



Review Article

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CONCEPT OF DUSHI VISHA (CUMULATIVE TOXICITY) IN MODERN ERA: A CRITICAL REVIEW

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ABSTRACT

In present era, thousands of harmful toxins are accumulated in environment are taken by human beings in different forms. These harmful toxins cause cumulative toxicity in human being which results in symptoms that can be seen slowly after their long- term use. These harmful toxins may be of Sthavara Visha/plant origin (e.g. Fruits and vegetables contaminated with pesticides, ripening agents, infections, heavy metal toxicity in plants, Maida, Pollen grains, dust, Latex from plants) Jangama Visha/ animal origin (e.g. Animal dander, adulteration in milk and milk products, Sea food containing heavy metals such as Hg, PCBs) Kritrim Visha (e.g. Toxic ingredients in cosmetics, Food preservatives, Food Flavouring agents, Synthetic Colour Additives, Environmental Pollution, Agricultural poisons, Medications like aspirin etc.). This Cumulative toxicity is similar to Dushi Visha as described in Ayurveda. A poison, which is having fewer properties, which means less than ten classical properties that a poison should contain, or either the poison which is having lesser potency of all the ten properties, attains a latent stage in the body is called as Dushi Visha (latent poison). The aim and objectives of this study is to study the concept of Dushi Visha in modern era and its toxic effects on human body.

Keywords: Cumulative toxicity, Dushi Visha, Jangama Visha, Kritrim Visha, Sthavara Visha

INTRODUCTION

Health is the reflection of normal physiological and metabolic activities or Samyavastha of the Tridosha and formation of Prakrit Dhatu. Ayurveda is a science of life as its main purpose is to maintain the health of the healthy individual and to cure disease in ill person. According to Ayurveda, a person is said to be healthy when the three Doshas (vata, pitta and Kapha), Digestive fire (digestion, assimilation and metabolism), all body tissues and components (Dhatus), all the excretory functions (physiological functions of urination and defecation) are in perfect order with a pleasantly disposed and contented mind, senses and spirit¹.

In present era, there are number of causative factors which are responsible for diseased conditions in human being. Among them, Dushi Visha is one of the main causes. Dushi Visha is a poison originating from – inanimate (Sthavara) or animate (Jangama) sources or any artificial poison (Kritrim Visha) when partially expelled out from the body by using detoxification through anti-poisonous drugs, then, a part of it retained inside the body tissues as a latent poison². This latent poison under favourable conditions aggravates Doshas, vitiates dhatus and produce diseases³. Dushi Visha is devoid of the natural ten properties of Visha. Due to its low potency, it usually will not cause death and is responsible for the delayed action and cumulative toxicity on the body.

Causes of Dushi Visha (Cumulative toxicity) in today's era

Table 1: Various types of Sthavara Visha, Jangama Visha, Kritrim Visha in the form of Dushi Visha in Present era

Sthavara Visha (Inanimate Poison)	<ol style="list-style-type: none"> 1. Fruits and vegetables contaminated with pesticides. 2. Infectious Fruits and vegetables. 3. Fruits containing ripening agents such as Calcium carbide and also contains chemicals to delay ripening for local industries. 4. Food adulteration like- Atta, edible oils, pulses, coffee, tea Vinegar, Besan Curry powder etc. 5. Heavy metals toxicity in plants. 6. Excessive consumption of Food made from Maida like Pizza, Burger, Bread, Samosas, Noodles, Momos, Pastas etc. 7. Latex from plants like Aloe latex. 8. Pollen grains / Dust
Jangama Visha (Animate Poison)	<ol style="list-style-type: none"> 1. Adulteration in milk and milk products. 2. Sea food containing high levels of Hg and PCBs from water or food they eat. 3. Meat prepared from infectious animal. 4. Animal Dander
Kritrim Visha	<ol style="list-style-type: none"> 1. Toxic ingredients in cosmetics. 2. Environmental Pollution. 3. Food preservatives 4. Food Flavouring agents. 5. Synthetic Colour Additives. 6. Hot Drinks and Liquids in Plastic cups. 7. Toxicity of Tattoo ink.

