



I J A P C

INTERNATIONAL JOURNAL OF AYURVEDA AND
PHARMACEUTICAL CHEMISTRY

www.ijapc.com

E ISSN - 2350-0204

VOLUME 9

ISSUE 1

10TH JULY

2018

Greentree Group Publishers



Food Poisoning & Ayurveda

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ABSTRACT

Food poisoning also called foodborne illness. This is caused by consuming contaminated food, But in specific terms it is poisoning due to bacterial products only i.e. bacteria and their toxins. According to W.H.O. an estimated 600 million, approx. 1 in 10 people in the world fall ill after eating contaminated food and 4,20,000 die every year resulting in the loss of 33 million healthy lives in a year. Ayurveda is an ancient medical science and has described the food poisoning indirectly in the form of AharaVishaktata. The aims of present study are to collect, elaborate, evaluate and discuss the food poisoning in aspect of Ayurveda as well as modern science.

KEYWORDS

Foodborne illness, Contaminated food, Toxins, Aharavishaktata



Greentree Group Publishers

Received 11/11/18 Accepted 29/05/18 Published 10/07/18



INTRODUCTION

FOOD POISONING ACCORDING TO AYURVEDIC POINT OF VIEW

What is Ahara? Any nutritious substance that people or animals eat or drink or that plants absorb in order to maintain life and growth.

What is visa? A substance that is capable of causing the illness or death of a living organism when introduced or absorbed.

SIGN AND SYMPTOMS

Acc to Acharya Sushruta (su.ka.1/27)

Person who consumes poisonous food will have discoloured face, tongue becomes hard and black in colour with burning and tingling sensation and unable to perceive the taste.

Swelling of the tongue, teeth, gums and lips, vomiting, diarrhea, burning sensation, shivering, disorder of sense organs, faintness, thirst and emaciation.

Acc. to Acharya Charak (ch.chi.23/108-112) has also given same opinion regarding this aspect.

DETECTION OF FOOD POISONING WITH DIFFERENT MODELS AND TREATMENT

Acc to Achary Sushruta (su.ka.1/28 -33)

Those who eat the poisoned food offered by the king, before his meals; if they died immediately that food is poisonous.

- When poisonous food is thrown into fire it burn with cracking sounds, flame and smoke resembling the colour of peacock neck. At that times the flame is sharp and some time it is slow.

- On seeing the poisoned food the eyes of the cakora bird soon becomes discoloured.

- *Jivajivaka* bird dies when it takes such type of food, the voice of *koil* becomes disordered, *kraunch* bird gets intoxicated,

- Peacock becomes agitated, *suka* (parrot) and *sarika* (*maina*) birds cry loud with fear, *Hamsa* (*swan*) makes more sound, *prashata* sheds tears, monkey eliminated excreta- these are the tests of bird and animals which are found in the vicinity the King. to see whether poison is administered in King's food or not?

If Poison in food vapour

The vapour rising from it produces pain in the region of the heart, unsteady movement of the eyes and headache. (*su.ka.1/35-36*)

Treatment

Collyrium prepared from *kusth*, *ushir*, *jatamansi*, and honey should be administered.

Same medicament is used in nasal medication also.



Body should be applied with the paste of *shirish*, *haridra*, *chandana*. Applying the paste of *chandana* on the region of the heart gives comfort.

Poison on Hands

When poison is present on the hands it gives rise to burning sensation of the palm and falling off the nails. (*su.ka.1/37*)

Treatment

The treatment is smearing the hand with paste of *priyangu*, *indravaruni*, *sariva*, *guduchi*, and *utpala*.

