[11].

**This concept highlights the fierce nature and deceptive appearance of poison.** Further it can be gathered that the effects of poison hardly respond to oppression or suppression. They have to be eliminated.

**Classification Of Poison [Visha]**

There are two types of poisons that have been described in the Agadtantra-

* Natural poisons (Akrutrim)
* Artificial poisons (Krutrim).

**The natural poisons** are classified as: Inanimate (Sthavara) and Animate (Jangama). Inanimate poisons or the Sthavara- comprise of poisons that have plant origin and toxic minerals, metals or metal ores that are found inside the earth. Animate poisons or Jangama consist of the venoms of animals like snakes, scorpions, worms, insects etc.

**Artificial poisons [Gara]** - designated as concocted poison are the invented poisons which are prepared by combining different kinds of animate and inanimate poisons, are again divided to **1.**True concocted poison composed of non-poisonous materials (here non-poisonous materials become poisonous by virtue of the mere combination)**, 2.**Composed of mixing of poisonous materials. [12]

**By other context**

Visha (poison) is of three type,

1.Sthavar visha (Poison from immobile source),

2.Jangam Visha (Poison from Mobile Source) and

3.Dushi Visha (Polluting poison) [13]

**Sthavar Vish**:

 Poisonous substances occurring in Sthavar (inanimate /immobile /static) substances are termed as sthavar visha. Ayurveda classics categorized sthavar vish in two types according to their potency- **Mahavisha** (strong Poison ), **Upvish** (mild poison). Upvisha in camparison to Mahavish are milder in strength and toxic effect. The only plant poison exist in current era as Mahavisha is **Vatsnabh (Aconitum ferox)** and Upvisha - Arka (Calotropis procera) Snuhi (Euphorbia nerifolia), Langli (Gloriosa superba), Karveera (Nerium indicum),Gunja (Abrus precatorius), Ahiphena (Papaver somniferum), Bhanga (Canabis sativa), Kupeelu (Struchnous nuxvomica), Jayapala (Croton tiglium), Bhallataka (Semicarpus anacardium), Dhatura (Dhatura metel), Chitraka(Plumbagozeylanica) and metal poisons are Parada (Mercury) Sankhiya visha (Arsenic), Tuttha (CopperSulphate) etc. [14]

**The substrata(Adhisthan)** of natural Inanimate poisons are ten viz. root, leaves, fruit, flower, bark, latex, heart. wood, resins, toxic minerals and metals and tuber.

**Toxic Manifestations of Inanimate Poison** -

* Root poisons cause a sense of constriction, the patient utters nonsense and becomes unconscious.
* Leaf toxins cause a sense of binding, or wringing pain of organs, yawning and breathing disorders.
* Fruit poisons produce vomiting anorexia and edema of testicles.
* Poisonous flowers precipitate flatulence, vomiting and finally, the patient becomes unconscious.
* Skin (bark), heartwood and mineral poisons cause halitosis, dryness and roughness of mouth, headache and catarrhal inflammation.
* Latex poisons cause frothy discharge from the mouth heaviness of tongue followed by incoherent speech and catharsis.
* Mineral and metal toxins cause burning sensation for the palate, chest pain and coma[15].

**Jangam Visha (Animate / mobile Poison):**

Poison derived from animals like Sarpa(Snake) and other such poisonous beings is termed as Jangam Visha.

Ayurveda has enlisted faunae that are poisonous – Sarpa (Snakes), Kita (insects), Mushaka (Rat), Luta (Spiders),Vrushika (Scorpion),Gruhgodhika (house lizard),Savish Jalauka (poisonous leech),Matsya (poisonous fish), Manduka (Poisonous frog) Kanabha (a kind of bird),

Alarka (Dog, Fox) and other such creatures with teeth, Visha (poison ) enclosed in their dentures and poisoning caused by their bites.

Sites of venom among poisonous animals, is termed as **Adhisthan (site)** of Jangam visha. They are sixteen: viz. sight, breath, teeth/fangs, nails, urine, feces, semen, saliva, menstrual blood, pincers, anal region, beak, bone, bile, hairs and dead body [16].

Bite by **Jangama** creatures gives rise to **general features** as-

Nidra(Somnolence), Tandra (drowsiness), Klama (mental fatigue), Daha(burning sensation).Paka (inflammation), Lomharshana (horripilation), Shopha(Oedema), Atisara(diarrhea) [17].