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| 8. Agricultural poisons. |
| 9. Medications like Penicillin, Aspirin. |

Sthavara Visha

Sthavara Visha (Poisons originated from vegetable and mineral) have ten sources⁴ which are as follows: roots, leaves, fruits, flowers, bark, milky exudates, sara, gum (Niryasa), bulb and mineral or metal (Dhatu)⁵. Some examples of Sthavara Visha are Vatsanabha, Gunja, Klitaka, Kumudaghni, Snuhi, Haritala, Phenashma, Kala-Kuta, Mustaka etc. But, In Present era, Poisoning cases with these Visha are very small in number. In this era, we daily ingest different forms of vegetable poisons as Dushi-Visha. These daily ingested poisons are not capable of causing death, due to its low potency. These poisons remain inside the body as latent poison and produce many diseases when conditions become favourable.

In present era, Fruits and Vegetables which we daily eat, are contaminated with pesticides, ripening agents such as Calcium carbide, chemicals for delaying ripening. Pesticides are mainly used to reduce damage to crops from weeds, rodents, insects and germs. This increases the yield of fruits and vegetables. But some part of pesticide residues, or found on the surface of fruits and vegetables when they are purchased as groceries. High levels of pesticides in food can lead to the development of diseases such as cancer, kidney and lung ailments etc. In children, high chemical residues can lead to childhood cancer, mental health problems such as autism and ADHD⁶.

Plants grown in areas having high level of heavy metal contents, also contains heavy metals in Fruits and Vegetables. Ingestion of these fruits and vegetables, causes accumulation of heavy metal in tissues which produce chronic toxicity symptoms in humans. Maida or Refined Flour is made from wheat, is not good for health. In present era we daily ingest maida in the form of Pizza, Burger, Bread, Samosas, Noodles, Momos, Pastas etc. Maida contains no fibre and turns into a kind of glue in intestine, making it difficult to digest as a result it slows down body's metabolism. Maida affects bone metabolism and also leads to issues like headache, stomach ache, migraines, stress, PCOD etc⁷. Aloe gel is generally considered as safe when appropriately applied to the skin. But taking 1 gm of aloe latex daily for several days can cause acute kidney failure, cancer⁸. Pollen grains from plants may cause allergic reactions to a person.

Kritrim Visha

Jangama Visha

Poisons, which originates from animals like snake venom, scorpion sting, rodent, dog, leech and different types of insect bite come under this type. Partially treated animal bite cases result in retention of poison in body as Dushi Visha which produces different symptoms when condition become favourable. But in present era, toxicity occurring from animal source through any mode, comes under the heading of Jangama Visha.

Milk obtained from cows, goats, sheep and used by humans as a drink or for making butter, cheese etc. Adulteration of milk decreases the quality of milk as most of the chemicals used as adulterants are poisonous and cause health hazards. Adulterants which are added in milk are soap, acid, starch, table sugar and chemicals like formalin. Formalin is used to preserve milk for long period. Due to its high toxicity, it is considered to cause kidney and liver damage.

Fish is an important part of a healthy, well balanced diet. They provide a good source of protein and vitamins. Fish can take in harmful chemicals from the water and the food they eat. Chemicals like mercury and PCB deposit in their bodies over time. High level of mercury is harmful to foetuses, infants and children as their bodies are developing. PCBs can cause cancer and other harmful effects. High level of Hg and PCB can harm brain and nervous system⁹.

Non- veg food cause various physical side effects besides psychological impacts. Undercooked meat may harbour many bacteria which can cause life threatening diseases. Pork and beef are commonest cause of neurocysticercosis or brain parasite which cause seizures, coma and death. Outbreaks of food poisoning is frequent reported in parties and weddings after taking contaminated meat. Insecticides, pesticides and other water insoluble chemicals accumulate in biological bodies and their concentration increases in food chain. Ingestion of animals in the form of meat cause toxicity in human beings. Animal dander is composed of tiny, even microscopic, flecks of skin shed by cats, dogs, birds and other animals with fur or feathers. These bits of skin can cause reactions in people who are allergic to it¹⁰.

