

# USING SPONTANEOUS FERMENTATION SOURDOUGH IN THE PRODUCTION OF RYE-WHEAT BREAD WITH THE ADDING AMARANTH FLAKES

Iryna Parkhomets, Tetiana Sylchuk  
National University of Food Technologies, Kyiv, Ukraine  
e-mail: [parkhometsiryna@gmail.com](mailto:parkhometsiryna@gmail.com)

Nutrition is one of the initial factors, that determines the state of health of the population. Bread is the most important product in the human diet and occupies 30...35% of the total amount products consumed per day. Therefore, constant attention devoted to improving and increasing its quality.

The traditional technology of rye-wheat bread production is based on the use of sourdough. This technology requires long-term preparation and large areas of manufacture. So, a very big disadvantage for rye sourdough is that it must be used at a certain time and also it cannot be stored for a long time. Thus, today this technology of rye-wheat bread production is quite energy-consuming.

The technology of rye-wheat bread using dry canned and frozen spontaneous fermentation sourdough was proposed in this paper. Amaranth flakes are also offered as non-traditional plant raw materials in the preparation of rye-wheat bread.

Amaranth, as well as quinoa, belongs to gluten-free pseudocereals. In Ukraine, amaranth is one of the most profitable agricultural crops grown mostly in the Southern and the Eastern regions. Amaranth is an excellent source of protein, starch, lipids, cellulose, and minerals. Carbohydrate-containing components of amaranth are, first of all, fine-grained starch, inositol, glucose, fructose, raffinose, sucrose, maltose, and stachyose.

The physicochemical properties and content of soluble and insoluble cellulose make amaranth grain biologically valuable, too. Amaranth grain contains more lipids (up to 10%) than most cereals do. Amaranth lipids consist of triacylglycerols (80%) and other minor components: squalene, sterols, tocopherols, carotenoids, phospholipids. Squalene is an important nutrient of amaranth. This organic compound carries oxygen directly to cell membranes throughout the human body.

Amaranth grain is a rich source of minerals, such as calcium, magnesium, iron, selenium, and molybdenum. In order to improve the technology of bread and increase its value the use of amaranth flakes was proposed. Amaranth flakes are made from organic whole (intact, unprocessed) grain, in which all its valuable parts (skin, so-called aleurone layer and germ) are preserved. The grain is rolled through a press and as a result it become less hard but does not losing its useful properties.

Preparation of spontaneous fermentation sourdough using rye flour and water at a temperature of 26-28 °C. Recovery of the leaven was carried out every 12 hours, adding the amount of the mixture that was selected. Also controlled its acidity and lifting force.

Spontaneous fermentation sourdough with the necessary quality parameters for storage was dried at different temperatures and kept for different times. Recovered dry spontaneous fermentation sourdough and conducted the necessary experiments and checked quality indicators, titrated acidity and lifting force of spontaneous fermentation sourdough. Also were conducted experiments and recovery of frozen spontaneous fermentation sourdough and determination of its quality indicators took place.

Using of non-traditional plant raw stuff for production of rye-wheat bread makes it possible to get multifunctional products properties. The inclusion of non-traditional types of raw materials in the recipe makes it possible to enrich the finished products with the necessary micro- and macronutrients, essential amino acids, dietary fibers and vitamins. And the using spontaneous fermentation sourdough to shorten the process of making rye-wheat bread.

### **References**

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