

RAW MATERIAL ANALYSIS FOR FLOUR CONFECTIONERY  
PRODUCTION OF SPECIAL PURPOSE FOR PEOPLE SUFFERING FROM  
CELIAC DISEASE AND DIABETES MELLITUS

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Human's modern life rhythm results in such risks as permanent stress, negative environmental influence, and deficient diet. This leads to immunity decrease and spread of non-communicable diseases which are connected, first of all, with metabolism disorder and, as a result, with food intolerance or inability of organism to digest certain products or their compounds. Among such diseases dominate diabetes mellitus, celiac disease, phenylketonuria, lactose intolerance, osteoporosis, dysbiosis, etc. That is why one of the main requirements to the food production is development of functional and special foods, taking in consideration nutrition science requirements to the children's, elderly's and other population categories' nutrition .

It's worth mentioning that among the aforementioned diseases the most spread are diabetes mellitus and celiac disease. The number of people suffering from celiac disease during last 50 years increased by ten times. This disease is transmitted hereditarily, moreover it may be influenced by incorrect nutrition during the first year of life, namely early introduction of gluten — protein which is a compound of cereals (wheat, barley, rye). That is why, taking into account the number of population with this pathology and their needs, it is necessary to develop special foods for people suffering from celiac disease and diabetes [1,4].

First of all, it is important to study the alternative raw materials which can substitute sugar for people suffering from diabetes and cereal plants containing gluten for those suffering from celiac disease. The issue of population with insulin deficiency nutrition exists for a long time, and that is why today there are a lot of natural and artificial sugar substitutes and sweeteners that allow to expand the range of products with low sugar content. An alternative to wheat, rye and barley is the use of rice, buckwheat and corn [2,3].

Analysing the recent researches, the most popular among the population are bakery and flour confectionery products (FCP). Despite a rather wide range of products, offered by domestic manufacturer for population suffering from celiac disease and diabetes, production is still limited, so that is why this sphere was chosen for improvement.

In order to create FCP for the chosen population category, two components, namely white sugare and wheat flour, should be sustituted. Fructose was chosen as a white sugar substitute, because from all the sweeteners only fructose is a natural substance that is easily digested. To substitute wheat flour the range of rice, buckwheat and corn flour, offered by Ukrainian market, was studied. Corn flour of domestic production appeared to be unsuitable for people suffering from celiac disease, because corn sorts grown in Ukraine contain small amount of gluten, which, however, is dangerous for people with gluten enteropathy. After organoleptic analysis of rice and buckwheat flour, rice flour was chosen for further study because it has more neutral taste. The first stage of research was the analysis of the examples if potential raw materials for new production that is suggested on both domestic and international market. According to the organoleptic evaluation rice flour has more neutral flavor properties, so this type of material was chosen for the research.

As rice flour is used as a substitute of wheat flour, the comparison of researched parameters was carried out with the values of corresponding normalized indexes for wheat, based on regulatory documentation.

In the result of the research physico-chemical properties were determined, the chemical composition of the product was studied and compared with corresponding parameters of wheat flour. It was found out that content has too less proteins which is negative for FCP production. Besides the lack of gluten will significantly affect the structural properties and cause complications in the porosity and crisp formation in finished products. Taking this factor into account, it is necessary to implement protein-containing componets, one of which might be skimmed milk. It is worth mentioning that during the manufacturing of this

product besides its moisture it loses almost all harmful water-soluble substances that can be dangerous for people with celiac disease and diabetes.

So for creation of FCP, safe for people suffering from diabetes and celiac disease, there is enough quantity of raw materials which have their own physico-chemical and technical properties that should be studied for successful development of up-grade products.

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