

TRADITIONAL RAW MATERIALS IN PASTA PRODUCTION TECHNOLOGY

<https://doi.org/10.5281/zenodo.17763862>

B.N.Amanov, N.F.Xujaqulova, D.R.Jabborova, Sh.Sh.Baqoyeva

Bukhara State Technical University

Bukhara, Uzbekistan

Bobbi.0727@mail.ru

Annotation

Wheat and rye grains contain inulin, which is lost during flour production. These products, unlike wheat, do not contain gluten-forming substances, and therefore are usually used for the production of instant pasta or short instant products or short products using technologies. The use of inulin in functional pasta is natural. Inulin is the most widely used and studied prebiotic in the world, it is a natural plant ingredient. The use of inulin in functional pasta is natural. Inulin is the most widely used and studied prebiotic in the world, it is a natural herbal ingredient. The optimal dosage of inulin is 2-3% by weight of flour. This is the optimal dosage for the best manifestation of technological and health-promoting properties.

Keywords

Pasta, wheat grains, flour, non-traditional raw materials, triticale

Macaroni is a product obtained from wheat flour, by kneading dough, forming products and drying them. The main raw materials for the production of pasta are bakery flour and flour obtained by grinding soft, highly vitreous wheat [1,2,3].

Traditional raw materials in the production of pasta products are an advanced direction in this industry. There is a reason for this, shortcomings in production with the main raw materials. Such as low quality of manufactured products, low biological value, increased wear of technological equipment, and many others [4,5,6,7].

Traditional raw materials of pasta production include products of processing of grain and seeds of various plant crops, fruits of tuberous crops, as well as by-products of their processing[8]. These products, unlike wheat, do not contain gluten-forming substances, and therefore are usually used for the production of instant pasta or short instant products or short products using technologies that

provide for high drying temperatures, as well as the use of hot water during kneading.

To increase the nutritional value of pasta, flour fortification is used. In this case, mainly egg and milk additives, heat-resistant vitamins are used. Flour is also enriched with iron and calcium [9,10,11].

Macaroni products are enriched with iodine by adding 3% seaweed.

Pasta products with the addition of sea kale acquire the same color as that of sea kale, while the color becomes darker with increasing dosage. At a dosage of 3%, the taste of pasta does not change, if 5% of the product gets the characteristic taste of seaweed. Seaweed is a dietary supplement that reduces the impact of adverse factors on the human body [12,13,14].

Triticale is a hybrid of different grains, selected by artificially crossing wheat and rye. Triticale combines the positive properties of both crops, such as high yields, nutritional value of rye, as well as the ability of proteins to form gluten with a low degree of darkening during the preparation of products, which applies to wheat.

Wheat and rye grains contain inulin, which is lost during flour production. The use of inulin in functional pasta is natural. Inulin is the most widely used and studied prebiotic in the world, it is a natural herbal ingredient. It is able to improve the functioning of the digestive tract, helps to increase immunity, reduces cholesterol levels in the blood[15,16,17].

In addition to the health-improving effect when inulin is added to pasta, it provides a number of technological advantages: when cooking pasta, it does not deform, the strength of dry products[18]. The optimal dosage of inulin is 2-3% by weight of flour. This is the optimal dosage for the best manifestation of technological and health-promoting properties.

In addition to the differences in the chemical composition of the grain of these crops, and therefore the grinding products, it is necessary to note differences in the structure of their main component starch: it differs in the ratio of amylose and amylopectin, in the temperature of gelatinization and the size of granules[19,20].

Peas and soybeans are legumes that are distinguished by their high protein content. At the same time, it is necessary to note the high value of soy proteins, which are close to the amino acid composition of animal proteins[21,22,23].

Vegetable and berry powders are a source of enriching pasta with minerals, dietary fiber, vitamins, and organic acids.

To get the powder, the raw material is first dried, then crushed. Powders have a higher moisture absorption capacity than baking flour.

As a food processing additive, amaranth processing products of grain and/or vegetable varieties are used, and phosphoric acid salts in the amount of 0.03-1.00% by weight of flour are used as a corrective additive. The use of enriching additives from amaranth makes it possible to increase the biological value of pasta products, expand their range, and reduce the microbiological contamination of the finished product [24].

Amaranth is considered a promising raw material for the food industry. It contains 15-20% protein, balanced in amino acid composition, is characterized by a high content of pectin, coloring pigments, oil with medicinal properties, vitamins A, B, C and other physiologically active substances[25,26,27,28].