Table 2: Potentially Toxic Ingredients in Cosmetics

Toxic ingredients	Found in	Harmful effects
Sodium Lauryl/ Laureth Sulfate (SLS and SLES)	Shampoo, Body wash, Face wash, Hand soap, Toothpaste, Bubble bath	Skin irritant, rapidly absorbed and retained in eyes, brain, heart and liver result in harmful long-term effects, Cataracts in adults, corrode hair follicles and impair ability to grow hairs.
Petroleum / Paraffin Oil	Baby oil, Lip balm, lip stick, Lip gloss, Mascara, Moisturizers, Concealer, Foundation, Face powder, Hair gel, Body wash, Eye shadow, Petroleum jelly, Hair conditioner	Slowing down Skin's normal functioning, resulting in premature aging. Other skin disorders such as Contact Dermatitis
Formaldehyde	Nail polish, shampoo, body wash, eye lash glue, Hair products, other straightening treatments.	Recognized by EPA as a Carcinogen and linked to Lung Cancer, Hodgkin lymphoma, Myeloid Leukaemia. Eye, Nose and Throat Irritation. Reproductive and developmental toxicity, Asthma, Immunological toxicity
Hydroquinone	Skin Lightening Creams	Cancer, Organ toxicity and Skin Irritation
Parabens (Isobutyl Paraben, Butyl Paraben, Methyl Paraben, Propyl Paraben)	Almost every type of personal care product	Skin irritation, Contact dermatitis in individuals with Paraben allergies. Skin aging and DNA damage. Endocrine disruptors and linked to fertility problems.
Phthalates (DBP, DEHP, DEP)	Synthetic fragrance, Nail Polish, Hair Spray	Endocrine disruptors may cause Birth defects. Damages Kidneys, lungs and liver

Synthetic Fragrance / Parfum	Almost every type of Personal Care Products	Hormone disruption, Headache, Dizziness, Rash, Hyperpigmentation, Violent Coughing, Vomiting, Skin Irritation.
Propylene Glycol	Cosmetics, Baby wipes, lotion, toothpaste, shampoo and deodorant.	Damages Liver, Heart, CNS. Allergic reactions, Hives and eczema.
Triclosan	Anti- bacterial Products such as Soap, Hand Sanitizer, Deodorants, Toothpaste and Cosmetics	Endocrine Disruptor and enables bacteria to become Antibiotic-resistant. ¹¹

