

FOOD DYES (E-171, E-173) AND CHANGES CAUSED BY THEIR USE

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Abstract

Food additives or food dyes (E-171, E-173) are substances added for technological purposes to give the necessary properties and qualities to products during production, packaging, transportation or storage. They are used as certain dyes, flavors, preservatives (Alyakhnovich, NS, 2015; Alyakhnovich NS, Novikov DK, 2016). These dyes are used in the cosmetics industry, in the production of cigarettes, oil, flour, toothpaste, confectionery, chewing gum, candy, fast food, beverages, cheese and many other products, as well as in the pharmaceutical industry. According to the chemical composition, these food additives are E-171 titanium dioxide, E-173 aluminum. E-171 titanium dioxide - formula TiO_2 .

Keywords: E-171, E-173, preservative, xenobiotic, cytotoxic.

Introduction

Currently, some components of food products and most medicines can become xenobiotics and produce harmful substances in the body. They can have an allergenic, mutagenic, carcinogenic or cytotoxic effect. Pollution of water and air on Earth, depletion of natural resources, disruption of natural processes directly or indirectly affects the human body. Therefore, it is important to analyze the components of food, medicines and tools we use for our needs, to study their effects on the body.

Food additives or dyes (E-171, E-173) are substances that are added for technological purposes to give the desired properties during the production, packaging, transportation or storage of products. They are used as certain dyes, flavoring agents, preservatives, consistency products. These dyes are used in the decoration of cosmetics, cigarettes, oil, flour, toothpaste, confectionery products, chewing gum, candies, fast-foods, beverages, cheese and many other products, as well as in the pharmaceutical industry. According to the chemical composition of these food additives, E-171 is titanium dioxide, and E-173 is aluminum. E-171 - titanium dioxide formula TiO_2 . Titanium dioxide is one of the three main materials used in nanotechnology and is used as a colorant and preservative in all medical preparations. Since it is a chemically stable substance, it cannot be broken down by the body, it has low toxicity and biological effect. Some studies have shown that titanium dioxide can cause inflammation in the gut and an increase in free radicals in the tissues. therefore, this substance is stored in the body. This stored substance has the ability to destroy organic particles. Since they are strong moisture retainers, they disrupt the body's water balance. This substance damages both single and double strands of DNA. Thus, it damages chromosomes and disrupts gene structure. Free radicals can damage cells and tissues, increase the risk of



developing various diseases such as cancer, diabetes, cardiovascular diseases, and also accelerate the aging process. Other studies have shown that inhaling titanium dioxide powder can damage the lungs and the whole body. In addition, this dye has been found to make it difficult for some vitamins and minerals to be absorbed. European food safety regulators have declared titanium dioxide unsafe for human consumption due to its potential toxicity.

E173 paints, i.e. give aluminum products a bright silver color. It is used in the production of foil for food. A particularly high concentration of aluminum is observed in canned drinks that are used in aluminum containers and in the inner packaging of drinks. There are speculations that the continuous consumption of aluminum in food may be associated with the development of certain diseases such as Alzheimer's disease, various neurological diseases and allergic reactions. In Russia and Ukraine, the use of the E173 additive in the food industry is prohibited. In addition, E173 dye is banned in Australia and a number of other countries. While most studies suggest that normal amounts of aluminum in food are not harmful to human health, most of these studies have been conducted in animals or in vitro, and more research and studies are needed to evaluate the effects in humans.

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