the first time. Whatever problems you face, you can overcome them and grow above yourself. This also applies to moving to another country. You just need to try and adapt, allowing a foreign country to become a second home.

My journey started a while ago. I'm very happy that I was able to push on myself and pursue learning of English language. Because of that hard work in the begging and right people around who gave me opportunities to improve my language I was able to live and work in lots of places across the world. My journey begun in the UK, then I lived in Denmark and now I'm permanent resident of the USA. It took a lot of time and effort to find my place beneath the sun.

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SWEETENERS AND SUGAR ALTERNATIVES IN FOOD TECHNOLOGY (ПІДСОЛОДЖУВАЧІ ТА АЛЬТЕРНАТИВИ ЦУКРУ В ХАРЧОВИХ ТЕХНОЛОГІЯХ)

У статті йдеться про існуючі цукрозамінники та причини їх використання у харчовій промисловості.

Ключові слова: *штучний підсолоджувач, аспартам, цукрозамінник, діабет, цукор, альтернативи.*

The article discusses the existing sugar substitutes and the reasons for their use in the food industry.

Keywords: *artificial sweetener, aspartame, sugar substitute, diabetes, sugar, alternates.*

Targeted diabetic confectionery for people with carbohydrate metabolism impairment includes sugar substitutes or sweeteners instead of sugar. At the same

time, modified carbohydrate composition should guarantee high sensory characteristics of the finished product, production technology and the raw materials being the main quality factors. Certain safety requirements are imposed on sweeteners and sugar substitutes, and their daily intake is regulated. Sweeteners and sugar substitutes have various technological and functional properties that are taken into account when developing specialized confectionery products. In this regard, the search for substitutes of non-sugar nature is a relevant matter [1].

In the recent years the trend towards health, figure and fitness has increased. Energy imbalance between calories consumed on one hand, and calories expended on the other hand, due to urbanization, sedentary lifestyles and excessive consumption of sugary foods along with increased fat consumption, especially saturated fats is leading population to obesity. So the growing health awareness today has increased the demand for food products that support better health. Consumers are demanding a greater variety of low-calorie products as they strive to make healthier food choices. A sugar substitute is a food additive that duplicates the effect of sugar in taste, but usually has less food energy. It is about 200 times sweeter than sugar. Some sugar substitutes are natural and some are synthetic. Those that are not natural are, in general, referred to as artificial sweeteners [2]. The food and beverage industry is increasingly replacing sugar or corn syrup with artificial sweeteners in a range of products traditionally containing sugar. Artificial sweeteners cost the food industry only a fraction of the cost of natural sweeteners in spite of the extremely high profit margins for manufacturers of artificial sweeteners [3].

Sugar containing dietary foods could be replaced by the use of sugar substitutes available on the market today, both noncaloric and caloric, which have a low or even no cariogenic potential, sugar substitution is an important part of caries prevention and improving the overall health of an individual [5].

The most common sugar substitutes used in Europe today are the caloric sweeteners xylitol, sorbitol, lycasin (hydrogenated starch hydrolysate), maltitol and mannitol and the non-caloric sweeteners acesulfame-K, aspartame, cyclamate, and

saccharin. They all share the following characteristics: They can only be fermented by oral microorganisms to a very small extent or not at all, resulting in very low or no acid production. They are currently replacing sugar in a wide range of products, such as sweeteners for coffee and tea, confectionery and chewing gum, medicine, and soft drink. Invert sugar (hydrolyzed sucrose) is a commonly used sweetener for baby food. Xylitol has been claimed to have anticaries properties and thus to be superior to sorbitol, for example, a sugar substitute [4].

In general, sugar substitutes may be divided into three categories: functional sweeteners, artificial sweeteners, and enhancing natural sweeteners/sweet taste enhancers.

Functional sweeteners include mainly polyols (sugar alcohols), as well as bulking agents and rare sugars. Polyols are the most commonly used. These are carbohydrates in a reduced form – for example, mannitol is a reduced form of the carbohydrate mannose. Sugar alcohols occur naturally in certain fruits and vegetables. Those used as sweeteners include sorbitol, mannitol, xylitol and erythritol. They are lower in calories than sugar, but are often less sweet as well. As such, they may be a good option for those prone to dental caries and diabetes. Moreover, they are popular among food manufacturers, as they can be used as a bulking agent, as well as being helpful in keeping the food products moist.

Artificial sweeteners, on the other hand, are chemically produced sugar substitutes that do not occur naturally. In the US, there are currently five artificial sweeteners on the market with FDA approval: saccharin, acesulfame, aspartame, neotame, and sucralose.

Natural sweeteners are sugar substitutes that can be extracted as such from plants. An example of such a sweetener is stevia, which is the only natural sweetener that has been approved by the FDA so far. It is important to note that some sweeteners are difficult to regulate due to their varied content and the number of different ways in which they can be manufactured [6].

The range of sweeteners and sugar substitutes in confectionery technology is limited. The domestic and foreign experience of using sweeteners showed that

stevioside and sorbitol are used both as sweeteners and in flour confectionery. Isomalt and lactitol proved effective in chocolate production, if used under optimal technological conditions. New scientifically based formulations and technologies for targeted confectionery for people with impaired carbohydrate metabolism and further research on the use of sweeteners and sugar substitutes will satisfy the increasing demand for these products and expand the range of healthy foods.

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