

USE OF UNCONVENTIONAL RAW MATERIALS IN THE TECHNOLOGY OF PRODUCING SMOOTHIES

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The strategic direction of development of the food industry in the twentieth century is the production of physiological food products obtained using innovative technologies aimed at improving the quality adequacy of food rations, that is, ensuring their compliance with the chemical composition of the physiological needs of the human body.

Diseases most frequently occurring at the present time are associated primarily with an unbalanced diet, conditions of an extraordinary pace of life and constant stressful situations. Therefore, modern consumers began to give preference to "healthy" food products, which guarantee the intake of essential vital substances into the body.

The choice of unconventional local raw materials or simply directed chemical composition is considered promising when modeling fortified beverages. Among the preliminary formulation of smoothie recipes, there are many products based on whey, flax seeds, etc. All these products fulfill their functional role thanks to the ingredients selected by scientists, rich in various vitamins, macro- or microelements.

The composition of the smoothie is based on the use of plant components rich in biological and chemical indicators. This allows you to create a balanced drink that can meet the daily needs of a person in nutrients and saturate the body with necessary substances. Rational selection of ingredients is determined by the availability and inexhaustibility of nutritional components of certain plant materials. It is advisable to use this type of drink in the morning and as a snack, therefore it should also perform energy functions. The research carried out confirms the prospects of creating new compositions for making smoothies.

The aim of the research is to study the possibility of using flaxseed meal in smoothie production technology.

The use of flax seeds in human nutrition, containing dietary fiber, natural lignans and the optimal content of polyunsaturated linolenic and linoleic fatty acids, which are indispensable in the human diet, has great promise. At the same time, the quantitative and qualitative composition of flax seed proteins indicates the prospects of their use as a source of protein to increase the biological value of bakery and confectionery products. In order to use flax seeds and products of their processing to create functional food products, the nutritional value of flax seeds was determined, including such characteristics as biological value and biological effectiveness.

It was found that 100 g of flax seeds provide more than 20% of a person's daily energy requirement, almost 30% in proteins, more than 50% in fats and phosphorus. The

magnesium content in 100 g of flax seeds fully meets the daily requirement for this macronutrient.

Such a rich composition allows it to be used to lower cholesterol and blood pressure, remove cadmium and lead from the body, improve metabolism, treat diseases of the gastrointestinal tract and bladder, and simply as a general tonic.

The meal of plant raw materials included in the strip has a good effect on the state of the liver, cardiovascular system and intestines, it enriches the product with minerals, vitamins, dietary fiber, polyunsaturated fatty acids, microelements (zinc, chromium, manganese, selenium) and has a high biological value, used for therapeutic and prophylactic purposes.

When conducting scientific research on the creation of new technologies in the strip, it is necessary to know the changes in moisture content depending on the use of new ingredients and technological modes of their processing.

In many cases, it is the state of moisture that is the main indicator that affects the quality indicators of the finished product. Therefore, the study of the state of moisture is an urgent task when designing a new smoothie technology.

The study of the degree of swelling of meal and fiber from flax seeds was carried out at a constant room temperature (23 ° C). To determine the degree of swelling, an object under study (meal or fiber) weighing 1 g was poured in 10, 15 and 20 g of liquid in accordance with a certain hydromodule (1:10, 1:15, 1:20). The investigated object swelled for 10 ... 90 min. and with a step of 10 min. centrifugation was carried out at centrifugal speeds of 1000, 2000 and 3000 rpm. within 1 and 2 minutes. After that, the amount of the released liquid was weighed, and then the degree of swelling of the test object was determined by a standard gravimetric method.

Swelling of meal and fiber is intense during the first 20 ... 30 minutes. and reaches a maximum for meal after 40 minutes. swelling and for cellulose - after 50 min. swelling. Moreover, fiber absorbs moisture and binds it tightly in greater quantities than meal.

From the data obtained, it can be seen that the intensity of moisture adsorption by flax fraction is greater than that by flax fiber. Moreover, the increase in moisture content in hydrated meal and fiber is approximately the same during 60 minutes of swelling. In the next 30 minutes of swelling, a decrease in the moisture content in hydrated systems is observed, and the fiber gives off moisture better. This is due, firstly, to a significant difference in the chemical composition of the shot and cellulose, and secondly, to the different dispersion of the objects of study.

The increased values of the moisture content of the products of secondary processing of flax seeds are associated with the presence in the composition of these fractions of a significant amount of the fetal shell, rich in complex polysaccharides - cellulose and hemicellulose, which are distinguished by a high swelling capacity. The significant difference in the kinetics of the moisture content of meal and flax fiber can be explained by analyzing the data obtained by examining samples on a nuclear magnetic resonance spectrometer.