**Trarment Of Visha(Poisoning) –** consist of two type

1. **Samanya Chikitsa (Generalized treatment) -** Treatment is based on the involved Doshas(Humors), stages of poisoning and symptomatically. Aacharya Charaka has enumerated Chaturvidha Chikitsa Upkram (twenty four Therapeutic modules) for general treatment of poisoning.
2. **Vishista Chikitsa (Specific Treatment) –** Is specific to the poison in question, e.g. treatment of poisoning by Kuchala, Vatsanabha or management of Sarp Visha (Snake bite).

 **Concept of Prativish (Antidote):**

 Accoding to Ayurveda Sthavar Vish is antidote for Jangam vish and Jangam visha is antidote for Sthavar vish, for example in root poisoning ,snake venom is used as antidote and in snake poisoning plant poisons are administered means administration of Visha cures poisoning because of Prabhav (Specific action) [18].

**Artificial Poison [Gara]**

Artificial poison also termed concocted poison is prepared by mixing various substances or various animate and inanimate poisons. It produces Gada (diseases). Sometimes Gara metabolize very slowly, the ill effects not initially grave but only a menace. In the long run it is fatal and cause death [19].

Ayurveda describes **two types of artificial poison.**

* One is composed of non-poisonous matter given in combination.( Separately nontoxic), but these act as poison when ingested in the mixed form for example.

-Madhu (honey) and Ghruta (Ghee) in equal quantity.

* The second type is prepared by combining toxic materials. for example - Pesticides

According to their combinations these Gara visha shows acute poisoning or sub-acute poisoning or chronic poisoning or produces disorders like Shopha (Edema), Pandu (Anemia), Udara (Ascites), Unmada (Psychological disorder), Durnam (Piles) etc. in the body [20].

**In current scenario,** Gara visha can be correlated with any substance which is synthetic or artificial in origin and harmful to body either directly or by means of its toxic metabolites.

 In 21st century each individual living in this world is under the influence of artificial or synthetic substances. Gara visha concept covers many areas like incompatible diet, adulteration of food, preservatives-additives, sweeteners used in foods, pesticides or agrochemicals found in cereals-vegetables-fruits-milk. Drug induced toxicity (Drugs in combinations or indiscriminate use of synthetic drugs like analgesics-antibiotics- anticonvulsants-anti hypertensive-oral contraceptives etc.), occupational poisoning etc.

**Management** **of Garavisha -** includes induction of emesis and purgation by suitable emetics or purgatives, consumption of compatible diet. Tamra Bhasma with honey for Hridashuddhi (Removal of poison from heart) and medication with Swarna Bhasma (Gold Bhasma) [21].

**Dooshivisha (Denatured or latent poison):**

Any poison either Sthavar (inaminate), Jangam (animate) or Kritim Visha (artificial), which has not eliminated completely from the body or partially nullified after the using of anti-poisonous remedies, after exposure to fire, the wind, the sun etc. and when the foresaid natural ten qualities of the poison becomes less potent are called as Dooshivisha.

This Dushi Visha does not being fatal because of low potency and remains inside the body for several years, that is covered by Kapha, such kinds of toxins shows its toxic effect in the body after prolonged exposure. It remains as an inactive state for a long period and that can extend for years. The defective food habits can lead to Dushivisha. The retention of metabolic waste products (Faecus, urine, menstrual blood) in the body will cause re-absorption of toxins into blood stream leading to Dushivisha. It produces symptoms according to its relation with Dhatu. Mild in nature and potency, it should not be neglected.

 During favorable situations such as geographical condition (Desha), time (Kala), diet(Anna) and sleeping at day time (Diwaswap), use of uncooked foods, cloudy weather, ingestion of unsuitable foods, by direct breeze, etc. It gets aggravated and vitiates bodily Dhatus.[22]

The poisons that have entered into the body should be thoroughly treated and completely cured in time by giving proper and potent medicines and antidote. If the drugs are not potent enough to neutralize the visha or if the treatment is not in accordance with the Dhatus or if the medicine is not given in recommended dosage for specified period of time to pacify the visha, the visha won’t get neutralized or cured properly and eliminated from the body. As the result of this improper and insufficient treatment some part or traces of the visha remain in the body. This won’t produce any immediate symptoms but liesdormant and spreads slowly to the other parts and tissues of the body. **When the conditions become suitable, it is manifested with upadravas (complications).**

Person suffering from Dooshivisha shows symptoms like discolored complexion, looseness of stool (Diarrhea), bad taste in mouth, foul smell from mouth, unquenchable thirst, vomiting, fainting, depression, stammering speech, Dushyodara (chronic ascites). Advancing further, it causes impaired functions of reproductive tissues, insanity, flatulence. Various types of skin diseases and widespread skin lesions are produced due to this [23].

