



International Research Journal of Ayurveda & Yoga

An International Peer Reviewed Journal for Ayurveda & Yoga



SJIF Impact Factor : 5.69

ISRA Impact Factor : 0.415

ISSN:2581-785X

Review Article

Volume: 3

Issue: 6

Importance Of *Dooshivisha* In Current Era W.S.R. To Chemical Toxicity Of Food.

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ABSTRACT

Food is fundamental importance to life. Chemicals are used in every step of the process that puts food on our table: production, harvesting, processing, packing, transport, marketing and consumption and can be dangerous to our health. These chemicals like pesticides, fertilizers, food preservatives and adulterants, artificial sweeteners, emulsifiers, flavours and artificial fruit ripening chemicals remain in our food and many persist in the environment and our bodies for decades to come. We cannot avoid toxicants in our food completely, but we can do many things to reduce their exposure. This concept is explained in Ayurveda in *Dooshivisha prakrana*. By using this concept, we can properly understand different type of food toxicities due to various chemicals present in our food and treat them by using the principles of Ayurveda.

Keywords: Chemicals, *Dooshivisha*, health, exposure, food

Article received on-7 June

Article send to reviewer on-11 June

Article send back to author on-19 June

Article again received after correction on -24 June

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How to Site the Article : Dr Sunita Godara, Dr Parmanand Upadhyay, Dr Anita Sharma, Importance Of *Dooshivisha* In Current Era W.S.R. To Chemical Toxicity Of Food, IRJAY, June: 2020 Vol- 3, Issue-6; 20- 32

INTRODUCTION

Now a day's people are more prone to various kinds of *Visha*, including *Dooshivisha* in food as well as in environment. It is not mandatory that only direct intake of poisonous material lead to *Dooshivisha Lakshanas*. At present scenario polluted air, water, land, the increased exposure to electromagnetic radiations through cellular phones and computers, faulty food habits, stressful lifestyle, unpleasant feelings, continuous usage of any particular medications and suppression of urges can act as cause for *Dooshi visha*. Chemicals are used in every step of the process that puts food on our table: production, harvesting, processing, packing, transport, marketing and consumption and can be dangerous to our health.¹

The use of chemical fertilizers and pesticides has become the integral part of modern agriculture. So, in the food also lots of toxins are present due to these pesticides and chemical fertilizers. Due to impaired

excretion & lipid solubility they get accumulated in body & causes toxicity. After entering in to the body these toxins bind with proteins & cause organ damage. By using the concept of *dooshivisha*, we can properly understand food toxicities due to various chemicals present in our food and treat them by using the principles of Ayurveda.

AIMS AND OBJECTIVES

1. To discuss the classical and the current scenario of chemical toxicity of food in the form of pesticides, fertilizers and adulterants in India and their cumulative toxicity.
2. To explore the concept of *Dooshivisha* and its correlation with chemical toxicities of different food and food products in present era.
3. Try to find some solutions with the help of Ayurvedic great principals like *shodhan* (detoxifications and bio-purification),

shaman chikitsa, rasayan therapy, yoga-meditations and many more.

MATERIALS AND METHODS

- Ayurveda Literature revived from various ancient books (*samhita* and *granths*) and contemporary science.
- Related information's and updates was searched through different websites.

CONCEPT OF DOOSHIVISHA

The term *Dooshivisha* is a compound of two different words, '*Dooshi*' and '*Visha*'. '*Dooshi*' means denatured, attenuated, altered, latent, vitiated or something which influences the system in the long run. '*Visha*' means poison. The word *Dooshivisha* is derived from the word '*Doosh*' meaning polluting or defiling. It means which pollutes many times.

A part of *Sthawara, Jangama* or *Krutrimvisha*, which cannot be removed from the body but instead becomes less potent after digestion or the counter action of antidotes (*Prativisha*) stays in the body for a long period and vitiating it slowly, with the factors such as *Desha, Kala*, food and sleeping during day time is called *Dooshivisha*²

Favorable conditions can produce a variety of symptoms in a patient affected by *Dooshivisha*. The manifestations may be very wide from *Jwara to Kushta and Unmada* also.