If Poison in mouth

If by mistake or by greed such a poisoned food eaten, the tongue become hard, incapable to recognise tastes. (*su.ka.1/38-39*)

When put into mouth, they causes tingling of the lips, the tongue becomes swollen, numb and discoloured. Gums swollen & rigidity of the jaw, burning sensation in the mouth. (*Ch.chi 23/113*)

Treatment

Paste of root of *Ankol* or bark of *saptaparna* or seeds of *shirish* mixed with honey applied. (*su.ka.*)

Powder of *khaith* mixed with honey applied. (*ch.chi.*)

If Poison in Aamashaya

Poison entering into *aamashaya* produce fainting, vomiting, diarrhoea, burning sensation, shivering, and disorder of sense organs. (*su.ka.1/40-41*)

When poison enters the gastric region, it produces discolouration, sweating, nausea, impairment of the vision and heart. (*ch.ch.23/114*)

Treatment

Then the person should be made to vomit by administering paste/powder of *madana*, *alabu*, *bimbi*, or *koshatakim* mixed with either curd, dilute buttermilk, or rice wash. (*su.ka.*) Powder of *tagara* (10 grams) mixed honey applied. (*ch.chi.*)

If Poison in Pakvashaya

Symptoms are same like those which appear in *Aamashaya*. (*su.ka.1/42-43*)

When the poison reaches the lower part of the digestive tract, it produces fainting, intoxication, delusion, burning and emaciation. (*ch.chi. 23/115*)

Treatment

Then purgation should be induced by using *niliniphala* with *ghee*.

Dushivishariagada with curd and honey (*su.ka.*)

Powder of *pippali*, *haridra*, *daruharidra*, *manjistha* mixed with *gorochan* given for the patient. (*ch.chi.*)

If Poison in Drava dravya

Poison if present in *dravadravaya* such as milk, wine, water etc different kinds of lines seen in their surface, froth and bubbles comes; images of objects not visualized in that particular liquid media



and if at all seen it will be either double, broken, thin or distorted. (*Su.ka.1/44-45*)

Treatment

If the poison is concealed secretly in the body, then the person should be made to drink the mixture of *pippali*, *madhuka*, honey, sugar, juice of sugarcane and water which produces vomiting.

If Poison in vegetables and other food materials

Vegetables, soup, cooked rice, and meat which are poison will be very moist, tasteless, devoid of smell; all eatables and fruits will be devoid of odour, colour, and tastes, raw ones undergo ripening quickly and even putrify. (*su.ka.1/46-47*)

Treatment

Then the person should be made to drink the mixture of *pippali*, *madhuka*, honey, sugar, juice of sugarcane and water which produce vomiting.

If Poison in tooth stick /brush

Poisoned tooth brush its loses bristles, produces swelling of the tongue, teeth, gums and lips. (*su.ka.1/48-50*)

If the poison is infused in the toothbrush, the bristles falls off and the swelling of teeth and lips. (*Ch.chi.23/117*)

Treatment

Applied the paste of *dhatakipushpa*, *pathya*, seeds of *jambuphala* added with honey.

Paste of root of *ankolaor* seeds of *shirisa* mixed with honey applied.

GENERAL LINE OF TREATMENT

The physician should first of all do *vamanakarma* in cases of *Aharavishaktata* and *lepakarma* should be done if skin gets effected.

Physician should give assurance to the patient, so that he recovers very soon. (*ch.chi.23/122*)

WHAT IS FOOD ?

Food is any substance, when it consumes it provides nutritional support for the body.

It usually of plants or animal origin and contains essential nutrients, such as carbohydrates, fats, proteins, vitamins or minerals.

The food is a substance when it is ingested by an organism it is assimilated in cell to provide energy, maintain life or stimulate growth.

WHAT IS POISON?

A poison is commonly defined as a substance which when administered, inhaled, or swallowed is capable of acting deleteriously on the body.

WHAT IS FOOD POISONING ?

Food poisoning occurs when you swallow food or water that contain bacteria, parasites, viruses, or toxins made by these germs. Most cases of food poisoning are from common bacteria such as *Staphylococcus* or *E. coli*.



Food poisoning is caused when your body receives contaminated food, bacteria's, viruses, and parasite's toxins.

CHARACTERISTICS

Simultaneous attack of many persons at the same time.

History of ingestion of common food by all sufferers.

Similarity of sign and symptoms in a majority of cases.

CAUSES

1) Poison due to bacteria and toxins.

2) Poison of vegetable origin:-
poisonous mushroom, *lathyrussativus*, oats, poisonous berries, cotton seeds, cabbage, soyabean etc.

3) Poison of animal origin: - poisonous fish, mussel etc.

