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Chemicals Commonly Used in Foods

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Food is one of the basic needs for the life of all living things. This is why food security is of critical importance globally. Food safety is a serious issue that needs to be examined not only in terms of hygiene but also in terms of chemical and biological pollutants. More than 90% of food poisoning disease is caused by biological contaminants such as *Staphylococcus*, *Salmonella*, *Clostridium*, *Campylobacter*, *Listeria* and *Vibrio*. Bacterial pathogens are responsible for most deaths due to food infection. The first of these is Salmonella. [1]. Examples of chemical pollutants are heavy metals such as mercury and copper arsenic. Personal or environmental hygiene is another issue that poses a threat to food safety [2]. Codex Alimentarius is a statement containing internationally accepted standards, application rules, and guidelines published by the Food and Agriculture Organization [3], [4]. While some of them are prohibited to be used for consumption in foods, safe use limits have been determined for some of them.

Medical Disclaimer

All information contained herein is for informational purposes only and does not constitute a recommendation. If you have or think you have a complaint, please consult your doctor. Evaluate the information according to its source.

Monosodium glutamate (MSG)

MSG (E-621) is called Chinese salt in many countries. MSG is used as an additive in canned foods, meats, salad dressings, frozen foods, and many other foods [5]. Monosodium glutamate is a food additive that has caused much food safety debate over it, which is often used as a flavor enhancer to impart umami flavor. The most famous known additive, Monosodium glutamate, may be the most researched food supplement. Monosodium glutamate or commonly known as MSG; at low doses it has not been strongly associated with clinical manifestations [6].

Saccharin & Aspartame

Saccharin (E-954) was recognized as a carcinogen in the United States in 1981 [7]. Saccharin, which is 300 times sweeter than sugar, contains many foods and beverages. In addition, there are many studies on addiction [8]. Recent studies of the artificial sweetener saccharin (E954) have suggested that short-term consumption of maximum acceptable levels of saccharin is not sufficient to alter the gut microbiota or induce glucose intolerance in healthy humans [9].

Aspartame (E-951), also an artificial sweetener, is 200 times sweeter than sucrose. Studies are conducted to associate aspartame with cancer, hair loss, depression, dementia and behavioral disorders. For example, in a study done to affect brain neurotransmitters in monkeys, more than 1 gram was required, which was equivalent to about 25 cans of beverage [10].

Butylated hydroxytoluene (BHT) & Butylated hydroxyanisole (BHA)

Butylated hydroxytoluene (E-321) is used in food, cosmetics and industrial industry to prevent the oxidation of unsaturated organic compounds. Butylated Hydroxyanisole (E-320) is a waxy mixture with a light aromatic odour. It is used in food, cosmetics and pharmaceutical industries [11], [12].

There are many studies on the harmful effects of BHT and BHA on the liver, urinary tract and also on the circulatory system [13].

Carrageenan (CGN)

Carrageenan (E-407) is a polysaccharide derived from red seaweed. It is widely used as an additive in processed foods. Its basic properties are used as a thickener, gelling agent, emulsifier and stabilizer in processed foods. The effect of Carrageenan on Inflammatory bowel diseases and allergic reactions has been investigated. [14].

Nitrates & Nitrites

The daily intake limits of sodium and potassium nitrate (E-251 and E-252) evaluated by the European Union Scientific Committee are limited to 0-3.7mg/kg per kilogram. No adverse effects were observed on experimental animals or humans of equal value determined. According to the general opinion, no genotoxic evidence could be reached [15]. In addition, Sodium nitrite (E-249) and potassium nitrite (E-250) are using. It has been stated that the food additives nitrites and nitrates made in 22 are directly related to the risks of breast and prostate cancer [16]. Nitrite and nitrate salts, which are generally used to inhibit microorganisms, are used to inhibit the growth of Clostridium botulinum, which is a bacterial species. They are generally used in meat products [17].

Sodium benzoate

Sodium benzoate (E-211) is a salt of benzoic acid. It can be distinguished by its good solubility in water and being tasteless and dark. It is a chemical used to improve the taste of foods or extend their shelf life. The safe dose has been determined and it has been reported that more studies are needed in this area [18].

Potassium Bromate

Potassium Bromate (E-924), which is generally used as an additive in the bread production process, is banned in many countries due to its carcinogenic effects [19].

Guar gum

Guar gum (E-412) The acceptable daily intake amount has caused controversy. There are also studies for consuming guar gum for medicinal purposes [20], [21].

Xanthan gum

Xanthan gum (E-415) is generally considered to be an effective stabilizer when used in animal feed [22]. At the same time, safe limits have been determined for foods for special medical purposes, and it is also used in supplementary baby foods [23].

Lecithin

According to general studies of Soy Lecithin (E-322), it is concluded that there are no safety concerns for consumers older than 1 year. According to the determined daily limits, 175 mg/kg body weight can be consumed by those older than 1 year old. But this value can be updated [24].

Calcium sulfate

Although the maximum daily intake dose of Calcium sulfate (E-516) has been determined for newborns, young children and adults; There are safety concerns with overdose [25].

Propyl Gallate

Propyl Gallate (E-310) is a food additive used in animal feeds, with safe consumption limits [26]. Propyl Gallate, which is a crystalline powder, is insoluble in water [27]. For this reason, it is actively used in the food, cosmetic and pharmaceutical industries [28].

Results

All food additives are kept under surveillance by world-renowned commissions. Listed below are similar commonly used food additives. While safe usage intervals are recommended for some, the use of others is completely prohibited. For some, these debates are still ongoing.

- Silicon Dioxide (E-551)
- Sodium Stearoyl Lactylate (E-481)
- Tert-Butylhydroquinone (E-319)
- Tartrazine (E-102)
- Triacetin (Glycerol Triacetate) (E-1518)
- Benzoic Acid (E-210)
- Emulsifiers (E-400 to E496)

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