 **In present era**, knowingly or unknowingly human beings are exposed to various types of poisons which may be of natural or artificial origin. Low potent poisons of artificial origin called as Garavisha gain entry in to the body and act as Dooshivisha. Storage of chemicals , toxins often occurs when the rate of exposure is greater than rate of metabolism or excretion. Ayurveda explains this notion of body burden of toxins under the concept of **Dooshivisha (Cumulative Poison)**. As Dooshivisha is less virulent it does not cause any immediate manifestations and lies dormant in the body for several years. Even Dushi Visha also formed after the ingestion of different kinds of Viruddha Aahara, Ahitkar Aahara, Vihara, intake of different kinds of drugs like steroids, NSAIDs, food containing heavy metals, pesticide containing Vegetables, which in long term results in the formation of Dushi Visha, which brings different kinds of disease conditions including non-communicable diseases like Hypertension, Diabetes mellitus, Cancer etc.

**Management of Dooshivisha -** these toxins must eliminate from the body by using different measures, mentioned in classical text for purification of body like Swedan (sudation), Vamana (emesis), Virechana purgation, Raktamokshana play the role in elimination of toxins or helps in the detoxification of body and residues toxins that is not eliminated. Medication-Tuttha Bhasma, Gandak Rasayana, Kalyankghrut, Dooshivishari Agada pawder with honey [24].

**Viruddha Ahara (Incompatible diet/food)**

All kinds of foods which aggravate (Increase) the doshas but do not expel them out of the body and all of them become unsuitable or unhealthy for body is called as Viruddha. The food articles by which the doshas are going to be provoked and spread or diffused from their place but these doshas are not eliminated from the body. So these food articles become unwholesome which not only provokes the doshas but also aggravate the Dhatus. **Drugs and food materials incompatible with the normal body tissue elements are Viruddha.** Virruddha Aahar can be interpreted as food allergy.

Ayurveda has mentioned eighteen types of food incompatibilities viz.

1. Desha Viruddha (Place incompatibility) - E.g. Hot and sharp food in arid place. Cold and unctuous food in marshy place.

2. Kala Viruddha (Time incompatibility) - E.g. Cold and dry food in cold season. Spicy and hot food in summer.

3.Agni Viruddha (Digestion incompatibility) - E.g. Intake of heavy food when digestion is mild. Intake of light food when power of digestion is high.

4. Matra Virudha (Dose incompatibility)- E.g. Honey and Ghee in equal quantities

5. Satmya Viruddha (Habit incompatibility) - E.g. Spicy food to a person who is not habituated to it.

6. Dosha Viruddha (Bio energetic Humor incompatibility) -Food which aggravates any of humors Vata, Pitta or Kapha Doshas. E.g. dry and light diet aggravates Vata Dosha. Hot and spicy food aggravates Pitta Dosha while unctuous and cold food aggravates Kapha Dosha.

7. Sanskara Viruddha (Process incompatibility) - Incompatible due to improper cooking process. E.g. Pigeon fried in mustard oil.

8. Veerya Viruddha (Potency incompatibility) – Combination of substances of opposite potencies. E.g. Combination of Fish and milk with hot and cold potency respectively.

9. Koshtha Viruddha (Gut incompatibility) - Not suitable for the type of Koshtha (Gut). E.g. Strong purgatives in Mrudukoshtha (soft bowel) and mild laxative in Krurakoshtha (hard bowel).

10. Avastha Viruddha (Condition incompatibility) – Not suitable to the condition of person. E.g. dry food to a person who exercises more. Unctuous food to excessive sleepy person.

11. Krama Viruddha (Sequence incompatibility) - E.g. Taking food with natural urges like defecation and urination or taking food without appetite.

12. Parihara Viruddha (Exemption incompatibility) - Use of things which are to be avoided before and after food. E.g.Intake of hot potency substances after eating pork.