Purvaroop of Dooshivisha

According to *Sushruta*, Prodromal symptoms of *Dooshivisha* are as follows, Narcolepsy (Sleepiness), Feeling of heaviness of the body, Yawning, Laxity of joints, Horripilation, Body ache.¹¹

Roopa of Dooshivisha

According to *Sushruta*, Clinical symptoms of *Dooshivisha* are as follows, Dysentery or diarrhoea, complexion – altered, mouth - emit foul smell, olfactory and gustatory senses – impaired, suffer from unquenchable thirst, slurring and broken speech, vomiting, sorrow, sudden bouts of unconsciousness, symptoms of ascitis (*Dushyodara*).³

Symptoms according to site of Dooshivisha

- When retained in stomach (*Amashaya*) it produces the diseases due to derangement of *Kapha* and *Vata* i.e. unconsciousness, vomiting, diarrhoea, giddiness, burning sensation, tremors, altered sensorium etc.
- When the *Dooshivisha* is located in the colon (*Pakwashaya*) it produces

diseases of deranged *Vata* and *Pitta Dosh*a such as burning sensation all over the body, fainting, diarrhoea, tympanitis and anaemia^{12,13}

Complications of *Dooshivisha*¹⁴

Pyrexia, Diarrhea, Burning sensation, Fainting, Hiccough, Cardiac disorders, Distension of abdomen, abdominal enlargement, Oligospermia, Insanity, Oedema, Tremors.

Factors that aggravate *Dooshivisha*

Vulnerable habitat (*Dooshita Desha*), deranged seasons (*Kala*), toxic food (*Anna*) and daytime sleep (*Diwaswapna*) are factors that aggravate *Dooshivisha*. Existing *Dooshivisha* can aggravate in the presence of these factors.

Dooshivisha and Modern Concept

*Dooshi visha*as a whole cannot be understood under a single heading. And it is yet to confirm that what factors can be considered under *Dooshivisha* (latent poison)⁴

1-Cumulative Toxicity: Any drug will cumulate in the body if the rate of administration is more than rate of elimination i.e. if a drug is excreted slowly and its repeated administration may build

up enough high concentration in the body to produce toxicity. E.g. heavy metal,

2. Delayed Toxicity: Predictable adverse drug reaction. E.g. hepatotoxicity is followed by methotrexate therapy.

3. Carcinogenicity and Mutagenicity: Capacity of a drug to cause cancer and genetic defects resp. e.g. Tobacco.

4. Free Radicals

5. Sub chronic Toxicity: Sub chronic toxicity results from repeated exposure for several weeks or months. This is a common human exposure pattern for some pharmaceuticals and environmental agents. E.g. Workplace exposure to lead over a period of several weeks can result in anaemia.

6. Chronic Toxicity: Chronic toxicity represents cumulative damage to specific organ systems and takes many months or years to become a recognizable clinical disease. Damage due to sub clinical individual exposures may go unnoticed. With repeated exposures or long-term continuous exposure, the damage from these sub clinical exposures slowly builds-up (cumulative damage) until the damage exceeds the threshold for chronic toxicity. Finally, the damage becomes so severe that the organ can no longer function properly, and a variety of chronic toxic effects may develop.

FOOD TOXICITIES DUE TO VARIOUS CHEMICALS

Food contamination can occur if the food has come into contact with toxic chemicals. The exposures of population at large by toxic chemicals through the food may create adverse health effects. Adverse health effects are dependent on the factors of the exposure. The factors that mainly play an important role are⁵:

- Type of chemical
- Amount or Dose of the chemical (the amount or level of a chemical to which a person was exposed)
- Duration of exposure (how long did exposure occur)
- Frequency of exposure (how many times the person was exposed to the chemical)

The occurrence of adverse effect on health also depends on the way by which the chemical enters and excreted by the human body. The response of human being is different to chemical exposure in different ways. Some people may be exposed to a chemical and not get sick. Other people may be more sensitive to chemicals and get sick more rapidly or have more severe reactions than others. The variables that mainly play a role in a person's susceptibility to exposure and adverse health effects include age, gender, genetics, pregnancy or other health conditions

1-FOOD TOXICITY DUE TO PESTICIDES

Pesticides are chemicals used in agriculture to protect crops against pests such as insects, fungi, weeds etc. **Bad Health effects of pesticides** may be acute or delayed seen in those people who are exposed. Acute effects of pesticides such as abdominal pain, dizziness, headaches, nausea, vomiting, as well as skin and eye problems. Many studies have revealed the effects of pesticide exposure on the cancer, effects on reproduction, immune or nervous systems and many skin disorders also.

2. FOOD TOXICITY DUE TO DIFFERENT CHEMICAL FERTILIZERS

Fertilizers are a mixture of toxic chemicals which are absorbed into the plants, leading toxins to enter the food chain via vegetables and cereals and water creating health effects.

Contaminated water may contain high levels of nitrates and nitrites, causing hemoglobin disorders.

- **Heavy metals** such as Mercury, Lead, Cadmium and Uranium have been found in fertilizers, which can cause

disturbances in the kidneys, lungs and liver and cause cancer .
- Exposure of **Ammonium Nitrate** causes many health problems such as eye and skin irritation and burning sensation. Inhalation exposure of Ammonium nitrate can create irritation of the nose, throat, and lungs.