As an unconventional raw material, sea buckthorn meal can be used - a dry residue obtained during the production of sea buckthorn oil, which has a high biological activity, has a high content of organic substances[29,30].

Tread properties. Sea buckthorn meal is a solid, loose product of yellow color. from the technological point of view, meal has a number of advantages: it has a high degree of hydration, it can be used in different amounts and combinations as part of food compositions[31,32,33]. As part of flour products, it not only increases the biological value, but also reduces the content of energy-intensive components, while maintaining the quality of products. In addition, meal has a number of advantages over raw materials: taking up 4-5 times less volume, it allows you to get significant savings by reducing production space and storage costs. Sea buckthorn meal is a natural vegetable source of dietary fiber, minerals, vitamins, vegetable protein, fiber, pectin substances, an antioxidant of fats and a moisture stabilizer[34,35,36,37].

In order to develop new, cheaper additives for pasta products, providing a cheaper technology for the production of pasta products with their introduction, ensuring the preservation of the biological value of additives, as well as improving the quality of pasta products, in particular color and cooking properties. Such additives include the product of whey processing[38,39,40].

The main raw material was wheat baking flour of the highest grade. Kneading was carried out at a water temperature of 40-50 °C, the estimated humidity of the dough is 32%, the duration of kneading is 10 minutes. The molded raw vermicelli was dried in a drying cabinet at 30, 50 and 80 °C for 6 hours, 2 hours and 40 minutes, respectively, to a humidity of 14-14.5%.

From the review of literature sources on the use of non-traditional raw materials in pasta production, it can be noted that various natural sources can be used as raw materials. Which are added to pasta in certain quantities, and these additives have an impact on changing the properties of pasta, their enrichment

with certain minerals[41,42]. The structural, mechanical and cooking properties of pasta depend on the introduction of a certain amount of additives[43,44].

Fortification of inexpensive food products, such as pasta, is advisable due to their mass consumption, not high cost this product. This implies the possibility of preventing a number of diseases and preventing beriberi among pasta consumers[45,46].

LITERATURE:

1. Аманов, Б. Н. (2013). Функциональное питание как основной фактор гармоничного развития личности. XXI асп-интеллектуал-инновацион фоялар асри республика илмий-амалий семинар материаллари. Материалы республиканского научно-практического семинара «XXI веки интеллектуально-инновационных идей». Ташкент, 64-69.

2. Аманов, Б. Н., Исабаев, И. Б., Аманова, З. М., & Хайдар-Заде, Л. Н. (2021). Способы применения пробиотических бактериальных препаратов при производстве ржаного хлеба. NVEO-Журнал О ПРИРОДНЫХ ЛЕТУЧИХ ВЕЩЕСТВАХ И ЭФИРНЫХ МАСЛАХ | NVEO, 8152-8165.

3. Аманов, Б. Н. (2017). Новое хлебобулочное изделие с повышенными показателями качества. Хлебопечение России, (3), 20-22.

4. Аманов, Б. Н., & Бакоева, С. С. (2023). Оценка биологической ценности тыквенного порошка при использовании в производстве. Жизненно важное приложение: Международный журнал новых исследований в области передовых наук, 2(1), 18-22.

5. Аманов, Б. Н., & Нодиров, А. А. (2022). Ржаной хлеб на сухой пароварке по дискретной технологии. Пионер: Журнал передовых исследований и научного прогресса, 1(6), 45-49.

6. Аманов, Б. Н., Исабаев, И. Б., Атамуратова, Т. И., & Садыков, И. С. (2021). Влияние продуктов из томатного прессы на эффективность технологического процесса и качество ржаного хлеба. Европейский журнал безопасности и стабильности жизнедеятельности (2660-9630), 6, 12-20.

7. Аманов, Б. Н. ИССЛЕДОВАНИЕ ПОКАЗАТЕЛЕЙ НАЦИОНАЛЬНЫХ ХЛЕБЦЕВ. ББК 36.81 я43 Т38 Редакционная коллегия: д. т. н., профессор Акулич АВ (отв. редактор) к. т. н., доцент Машкова ИА (отв. секретарь), 30.

8. Аманов, Б. Н., & Нурматов, Д. Д. (2023). Пищевая ценность хлебобулочных изделий увеличивает ее. Жизненно важное приложение:

Международный журнал новейших исследований в области передовых наук, 2(1), 165-169.

9. Аманов, Б. Н., & Амонова, З. М. (2023). ДИСКРЕТНАЯ ТЕХНОЛОГИЯ ПРОИЗВОДСТВА РЖАНОГО ХЛЕБА НА ОСНОВЕ СЫРЬЯ. Procedia of Теоретические и прикладные науки, 3.