13. Upachar Viruddha (Regimen incompatibility) - E.g.Exposure to cold after consuming Ghee.

14. Paka Viruddha Cooking incompatibility) – Improperly cooked. E.g. Use of bad fuel material to cook, overcooked or uncooked rice.

15. Samyoga Viruddha (Combination incompatibility) - E.g. Milk with acidic fruit.

16. Hrita Viruddha (Mind incompatibility) - Objectionable to mind. E.g. Meat for Strict vegetarian.

17. Sampata Viruddha (Maturity incompatibility) – Immature or Over mature substances. E.g. Immature Banana over mature mango.

18. Vidhi Viruddha (Regulation incompatibility) - Against the rule of consuming food. E.g. eating without privacy.

Viruddha ahara generally do not have any effect on those who are habituated to it or consume it in a small quantity, their Agni (Digestive power) is strong and who are young and practicing exercise regularly.

 **In present era** the following food items which consumed regularly can be included in eighteen types of Viruddha ahar (Incompatible food). E.g. Bakery products like Cake, Pastries, Bread, Biscuits having combinations of Maida, milk, egg, cheese etc; in India street food like Dabeli, Panipuri and Chats having combinations of potatoes, tomatoes, chilies with Yoghurts. Burger and Pizzas are heavy to digest. Burger and Pizza with Cold Drinks or Milk shakes again become incompatible.

**Food combinations must be avoided in daily life style-**

* Fish should not take along with milk.
* Dahi (Curd) should not be consumed in the night.
* Warm honey should not be consumed by the person suffering from heat exhaustion or sun stroke.
* Avoid consuming cold water immediately after a meal.
* Avoid consuming hot tea or coffee immediately after a meal.
* Avoid eating raw and cooked foods together. One can have the salad first and then proceed for dinner after a short gap.
* After consuming green leafy vegetables, drinking of milk should be avoided.
* After eating Muli (radish), Lasuna (garlic), Tulsi (basil) one should not be consumed milk because of the risk of skin disorders (Leprosy).
* All Sour substances are incompatible with milk.
* Avoid eating melons and grains together. Melons digest quickly whereas grains take more time. This combination will upset the stomach.
* Sweet and sour fruits should never be combine[25,26].
* Agni mostly gets vitiated by **Viruddhahara and caused Agnimandya** which is source of several diseases. Undigested food material turns sour and acts like a poison, which is called **Aama visha.**

-Due to continuous use of incompatible food many diseases occur like:

Klaibya (Impotency) Visarpa (Erysipelas) Jalodara (Ascitis) Unmada (Insanity) Bhagandara (Fistula in ano) Murcha (Coma/fainting) Aadhmana (Abdominal distention),Vandyatva ( impotency ), blindness, erysipelas, ascites, boils, insanity, anal fistula, fainting, intoxication, distension of abdomen, spasmodic obstruction of throat, anemia, food poisoning, skin diseases, mal-absorption syndrome, edema, hyperacidity, fever, congenital disease of progeny or death.

**Incompatible food act like Garavisha (Concocted poison) may be one of the reasons of several diseases and death.**

**Management -**

Diseases caused by incompatible food may be treated with - Vaman Karma (Medicated Emesis), Virechana (Purgation), Administration of antidotes (Administration of substances which are of converse qualities), Taking prophylactic measures, Preventive measures like exercise.

 Secondary prevention should be done by slowly replacing incompatible habits with wholesome habits [27].

**Aam Visha :**

This condition occurs to those **consume incompatible food regularly.** Habitually **eat before the previously ingested food is digested,** having chronic indigestion.

Aacharya Vaagbhat amended this concept by providing the definition for Aama-It refers to an **endogenous toxin.** This toxin is a harmful material formed in the body at the level of gut or even at the level of cellular metabolism. The verity of this toxin will differ and the symptoms will change depending upon the production and accumulation of the toxin

General signs and symptoms cause by Aam Visha (endogenous toxin) are –

Blockage in the channel of the Body, Fatigue, Heaviness of The Body, Neurotic Changes, Lassitude, Indigestion, Constipation, Loss of Appetite ,Increased Salivary Secretion.

This Intrinsic Toxin (Aamavish) Present In Gut Produces Diseases Intestinal Obstruction (Alaska) ,Cholera (Vishoochika), Paralytic Ileus (Vilambika),Botulism(Danalasaka).