TYPES OF FOOD POISONING

A) Bacterial

B) Non-Bacterial

Bacterial food poisoning

The poisoning is due to bacterial products only. The bacterial products include bacteria and their toxins.

Non-bacterial food poisoning

The non-bacterial products include poisons derived from plants and animals, and inorganic chemicals. Foods containing such products are, by convention, known as poisonous foods.

BACTERIAL FOOD POISONING

This is of three types, viz. (1) Infection type (2) toxin type, and (3) botulism.

Infection type – This results from ingestion of viable microorganisms that multiply in the gastrointestinal tract and produce a true infection, eg. salmonella group of organisms.

Toxin type – This results from toxins produced by multiplying organisms that have gained access to the prepared food, eg. enterotoxin produced by the staphylococcus.

Botulism – This results from ingestion of performed botulinum toxin in the preserved food. The toxin is produced by *Clostridium botulinum*.

INFECTION TYPE OF FOOD POISONING

In this type of food poisoning, the organism multiply in the gut and cause gasroenteritis. The common organisms responsible for the attack are the *Salmonella* group of organism and occasionally, the *Shigella* group.

The natural reservoir of salmonella organism in certain birds, mammals and reptiles. Food may be contaminated with infected excreta of mice or rats, or infection may be transferred by flies.

Shigella infection is the result of contamination of food or water supplies with the faeces of the individuals who



either have the disease or, less often, are asymptomatic carriers of the organism.

SIGN AND SYMPTOMS

Depending on the susceptibility of individuals to salmonella food poisoning, while some participants may remain free from symptoms, others may be severely affected.

The incubation period is 12-24 hours.

The onset is sudden.

A chill may be the initial symptoms, followed by headache, nausea and vomiting, severe abdominal cramp, and marked prostration.

The diagnosis rests on the isolation of the causative organism from the patient and suspected article of food.

TREATMENT

Stomach wash should be done and the bowel emptied by a cathartic, if diarrhoea is not present.

For infection with the Salmonella group of organism, the antibiotic of choice is chloramphenicol, Ampicilin or Septran can also be used.

For infection with the Shigella group of organisms now a days Ampicillin and Tetracycline are used.

Cotrimoxazole is as good as Ampicilline& is preferred by some.

The rest of the treatment is symptomatic.

POSTMORTEM APPEARANCES

These are those of gastroenteritis.

The mucosa of alimentary tract is inflamed or even ulcerated.

Internal organs are congested.

TOXIN TYPE OF FOOD POISONING

The food must be contaminated by a strain of organism that produces enterotoxin.

It must be suitable for growth of this organism.

The infected food must be kept at a temperature suitable for bacterial growth and for a sufficiently long time so that an appreciable quantity of enterotoxin is form.

Most cases are due to some stains of staphylococci which produce a heat stable enterotoxin.

SIGN AND SYMPTOMS

Incubation period 1-6 hours.

The first symptom is salivation, followed by acute gastroenteritis, and recovery in about 24 hours.

Unlike salmonella food poisoning, this condition is not an infection.

The illness become manifested by the sudden onset of the vomiting, diarrhea, abdominal cramps.

TREATMENT

This is largely symptomatic and on the same lines as in salmonella food poisoning.

POSTMORTEM APPEARANCES

These are the same as those found in salmonella food poisoning.



BOTULISM

The term botulism is derived from 'botulismus' meaning a sausage, large outbreaks of the disease were first observed following ingestion of improperly cooked sausage.

The causative agent is an anaerobic spore forming bacillus, *Clostridium botulinum*, which produces an 'Etoxin. It is commonly found in the soil. The toxin is therefore likely to be present in such soil contaminated undercooked or canned foods. The foods that are most often responsible are meat, fish and vegetables. The toxin is destroyed by heat at 80 degree celsius for 30 minutes and, therefore, adequate cooking gives protection against it. The toxin paralyses the muscles by blocking nerve.

SIGN AND SYMPTOMS

The incubation period 12-36 hours.

Dysphagia, dysarthria, diplopia.

Blurring of vision

Muscle weakness.

Gastrointestinal symptoms are rare.

Respiratory paralysis and bulbar palsy.

Fever is generally absent.