10. Мухамедова, М. Е., & Аманов, Б. Н. (2023). ПРИМЕНЕНИЕ НОВЫХ ВИДОВ СЫРЬЯ В ПРОДУКТАХ ИЗ МУКИ ГРУБОГО ПОМОЛА. Procedia of Теоретические и прикладные науки, 3.

11. АМАНОВ, Б. Н. (2016). РАСШИРЕНИЕ АССОРТИМЕНТА НАЦИОНАЛЬНЫХ ХЛЕБОБУЛОЧНЫХ ИЗДЕЛИЙ. In Наука молодых- будущее России (pp. 331-334).

12. Аманов, Б. Н. (2013). Методологический подход к проектированию рецептур хлебобулочных изделий с использованием композитных смесей. Ўзбекистон Республикаси фанлар академияси. Ёш олимлар ахборотномаси илмий журнал, (1-2), 39-44.

13. Аманов, Б. Н., & АЛЬБУМИНОВ, И. ИЗ ПШЕНИЧНЫХ ОТРУБЕЙ. КОМПЛЕКСНЫЕ СОЕДИНЕНИЯ НИКОТИНАТА КАЛЬЦИЯ С АМИДАМИ, 83.

14. Аманов, Б. Н. МОДЕЛИРОВАНИЕ ХИМИЧЕСКОГО СОСТАВА КОМПЗИТНЫХ СМЕСЕЙ ДЛЯ ХЛЕБОБУЛОЧНЫХ ИЗДЕЛИЙ. ББК 36 Т38 Редакционная коллегия: д. т. н., профессор Акулич АВ (отв. редактор) к. э. н., доцент Козлова ЕА (отв. секретарь), 194.

15. Аманов, Б. Н. ДИЕТИЧЕСКИЕ ХЛЕБОБУЛОЧНЫЕ ИЗДЕЛИЯ ДЛЯ ПИТАНИЯ НАСЕЛЕНИЯ. ТЕХНИКА И ТЕХНОЛОГИЯ ПИЩЕВЫХ ПРОИЗВОДСТВ, 76.

16. Аманов, Б. Н., Амонова, З. М., Хайдар-Заде, Л. Н., & Файзуллаев, А. Р. (2021). Перспективы использования продуктов переработки томатов в производстве ржаного хлеба. Анналы Румынского общества клеточной биологии, 1009-1022.

17. Бакоева, С. С., & Аманов, Б. Н. (2023). Использование тыквенной муки при производстве полуфабриката для печенья. ЕВРОПЕЙСКИЙ ЖУРНАЛ ИННОВАЦИЙ В НЕФОРМАЛЬНОМ ОБРАЗОВАНИИ, 3(2), 101-105.

18. Мухамедова, М. Е., & Аманов, Б. Н. (2023). Использование пищевых добавок при производстве сухариков. ЕВРОПЕЙСКИЙ ЖУРНАЛ ИННОВАЦИЙ В НЕФОРМАЛЬНОМ ОБРАЗОВАНИИ, 3(2), 96-100.

19. Аманов, Б. Н., & Адизова, Н. Б. (2023). Пищевая ценность хлеба из муки сорта Веда. ЕВРОПЕЙСКИЙ ЖУРНАЛ ИННОВАЦИЙ В НЕФОРМАЛЬНОМ ОБРАЗОВАНИИ, 3(3), 45-50.

