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FOOD PRESERVATIVE - THE SLOW ACTING POISON

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ABSTRACT

As we know, food is the most important part of our life. Liquid, solid, semi-solid are the forms of food we take in our daily life. Food provides nutritional support to our body. For centuries man has treated food to prolong its edible life. Nowadays both traditional and modern preservatives are used for maintenance of foods. We can correlate preservative with this *dushivisha* and *garvisha* which are mentioned by *acharya charaka* and *sushruta*. It is seen that the symptoms of chronic poisoning are very much alike to *dushivisha* and *garvisha*. People preserve their food as long as they want by using preservatives and additives. Preservation is a pleasant technique but also shows some deleterious effect on our body like cancer, cardiovascular disease and aging. Food preservation can be done by drying, smoking, canning, by using chemicals or by natural methods. This process of maintaining food is good but it also act as slow acting poison to us. As it doesn't show its deleterious effect in early stage but due to repeated consumption of these type of food its shows its harmful effect, can causes many diseases. *Dushivisha* and *garvisha* depicts symptoms like urticarial rashes, pustules, excessive thirst etc.

Keywords: preservatives, additives, chemicals, diseases, *dushivisha*, *garvisha*

INTRODUCTION

Food is any substance or material eaten or drunk to provide nutritional support for the body or for pleasure [(1)]. In *ayurveda ahara* (food) is described by our *acharyas* in form of its properties, amount, healthy food, unhealthy food all well said by them. Food contains nutrients, fats, vitamins which provides energy to our body, stimulate growth. Food has limited shelf life so to overcome these problem preservatives or additives are added. Food can be categorised as fast food, junk food, whole food, organic food out of these whole food is unprocessed, unrefined so it has very short shelf life. Therefore food preservatives are used to inhibit natural ageing and increase its shelf life [(2)]. A preservative is a substance or a chemical, added to food , cosmetics, beverages pharmaceutical drug and many other products to reduce and for stoppage of spoiling of that particular product from bacteria ,fungi etc. The other purpose of food preservation is promot-

ing longer shelf life and reduced hazard from eating the food. Preservation usually involves preventing the growth of bacteria, fungi, and other micro-organisms, as well as retarding the oxidation of fats which cause rancidity [3]. Some methods of preservation are drying, canning, preserving in syrup, adding preservatives or inert gases such as carbon dioxide. Another methods that not only help to preserve food, but also add flavour, include pickling, salting, smoking, preserving in syrup or alcohol, sugar crystallization and curing. Traditionally, food preservation has three main purposes. The preservation of appearance, nutritional characteristics, and a prolongation of the time of food. Hence food preservative can be defined as the "food additives used to slow up the development of micro-organsims like yeast, molds and bacteria and prevent the spoilage by different anti-oxidative reactions which further maintains the quality, consistency, taste, colour, alkalinity or acidity of that food"[4]. Preservatives, also known as antimicrobial agents and is a type of food additive. The use of food additives has increased extremely in the past 30 years, totally now over 200,000 tonnes per year [5]. According to the scientific functions twenty –five categories of food additives have been described [6]. As a result it has been estimated that as today approximately 75% of the western diet is fabricated of various processed foods, each person is now overriding an average 8-10 lbs of food additives per year[7]. In *ayurveda* acharya s*ushruta* term this type of poison as *dushi visha and garvisha. Dushi visha* is accumulation of poison in a body which acts like a weak poison. Because of its poor potency it doesn't kill the person quickly but remains in the body for many years covered by *kapha*. This further causes health hazards. *Dushi visha* (cumulative poison) slows down the metabolism of various system of the body and kills the person. The person suffering from this will having loose motions, change in colour, bad smell in mouth and breath, vomiting, fainting etc[8]. On the other hand *garvisha* is a toxic combination of non-poisonous substance, which exerts toxic effect after interval of some time and it does not kill the patient instantly. *Garvisha* causes *panduta* (pallor), *aadhmaan* (abdominal distension), soth (edema), *grahni dosha* (disorder of duodenal region, *jwar* (fever), *mansika lakshan* (psychiatric symptoms) [9].

Preservatives classification- Preservatives usually has two types- Physical preservatives and Chemical preservatives. Physical preservatives like pasteurization, freezing, drying, canning etc. are used for maintaining shelf life of food. Where chemical preservatives of two types they are antimicrobial and antioxidants. Several forms of antimicrobial are being currently in use in food and beverages industries such as sulphates, benzoates, sorbates, nitrates, sodium salts, fruit extracts(grape &pine). Antioxidant preservatives are vitamins, polyphenols, thiols, phosphates, succinates, lactates [10]. The use of food preservative is regulated by specific laws namely European union – EU. In EU every food additive has a code that includes the letter E (for Europe) followed by three or four digits. The numbering scheme follows that of the international numbering system (INS)[11].These are the E codes with their applications as shown in figure[12].