Death may occur within 24-48 hours or may be delayed for a week. The diagnosis rests on the isolation of the bacillus from food, or patient's vomit, faeces, or viscera.

TREATMENT

The stomach should be washed out and bowels emptied by saline purges if necessary.

The administration of anti botulinum serum is urgency.

Management of bulbar and respiratory failure is as for poliomyelitis.

Mortality is 60 to 70%.

POSTMORTEM APPEARANCES

The pathological changes consist of congestion and haemorrhage in all the organs and especially in the central nervous system.

Degenerative changes occur in the liver and the kidneys.

DIFFERENTIAL DIAGNOSE

Cholera

Acute bacillary dysentery

Symptoms appear rapidly and are mainly gastrointestinal

NON BACTERIAL FOOD POISONING

By usually implication, this term excludes conventional food poisoning by bacteria and their toxin and is restricted to poisoning by articles of food due to

- 1) Contained toxic principles
- 2) Metallic contamination
- 3) Food allergy

Containing toxic principles



The articles of food containing toxic principle are poisonous food grains, adulterated oil, and poisonous mushrooms. The most common food grain so affected is *Lathyrussativus (kesaaridaal)*, which gives rise to lathyrism, a spastic paralysis of the lower limbs.

The musterd oil contaminated with argemone oil (katkar oil) produces dropsy. The poisoning mushrooms produce symptoms of irritant poisoning, neurotic poisoning, or both.

Metallic contamination

This is probably more common than dangerous.

Various metallic poisons formerly occurred in food stuffs as dyes, preservatives or colouring matter. Such severe poisoning is not common nowadays.

Food allergy

It is not food poisoning.

This is due to sensitivity to certain articles of diet, usually proteinaceous in nature.

It is followed by an illness characterized by nausea, vomiting, diarrhoea, fleeting joint pains, urticaria, oedema of the glottis and asthmatic seizures may follow.

Many articles of food are implicated, like shell fish, eggs, tomatoes, strawberries, mussels, etc.

The abnormality is not in the food but in the allergic individual. Diagnosis is

generally not difficult. Antihistaminics and steroids are of value.

INVESTIGATION OF FOOD POISONING

Secure complete list of the people involved and their history

Laboratory investigation

Blood for the antibodies

Environmental study

Stool study

Analysis of the data according to descriptive method of time, place and person.

DISCUSSION

To minimize the risks of food borne illness, one should follow the following steps for food safety.

Buying groceries

Buy meat and seafood items only from hygienic outlets.

Do not buy items whose expiry data has elapsed.

Do not buy items containing undercooked or raw animal derived ingredients.

Buy only pasteurized milk or cheese.

Do not buy eggs which are cracked or leaking.

Storage

Take groceries directly home and store immediately in the refrigerator.

Always store raw meat, poultry, or seafood in plastic bags, so that drippings do not contaminate other items in the refrigerator.



It is extremely important to keep cold food cold and hot food hot. That food never reached the “Temperature danger zone.” which is between 4 degree celsius and 60 degree celsius defrosting raw meat , poultry and fish should be done in refrigerator, in the microwave or immersed in cold water .

Temperature requirements

Never cut vegetables or meat in the open. Store them in the refrigerator or cook them.

Ensure that the temperature in the main section of the refrigerator is always below 4 degree celsius, and that of the freezer is below -18 degree celsius.

Cook all meat and seafood thoroughly before eating. Never consume undercooked oysters, clams, mussels, sushi ,or snails.

Hygiene

Wash hands, utensils, counters, and cutting surfaces with water.

Use plastic or glass cutting boards for slicing vegetables or meat.

Wash fresh fruits and vegetables under running water.

Proper hand wash: Wash your hands in right way, it takes only 20 seconds & it requires 3 ingredients running water, soap and clean towel.

Separate

It is important to always separate your raw food such as meat and eggs from ready to eat food such as cooked meat and vegetable to avoid cross contamination.

CONCLUSION

In *Ayurveda* we are getting literature about food poisoning in such a way that where poison is administered externally but in modern literature both the references are getting.

Alerting your local health department and bringing awareness to consumers. this is the key in preventing food poisoning out breaks.

Food safety is everyone’s responsibility including the consumer.



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