20. Amanov, B. N., Amonova, Z. M., Khaidar-Zade, L. N., & Fayzullaev, A. R. (2021). Prospects for Using Tomato Processing Products in the Production of Rye Bread. *Annals of the Romanian Society for Cell Biology*, 1009-1022.
21. Бакоева, С. С., Аманов, Б. Н., & Амонова, З. М. (2023). Биологическая ценность тыквенного порошка при использовании в производстве. *ЕВРОПЕЙСКИЙ ЖУРНАЛ ИННОВАЦИЙ В НЕФОРМАЛЬНОМ ОБРАЗОВАНИИ*, 3(4), 133-137.
22. Аманов, Б. Н., & Амонова, З. М. Хайдар-Заде ЛН и Файзуллаев АР (2021). Перспективы использования продуктов переработки томатов в производстве ржаного хлеба. *Анналы Румынского общества клеточной биологии*, 1009-1022.
23. Amanov, B. N., Isabaev, I. B., Amanova, Z. M., & Khaidar-Zade, L. N. (2021). Methods Of Application Of Probiotic Bacterial Preparations In The Production Of Rye Bread. *Nveo-natural volatiles & essential oils Journal | NVEO*, 8152-8165.
24. A.A. Nodirov, B.N. Amanov, & Z.M.Amonova. (2023). RYE BREAD USING DISCRETE TECHNOLOGY. *Multidisciplinary Journal of Science and Technology*, 3(3), 350-355. Retrieved from <http://mjstjournal.com/index.php/mjst/article/view/247>
25. Muxamedova, M. E. ., & Amanov, B. N. . (2023). Treatment of Pullorosis in Chickens of Biological Control of an Incubation Egg. *EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION*, 3(6), 169-176. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1823>
26. Baqoyeva, S. S., Amanov, B. N., & Amonova, Z. M. (2023). Biological Value of Pumpkin Powder when Used in Production. *EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION*, 3(4), 133-137. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1629>
27. Amanov, B. N. ., & Adizova, N. B. . (2023). Nutritional Value of Bread from Veda Flour. *EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION*, 3(3), 45-50. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1528>
28. Baqoyeva, S. S. ., & Amanov, B. N. . (2023). Use of Pumpkin Flour in the Production of Semi-Finished Biscuit. *EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION*, 3(2), 101-105. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1485>
29. Muxamedova, M. E. ., & Amanov, B. N. . (2023). Use of Food Additives in the Production of Rusk Products. *EUROPEAN JOURNAL OF INNOVATION IN*

NONFORMAL EDUCATION, 3(2), 96-100. Retrieved from <http://www.inovatus.es/index.php/ejine/article/view/1484>

30. Amanov, B. N., & Nurmatov, J. J. (2023). Nutritional Value of Bakery Products Increasing It. Vital Annex: International Journal of Novel Research in Advanced Sciences, 2(1), 165-169.

31. Amanov, B. N., & Baqoyeva, S. S. (2023). Evaluation of the Biological Value of Pumpkin Powder When Used in Production. Vital Annex: International Journal of Novel Research in Advanced Sciences, 2(1), 18-22.

32. Amanov, B. N., & Nodirov, A. A. (2022). Rye Bread on Dry Steader by Discrete Technology. Pioneer: Journal of Advanced Research and Scientific Progress, 1(6), 45-49.

33. Аманов, Б. Н., Исабаев, И. Б., Атамуратова, Т. И., Очилов, Ш. Б., Жаббарова, С. К., & Кусова, И. У. (2022). СОВЕРШЕНСТВОВАНИЕ ТЕХНОЛОГИИ ПРИГОТОВЛЕНИЯ РЖАНЫХ СОРТОВ ХЛЕБА. In Совершенствование рациона питания населения, обеспечение качества и безопасности кулинарной продукции (pp. 8-16).

34. Amanov, B. N., & Majidov, K. H. FUNCTIONAL PROPERTIES OF ALBUMINS FROM WHEATEN BRAN. КОМПЛЕКСНЫЕ СОЕДИНЕНИЯ НИКОТИНАТА КАЛЬЦИЯ С АМИДАМИ, 83.

35. Ergasheva, H., Khujakulova, N. // Enrichment of Wheat Flour with Shorts at Flour-Milling Enterprises // Journal of Pharmaceutical Negative Results, 2022, 13, pp. 2359-2363

36. Sh.Sh.Baqoyeva, B.N.Amanov, & Z.M.Amonova. (2023). USING PUMPKIN FLOUR IN COOKIE PRODUCTION. Multidisciplinary Journal of Science and Technology, 3(4), 119-125. Retrieved from <https://mjstjournal.com/index.php/mjst/article/view/314>

37. B.N Amanov, Z.M.Amonova, B.S.Abdullayev, & Q.G.Majidov. (2023). STUDY OF THE FUNCTIONAL PROPERTIES OF PROTEINS FROM WHEAT BRAN IN BAKERY PRODUCTS. Multidisciplinary Journal of Science and Technology, 3(4), 102-108. Retrieved from <https://mjstjournal.com/index.php/mjst/article/view/311>

38. Amanov, B. N. , & Adizova, N. B. . (2023). Nutritional Value of Bread from Veda Flour. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(3), 45-50. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1528>

39. Baqoyeva, S. S. ., & Amanov, B. N. . (2023). Use of Pumpkin Flour in the Production of Semi-Finished Biscuit. EUROPEAN JOURNAL OF

INNOVATION IN NONFORMAL EDUCATION, 3(2), 101-105. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1485>

40. Muxamedova, M. E. ., & Amanov, B. N. . (2023). