

THE RESEARCHING OF TECHNOLOGICAL PARAMETERS OF PASTA PRODUCING WITH QUALITY IMPROVER

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Abstract: the researching of enzymatic additive “Noopazyme” as improver in producing the pasta from baking flour that is topical today is presented in papers. The influence of “Noopazyme” on the technological processes of dough kneading and forming of products is installed. It gives the possibility to prove and regulate the technological parameters of pasta producing depending on quality of raw and applying equipment.

Consumer value of pasta products depends on quality and technological characteristics of raw and using the high technological equipment. Today producing of domestic pasta products of high quality makes more difficult because Ukrainian producer of pasta products process only baking wheat flour that in case of absence special technological ways (techniques) leads to getting the poor quality products, that lies in increasing of quantity of scrap and bit, making microcracks in transportation, realizing, loosing of form and adhesion after cooking.

Ukrainian market is supersaturated of goods of foreign producers including pasta products. So searching the ways of producing of high quality and competitive domestic pasta products is urgent.

Now the food additives are wide used for improving of quality of food products. In domestic practice using of enzymatic additives (EA) as food additives in pasta producing earlier not have been applied as fermentative processes is not of great importance. Today in Ukraine EA after trade title “Noopazyme” is realized. This additive is enzyme on a basis of lipase that degrades triglycerides at the place of enteric link with formation of glycerin and high lipid acids.

The authors have been installed the expediency of using of “Noopazyme” for improving the quality of products to indexes of firmness, glassiness, cooking characteristics: products hold the shape in good way, are stable to overcooking and quantity of dry substances that go to cooked water reduces. Authors recommend the dose of additive for producing of pasta products is 0,004 – 0,008 % to flow [1].

Selection of optimal parameters of producing of pasta products gives the possibility to get product of high organoleptical and physical-chemical indexes. It is necessary to have knowledge about changing of quality of half-finished products (pasta dough, raw only pressed pasta products) [2].

Pasta dough essentially differs from other dough masses of food purpose. During preliminary mixing of ingredients (mainly flour and water) crumbed mass is forming that during further processing under pressure gradually transforms into dense bound mass. Its moisture, temperature and structure making additives also influences on crumbness of dough. Crumbness, for its part, will influence on speed of pressing.

So, researching of structure of dough and parameters of pressing of products with enzymatic additives will give opportunity to prove and vary the technological parameters of producing of pasta dough depending of quality of raw materials, characteristics of equipment etc.

The influence of EA “Noopazyme” in quantity 0,004 and 0,008% to flour on structure and indexes of pressing of products had been researched in papers. Structure (crumbness) of pasta dough had been determined by dispersion of 500 g of prepared dough at the system from 4 metal sieves #7, 5, 3 and 1 and by determining of mass of obtained fractions. Rest on sieves differs from granulometric composition: crumbs greater (larger) than 7 mm, from 5 till 7 mm, from 3 till 5 mm and from 1 till 3mm. Mass of crumbs of different fractions have been shown in percents to total (whole) mass (500 g).

Among characteristics of pressing the productivity of press and speed of pressing had been researched. Speed of pressing (V_{pr}) had been determined by measuring of length of raw (not dried) products that have been pressed during 30 c and have been shown in mm/c; productivity of press (P_{pr}) – by weighing of these products and showing in kg/hour.

Additives have been dosed into dough in water suspension with temperature 40 degree Celsius (recommended by producer), dough have been kneaded at pasta press “MAKMA-M” (Russia) with moisture 32 %.

Pasta dough with “Noopazyme” is characterized by more small crumbs comparing to dough without additive (fig. 1): with increasing the dose of enzymatic additives the quantity of crumbs of 3 largest fractions naturally decreases as content of most small crumbs fractions with dimension of crumbs from 1 to 3 mm increases. Apparently it is the result of increasing of water absorbing capability of dough.

So (such) small crumbs structure of pasta dough causes decreasing of indexes of pressing of pasta products with “Noopazyme” (fig.2). Speed of pressing of pasta products decreases in case of dosing the EA 0,004 % and 0,008 % accordingly at 11 % and 20 % comparing to the control. Productivity of press decreases too.

In producing of pasta products different types of kneading of dough are using depending of its moisture and temperature of water [2]. In case of using the enzymatic additive “Noopazyme” it is important to research the reservation of it activity as water of different temperature for preparing of suspension use. The water with temperature 30, 40 degrees Celsius that corresponds to cold kneading has been used for analyze as well as water with temperature 50 and 75 degrees Celsius that corresponds to warm kneading. The quantity of enzyme (g) that delivers 1 micromole of oleic acid from 40 % emulsion of olive oil if pH

7,0 and temperature 40 degrees Celsius during 1 hour is 1 unit of enzymatic activity.

Determining of activity of enzyme in water suspension has been made by modified method of Ott, Yamad that lies in determining by titration by alkali of fatty acids which had been generated after acting of lipase in using the olive oil as substrate [3]. For choosing the concentration of solution of enzymatic additive on the condition that different between control and analyze titration was from 0,8 to 1,5 mg.

Results of analyzing evident (fig. 3) that during rising the temperature from 30 to 40 degrees Celsius activity of lipase increases but at 50 degrees Celsius activity sharply decreases. At 75 degrees Celsius results of titration were negative that evident the inactivation of enzyme. Maximum activity of lipase is seen at 40 degrees Celsius.

So it has been installed that optimal temperature for lipase acting is 40 degrees Celsius, so water exactly of this temperature has been recommended for using in preparing of suspension of enzymatic additive.

Thus at basis of carried out analyzes it has been installed that addition of “Noopazyme” causes formation more small crumbed dough. As a result it makes decreasing of parameters of products pressing. It has been recommended to use water with temperature 40 degrees Celsius for preparing of suspension of enzymatic additive.

So taking into account of obtained dependences it is possible to regulate the technological parameters of kneading of dough and forming of products for getting quality pasta products with “Noopazyme”.

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