Potassium Chloride interferes with nerve impulses, and interrupts with virtually all bodily functions and mainly affects heart functioning. It can cause all kinds of gastric and stomach pains, dizziness, bloody

diarrhea, convulsions, headaches, mental impairments, redness or itching of the skin or eyes.

Cadmium : Ultimately enters the human tissues resulting in diseases such as tracheo-bronchitis, pneumonitis, pulmonary edema, renal failure, osteoporosis, and many others.

3. ARTIFICIAL FRUIT RIPENING

Many times unripe fruits and vegetables are picked from plants and some chemicals like calcium carbide, acetylene, ethylene, propylene, 2-chloroethyl phosphoric acid,

glycol, ethanol etc. are used for ripening process but it is proved to be very harmful for health.

4. OTHER ADDITIVES

Chemicals in food are known as additives. There are many types of additives we use currently. They are usually added when food is prepared, packaged, transported, or stored, and they eventually become a component of the food.

These are- **Food Colours, Artificial Sweeteners, Artificial Flavours, Stabilizing agents, Preservatives, Supplements, Trans Fats etc.**

Artificial Food preservatives

Many Preservatives are used by the food industry to extend the shelf life of foods products.

Artificial flavourings in foods

On their own, these chemicals have no taste. But when combined with other foods, they become flavour enhancers.

Artificial colourings in food

Colours are added to “food” to make them look appealing and attractive, especially to children. Colours give the illusion of fresh ingredients which are in fact artificial. Most

of these food colours are coal-tar dye or synthetic dyes that are registered as pesticides.

Artificial sweeteners

As these artificial sweeteners are sweeter than normal sugar, very little is used thus providing more profit to the food manufacturers. They are now sold as “sugar free” or “zero calories for the weight conscious people. [Artificial sweeteners are found deadly and carcinogenic](#)

The continuous exposures of hazardous chemicals present in food contribute to many diseases and other toxic effects in human beings. Food additives have been found as a contributing factor to dementia, bone disease, microcytic anemia. Preservatives are added to many processed foods including breads, cereals, and meat. Studies have found additives as a source of nausea, weakness, headaches, and difficulty in breathing. New research has shown that they may damage human nerve cells. The toxicants in our food cannot be avoided completely, but many things can be done to reduce exposure. This includes choice of organic, less toxic and sustainable options and demand of local and farm food.

Food toxicity due to various chemicals and concept of dooshivisha

When toxicology concerns the Bioaccumulation refers to the accumulation of substances, such as pesticides or other chemicals in an organism. Bioaccumulation is occurs when an organism absorbs a toxic substance or chemical at a faster rate than it is lost by catabolism and excretion. Thus, if a toxic substance have longer the biological half-life then the risk of chronic poisoning is greater.

Dooshivisha:

- Dooshivisha* get enveloped by *Kapha*
- Remains in the body for long time
- Shows its manifestations on favorable conditions

Sign and symptoms of toxicity

Sr.no.	<i>Dooshivisha Lakshan</i>	Symptoms associated with chemical toxicity of food
1	<i>Vaman</i>	Vomiting
2	<i>Bhinnapurish</i>	Diarrhoea
3	<i>Anaha</i>	Flatulence
4	<i>Kustha</i>	Dermatitis
5	<i>Vaivarnya</i>	Discoloration of skin
6.	<i>Pipasa</i>	Thirst
7.	<i>Murcha</i>	Faintness
8.	<i>Vairasyamukhta</i>	Metallic taste of mouth
9.	<i>Annamada</i>	Intoxication
10.	<i>Avipak</i>	GIT manifestation
11.	<i>Mandal</i>	Eruption of circular patches
12.	<i>Kotha</i>	urticaria
13.	<i>Dhatukshaya</i>	Weakness
14.	<i>Pad-Kar-Aasyashofa</i>	Oedema
15.	<i>Vishamjwara</i>	Irregular fever
16.	<i>Unmad</i>	Insanity
17.	<i>Gadgadvak</i>	Slurring of speech
18.	<i>Shukrakshaya</i>	Reproductive dysfunction

Management of chemical

toxicity/*dooshivishajany lakshan*

-The study of *dooshivisha* & chemical toxicity of food is important to access cumulative poisoning due to different chemicals.

-Preventive measures should be taken to avoid health hazards due to various chemicals added with food.

Shodhan & *shaman chikitsa* for *dooshivisha* and other preventive measures are narrated by our ancient sages can be helpful to treat the toxicity of food due to various chemicals.

❖ **ShodhanChikitsa**⁶

It is divided into three types - *purvakarma*, *pradhana karma* and *paschatkarma*

1] Purvakarma (Preparation to be done before detoxification):

a) **Snehana**(Oleation therapy) is adopted for softening of the channel and toxins. Thus the toxins can easily detached and after that can easily eliminated during main detoxifying procedures.

b) **Swedana**(Sudation therapy) is adopted after Snehana, so that waste materials blocked in the body channels becomes unctuous. With the help of this procedure channel gets lubricated and the doshas brought into the main body channel (Koshta).

2]Pradhanakarma – Main process of Panchakarma (main detoxification procedures):

- I. **Vamana**(therapeutic vomiting/Emesis): For elimination of Kapha dosha
- II. **Virechana**(Purgation/ Catharsis therapy): For elimination of excess pitta accumulated in the body.
- III. **Basti**(Enema therapy): For elimination of vata dosha. It also helps to expel body toxins.
- IV. **Nasya/ Shirovirechana**(nasal medication): this therapy used for expel toxins and vitiated doshas from head and neck along with nasal and oral secretions. Nasya is used in neurological and mental disorders.
- V. **Raktamokshana**(blood-letting therapy): When toxins present in gastro intestinal tract and absorbed into blood. These toxins circulated all over the body along with blood. It responsible for repeated infections and other circulatory disorders. It also responsible for various skin disorders like urticaria, herpes, eczema etc. In all these disorders Raktamokshana can be used. This procedure also stimulate the spleen to produce antitoxic

substances, helps in stimulation of immune system.

3] Paschatkarma

The strict diet plan and lifestyle procedures should be followed in Panchakarma to bring back the normal lifestyle and diet, some rehabilitative procedures should be followed called as Pashatkarma.

- According to *Acharya Charaka*, A patient suffered from *Dushivisha* should be first done *Swedana* (sudation or fomentation) and then body detoxified by *Vamana-karma* (emesis) and *Virechana-karma* (purgation). After these procedures daily *Dushivishari Agada* should be given to patient.

- ❖ **ShamanaChikitsa** (some anti toxic preparations and herbs)

1. Given in *Bruhad Nighantu Ratnakara* are⁷

- Tankan Yog*
- Sarkaradi leha*
- KrutrimVishagruhadhoom tail*

2. According to *Yogaratnakara*⁸

- Pippalyadi Agad*

3. *Pathya* (dietary management)⁹

- Shigru* (*Moringa oleifera*)
- Karvellaka* (*Momordia charantia*)
- Amla* (*Phyllanthus embilica*)
- Jirnashali* (old rice)
- Karkotakishaka* (*Momordica*)
- Vetragraphala* (*Garcinia indica*)
- Dadimaphala* (*Punica granatum*)
- Madhu* (Honey)
- Ushnodaka* (Hot water)
- Mudgayusha* (Green gram soup)
- Kulatthayusha* (Horse gram soup)
- Lava mamsa-rasa*
- Tittirmansa-rasa*
- Jangalmamsa-rasa*

* Detoxification through yoga and breathing exercises

Yoga is probably the ideal approach to keeps toxins from entering our body. So do yoga to avoid these toxins from harming our various systems of body.

*Use of RASAYAN

Drugs, diet and regimens which promote longevity by delaying aging, improving the immune system, process of detoxification and preventing diseases are called *Rasayana*. So we can reduce the harmful

effects of toxins present in our food through the daily use of *rasayan herbs* (*amalki, shatavari, giloy, tulsi, pipalli, kali mirch, haldi etc*) or *rasayan preparations* like *amalki rasayan, haridra khand, trifla, panchkol etc.*

DISCUSSION-

Toxic contaminants can be present in foods mainly as a result of the use of agrochemicals, such as residues of pesticides and veterinary drugs, contamination from environmental sources (water, air or soil pollution), or during food processing, migration from food packaging materials, presence or contamination by natural toxins or use of unapproved food additives¹⁰.

After taking above precautions, if any pesticide still enters into the fruit or vegetables *Dhawana*(washing) by given by our great ancestors to detoxify the poisoned environment. Those remedies if checked for their efficacy for existing conditions and on today's parameters can be proved very helpful in eradication of pollution

Vishghnadravya like *Shirish* (*Albezzia lebbeck*), *Ankol*(*Alangium salvifolium*) etc. should be used. Government of India should also have to be take some strong initiatives to lower the use of chemical fertilizers, by giving subsidies for organic manures which are given for chemical fertilizers only in the present situation.

CONCLUSION-

By using *Shodhana* and *Shamana chikitsa* explained in Ayurveda the disorders due to toxic substance can be cured but as prevention is better than cure, given by our great ancestors to detoxify the poisoned environment. Those remedies if checked for their efficacy for existing our responsibility should be more toward prevention of these toxicities in community. For this purpose, in Ayurveda we have so many remedies and measures

Acknowledgement:- Nil

Financial Assistant:- Nil

Conflict of interest :- Nil

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