E100-E199	Color additives	Riboflavin, tartrazine, quinoline yellow WS, carminic acid etc
E200-E299	Preservatives	Sodium sorbate, benzoic acid, potassium benzoate, calcium benzoate etc
E300-E399	Antioxidants, acidity regulators	Ascorbic acid, sodium ascorbate, propyl gallate, butylated hydroxyanisole etc
E400-E499	Thickeners, stabilizers, emulsifiers	Alginic acid, agar, oat gum, mannitol etc
E500-E599	Acidity regulators, anti-caking agents	Sodium carbonate, magnesium carbonate, hydrochloric acid, sodium sulphate etc
E600-E699	Flavour enhances	Glutamic acid, calcium inosinate, zinc acetate etc

E700-E799	Antibiotics	Tetracyclines, penicillin G sodium, avilamycin etc
E900-E999	Miscellaneous	Bee wax, paraffins, rice bran wax, nitrogen oxide etc.
E1000-E1599	Additional chemicals.	Cholic acid, invertase, lyzozyme, castor oil etc

There are about twenty-five categories of food additives have been defined (lindon and Silvestre, 2007). Like carriers, a form of additives is used to disperse, dissolve, dilute or otherwise physically modify food additives. Acidifying substances are used to enhance the acidity the foodstuff, broadly used in beverages to furnish them acid or sour taste. Anti-caking agents are used to reduce the affinity of particle of food to form cluster .glazing agents used to the external surface of food to give them shiny appearance. Humectants are used to prevent the food like chocolates biscuits etc from drying. Sweetener, colorants, packaging gases etc are other forms of food additives [13].Some chelating agents are also be used as preservatives like ethlenediaminetetraacetic acid (EDTA), ascorbic acid and citric acid, monosodium glutamate etc[14]. Anti-foaming agents used to reduce foaming in foods. Bulking agents are used to increase bulk of food without affecting its other properties. Stabilizer, thickers are used to gives texture to food. Flour treatment agents are added to flour to improve its colour also used in baking. Most commonly used preservatives are-aluminium silicate, amino acid compound, white sugar, ammonium carbonate, propyl gallate, potassium sorbate etc[15].

Some harmful effects of food preservatives- As we early says that it act as a *dushi visha* (slow poison) so it can causes various effect on our body as mentioned in *sushrut samhita* It produces more sleep, feeling of heaviness, more yawning, looseness of joints, tingling or diffuse pain in the body , indigestion, loss of taste, ascitis, vomiting and diarrhoea, fainting, irregular fever, some other diseases of semen, sometimes produce skin diseases[16].

Sodium benzoates and benzoic acid- They are the most commonly used preservative and broadly used in acidic food products like fruit juice, carbonated drinks, pickles and jams. [17]. Sodium benzoate is listed as' generally regarded as safe" (GRAS) compound by united states food and drug administration[18]. Benzoates cause allergies, asthma and skin rashes, liver cancer etc.

Boric acid- It is widely used as food preservative in food like in meat, dairy products, soft drinks, food stuff, jams , jellies, sweets, candies, ice creams, sauces and pickles. Boric acid and borates are toxic to cells if consumed in high level. It lowers the sperm count, causes fertility [19].

Nitrates and nitrites- They are used in meat products causes' stomach cancer [20]. Color additives like curcumin (E 100), sunset yellow (E 110), Tartrazine (E102), Caramels (E 150) etc are used in biscuit, cold drink also used in alcohol industries which causes severe thyroid damage, damage kidney, asthma, urticaria, rhinitis etc[21]. Sweetener like saccharin, aspartame etc are found to be growth inhibitor, causes, psychairtic disorder, panic attacks etc[22].

Sulphur dioxide and sulphites- These are used to prevent the development of yeast and fungi in food, mainly used in wine, meat, sweets, jams and in other beverages. The toxicity of sulphites and sulphur dioxide may cause allergic reactions, headache, eczema, can cause cancer etc[23].

CONCLUSION-

A single additive or preservative may be of lower risk but a person consumes a cocktail of preservatives. In today's world food preservatives and additives becomes essential to keep long life of food, but they interact with each other than may causes hazardous effect to our body. People should be advised and encouraged to consume fresh fruit and vegetables, as they enhance immunity. These food additives on one hand do increase the shelf life of the food but on the other hand they show their adverse effect in society. Children and adults are more likely affected by this slow acting poison. On one hand we are degrading our lifestyle on that consumption of food treated with preservative is like decreasing our life from all sides. So it is important for every person to know about food

additives and side effect caused by them so that we can slow down the disease rate in today's era.

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