The treatment of these diseases is very difficult. Here Aama present in profuse quantity in the **body acts as an acute poison.** Any cold treatment will tend to increase Aama and any hot treatment will tend to augment the properties of poison.

**Management of Aam Visha :**

Langhana (Keeping on fast), Swedana ,Sunbath,Pranayama Yoga,

**Panchakarma**: It includes Vaman, Virechana, Nasya.

Some herbal drugs: Fresh Ginger, Garlic, Black Peeper, Castor Oil, Aloe Vera, Coriander, Guduchi, Cumin, Pushkarmool, Tulsi, Guggul [28,29].

**Environmental Toxicity in Ayurveda**:

In Ayurveda toxicology Environmental Toxicity has its unique significance**.** Kalpasthana of Susruta Samhita elaborate the description of environmental toxicity long- windedly. The sources of environmental toxicity, means by which the environment can be poisoned especially related to warfare purpose.

**Features** to identify the toxicity in the environment and the **treatment plan** to prevent and remove poison from the environment are the ways by which it is made fit to be used by the human beings.

The four main sources which are mentioned in the Susruta Samhita through which poisoning can be done in the environment are Water, Land, Fodder, Air.

**Poisoned water:** It becomes slimy, possesses strong odor and froth, lines on the surface, frogs and fish of water die, birds living in marshy places, men, horse and elephant which immerse in the water will develop vomiting, delusion, fever, burning sensation, swelling.

**Management –** The herbs as Dhava, Ashvakarna, Paribhadra, Patala, Siddhaka, Moksaka, rajadruma and somvalka, all these drugs are burnt and the collected ash is spread on water body and put into the pot containing drinking water to be used.

**Poisoned Land**: Ground, surfaces of stones, banks of rivers and sand dunes which have been poisoned and which come in contact with the body parts of cows, oxen, horses, elephant, camel, donkey and men produces swelling , burning sensation and makes hairs and nails to fall off.

**Management** : Ananta (durva) along with Sarvagandha (fragrant drugs example ela, karpura etc and sweets (honey, jaggery etc) made as paste should be dissolved in sura (beer) or water and sprinkled on the poisoned road or water boiled with Vidanga, Patha and Katabhi be sprinkled.

**Poisoned Fodder**: Animal becomes weak, faint, vomit, purge and some even die.

**Management** : Animal should be made to hear the melodious sound of musical instrument suchas drums, kettle drum etc which are beaten hard being smeared with the paste of silver, mercury, gold, sariva, musta all in equal quantity macerated in the bile of brown colored cow.

**Poisoned Air**: If air,smoke is poisoned birds fall on the ground, exhausted develop cough, headache and severe eye diseases.

**Management**: Laksha, Haridra, Ativisa, Abhaya, Musta, Harenuka, Eladala, Tagara, Kustha, and Priyangu should be put on fire and the resulting smoke purifies the air.

**Conclusion**

Anything that stimulates the aggravation of humors without culminating in the expulsion of such vitiated humors is considered as incompatible in Aayurveda toxicology. Incompatible diet also falls under this group and continuous use of such diet causes various toxic diseases. Public health problems like water pollution and air pollution also come under the purview of Aayurvedic toxicology . Denatured poison, chronic and cumulative toxicity and incomplete detoxification or partial elimination of toxins from the body can function as Dooshi Visha. Ayurveda toxicology consider some certain conditions equivalent to poison whch are **unique and significant** as Virruddha aahar (incompatibile food materials), Aam Vish, Dooshi visha, Gar Visha. Most of the disorders caused in present scenario are due to unconventional etiology such as indiscriminate use of pesticides-fertilizers in the farming, food adulteration, food additives-preservatives sweeteners, indiscriminate use of various synthetic drugs etc. and this unconventional etiology causes diseases like cancer, cardiovascular disorders, neurological disorders, liver disorders, renal disorders, psychological disorders, skin diseases etc. For this unconventional etiology, modern science emphasizes on oxidative stress and treatment given symptomatically while Agad tantra in Ayurveda emphasizes on balancing humors by (Shodhan) Purification of body Panchakarm and Agadpana (Consumption of Antitoxic formulation) Now it’s time to explore and use the principles of **Agadtantra the precious gift to mankind** not only to cure poisoning conditions but also to improve quality and longevity of life.

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