

## INVESTIGATION OF THE INFLUENCE OF NON-TRADITIONAL RAW MATERIALS ON THE RHEOLOGICAL PROPERTIES OF DOUGH IN THE PRODUCTION OF GLUTEN-FREE PASTA

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### Abstract

The nutritional value of food is one of the most important factors determining the health of the population. Based on the importance of the health of the nation for the development and security of the country, the concept of state policy in the field of healthy nutrition of the population of Kazakhstan has been defined, which provides for a set of measures aimed at creating conditions that meet the needs of various segments of the population in a rational, healthy diet, taking into account traditions, habits and the economic situation. In the pasta market, a small segment is occupied by dietary and functional products, enriched pasta and products with a high nutritional value of no more than 1%. In this regard, the purpose of this study is to use non-traditional raw materials and food additives for the production of gluten-free pasta with a high content of vitamins and minerals.

In this work, the materials for the study were: buckwheat and chickpea flour of the Shortandinskaya coarse-grained variety, produced in the scientific and production center of the grain farm named after A. I. Barayev of the Republic of Kazakhstan, corn flour produced in the AL and KS Firm LLP of the Republic of Kazakhstan, using high-grade corn starch produced in the Zharkent Starch Plant of the Republic of Kazakhstan. Based on the experimental data obtained, three recipes for gluten-free pasta based on corn, chickpea, and buckwheat flour have been developed. To maximize the rheological properties of the pasta dough, it is recommended to introduce 25% starch into the dough formulation, which will increase the nutritional value of finished gluten-free pasta without significantly worsening the rheological properties of the dough. Rheological properties were determined using an alveograph (GOST 51415-99, ISO 5530-4-91). Water absorption using a farinograph (GOST 51404-99, ISO 5530-1-97).

During the study, 3 recipes were obtained. Rheological properties are possessed only by a control test sample based on flour of the first grade, which is explained by the fact that the protein fraction of wheat is mainly represented by gliadin and glutenin, insoluble in water, a distinctive feature of which is low solubility in water, therefore they can bind water in the test, swell and form gluten in a limited way. The results of experimental data showed that when starch is added to the pasta dough formulation, the value of the elasticity index increases from 15 to 25%, and the percentage of starch increases to 35%.

Thus, to improve the rheological properties of pasta dough, it is recommended to add 25% starch to the dough formulation, which increases the nutritional value of the finished product without significantly worsening the rheological properties of the dough. The resulting products will have high consumer properties and a homogeneous structure.

**Key words:** *Gluten-free flour, Gluten-free pasta, Non-traditional raw materials, Nutritional value, Rheological properties.*