Table 3: More Toxic Ingredients in Cosmetics to be avoided

S. No.	Toxic ingredients	Found in	Harmful effects
1.	Toluene	Nail Polish	Toxic to Immune System and can cause birth defects.
2.	Benzalkonium Chloride	Sunscreens, Moisturizers	Severe Skin, eye and respiratory irritation and allergies
3.	Bisphenol A (BPA)	Eye shadow, Styling gel	Hormone disruptor
4.	Butoxyethanol	Fragrance, Hair color	Skin Irritant, can cause Cancer and reproductive toxicity.
5.	BHA and BHT	Lipstick, Moisturizers, Diaper Creams	Carcinogen, Hormone disruptors and may cause Liver damage
6.	Bismuth Oxochloride	Mineral powder makeup	Cause skin irritation and sensitization such as redness, itching, rashes and inflammation.
7.	Coal Tar (Aminophenol, Diaminobenzene, Phenylene diamine)	Hair dye, Shampoo, Colorant in Cosmetics	Carcinogen
8.	Cyclomethicone and Dimethicone	Skin care, Foundation, Tinted Moisturizer	Endocrine disrupters
9.	Diazolidinyl urea and Imidazolidinyl urea	Skin, Body and Hair Products, Anti-Perspirants and Nail Polish	Joint pain, Allergies, Headaches, Depression, Chest pain, Chronic fatigue, Dizziness, Insomnia and Asthma, also cause cancer
10.	DEA, MEA and TEA (Diethanol amine, Cocamide and Triethanol amine)	Body wash, Shampoos, Soaps and Facial Cleansers, Hair dyes, mascara, fragrances and Sunscreens	Hormone disruption, Irritation of eyes, skin, respiratory tract, sore throat, asthma and Allergic contact dermatitis.
11.	EDTA (Ethylene Diamine Tetra acetic acid)	Hair color, Moisturizers	May be toxic to organs
12.	Methyl Cellosolve (Methoxyethanol)	Anti- Aging creams	Neurotoxin, Carcinogen
13.	Oxybenzone	Sunscreens, Moisturizers, Foundation, Lipstick with SPF	Irritation, sensitization And Allergies, Possible Hormone Disruption
14.	Polyethylene Glycol	Shampoo, Body wash, Foaming Cleansers, Creams, Sunscreen	Carcinogens, Skin irritant, Toxic to Respiratory System.
15.	Resorcinol	Hair color	Skin Irritant, Toxic to immune system, Hormone disruption.
16.	Retinyl Palmitate and Retinol	Anti-Aging and Blemish control skin care	Speed the growth of skin tumours when used topically.
17.	TALC	Cosmetic Powders, Eye shadow, Blush, Baby Powder	Respiratory toxin in large amounts, can cause tumours in lungs. ¹²

Environmental pollution

Introduction of contaminants into the natural environment that cause adverse change. Ayurveda believes that the existence of living beings includes the physical body, mind and soul. The human being is a miniature replica of the vast universe outside. Both Universe and Human being are made of five basic factors or Panchamahabhutas (Akasha, Vayu, Teja, Jala, Prthvi).

“Yavanto hi loke (murtimanto) bhavavisesastavantah puruse, yavantah puruse tavanto loke”¹³

The individual (Purusha) and the Universe (Loka) are in constant interaction with one another, and exchange the Panchamahabhutas from each other, thus trying to maintain their normalcy and homeostasis. As long as this interaction is wholesome and balanced, the person is in good health condition. When this harmony breaks, the seed of illness is sown as seen in environmental pollution.

Major forms of pollution include: Air Pollution, Water Pollution, Soil Contamination, Noise Pollution, Radioactive Contamination etc.

Table 4: Causes and harmful effects of environmental pollution

Environmental pollution	Causes	Harmful effects
Air Pollution	Motor Vehicle emission, Wood burning fires, Fires on agricultural land, Exhaust from diesel generators, Dust from construction site, Burning garbage	Effects on Children: Lower children's immune system, increases risks of cancer, epilepsy, diabetes and even adult-onset diseases like multiple sclerosis. Effects on Adults: Reduced lung capacity, Headaches, Sore-throats, coughs, Fatigue, Lung Cancer and early death.
Water Pollution	Industrial Waste contains Pb, Hg, S, asbestos, nitrates etc. Sewage and waste water produced by household. Marine dumping, Accidental Oil Leakage, Burning of fossil fuels, Chemical Fertilizers and pesticides, Leakage from sewer lines, Radioactive waste, Animal waste ¹⁴ .	Water borne diseases such as Typhoid, Cholera, Paratyphoid fever, Dysentery, Jaundice, Amoebiasis, malaria, Pesticides- Damage nervous system, cause cancer, reproductive and endocrinal damage. Nitrates- Dangerous to babies cause "Blue baby syndrome" Fluorides- Yellow teeth and damage to spinal cord. Petrochemicals- Cancer Arsenic- Liver damage, Skin cancer, vascular diseases ¹⁵
Noise Pollution	Caused by machines, transport (Traffic, rail, airplanes etc.) and propagation systems.	Hypertension, High stress levels, Tinnitus, Hearing loss, Sleep disturbances.
Soil Pollution	Agrochemicals such as pesticides, herbicides and fertilizers, Road debris, Drainage of contaminated surface water into the soil, Electronic waste, Plastic waste, Coal ash, Acid rain, Intensive farming.	Cancer, Neuromuscular blockage, depression of Central Nervous System, Headache, Nausea, Kidney and Liver damage from exposure to excessive mercury in soil ¹⁶ .

Food preservatives

Table 5: Food Anti-microbial preservatives

Anti-microbial preservatives	Sodium benzoate ¹⁷	Respiratory system disorder, vomiting, nutrition disorder, Anaemia, hypokalaemia, renal diseases.
	Sodium Nitrite ¹⁸	Excessive consumption leads to colorectal cancer, leukaemia, non-Hodgkin lymphoma, heart diseases, Thyroid cancers.
	Sorbic Acid ¹⁹	Light skin itching in some people allergic to sorbic acid, while, rare Contact Dermatitis may occur.

Table 6: Food flavouring agents

Food Flavouring agents	Monosodium glutamate (MSG) ²⁰	Headache, Flushing, Sweating, Numbness, tingling in the face, neck and other areas, Heart palpitations, Chest pain, Nausea, weakness
	Disodium guanylate ²¹	Not safe for babies under 12 weeks, Should be avoided in people with Asthma, Gout.
	Disodium inosinate	Flushed skin and burning sensation, Numbness and tightness, Sweating, Swelling.

Table 7: Synthetic colour additives

Synthetic Colour Additives	Red 40, Yellow 5, Yellow 6	Carcinogens, cause irritability, allergies ²²
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Disposable plastic cup has become a vital item for serving hot tea-coffee at many shops in the town or train journey, without knowing the fact that the usage of such plastic cups is harmful to human health. Bisphenol A (Class of plastic), at very low concentration, blocks the effect of several chemotherapy agents on various lines of breast cancer cells²³. Tattooing is very trendy and popular art. People express them through tattoo and express their true identity with the help of tattoo. According to the research of European Synchrotron Radiation Facility that toxic element in tattoo ink can leech, permanently, into lymph nodes and will cause health side effects to body. There is various ink which contains toxic metals like nickel, chromium, manganese, cobalt or lead. These toxins can cause inflammation, body infection and even cancer²⁴. Many Allopathic medicines, after long term use develops many side effects or toxic effects like PCM is a hepatotoxic drug.

DISCUSSION

According to different Acharayas, Dushi Visha as any kind of poison originating from inanimate or animate sources or any artificial poison (Kritrim Visha) remains in the body after partial expulsion or which has partially undergone detoxification, by the anti-poisonous drugs, forest fire, the wind or the sun is termed as

latent poison (Dushi Visha). In ancient times, from Inanimate poison, we simply understand poisons of plant origin like Vatsanabha, Gunja, Klitaka, Kumudaghni, Snuhi, Haritala, Phenashma, Kala-Kuta, Mustaka etc. From Animal poisons, we understand various types of animal bite like snake venom, scorpion sting, rodent, dog, leech and different types of insect bite. In present era, poisoning with these are very small in number. In Today's era, we daily ingest some amount of poison in the form of fruits and vegetables containing pesticides, Packed foods containing preservatives, Colouring agents, cosmetic products, Polluted environment and many more. All these factors and sedentary life style are the main cause that some diseases (like cancer, PCOD, Hypothyroidism, Allergic reactions etc.) are very common in human beings. So here an attempt has been made in order to understand Dushi Visha in present era, so that we can minimize the use of these products and reduces our risk of producing various diseases.

CONCLUSION

The concept of Dushi Visha (Latent Poison) is not properly explained in our Ayurvedic classics. In present era, concept of Dushi Visha is quite different. In our today's lifestyle, Sthavara, Jangama And Kritrim Visha are in different manner that can be

considered under the heading of Dushi Visha. It is felt that this is the right time to consider these factors and should further be studied separately under the heading of latent poison (Dushi Visha) for better perception.

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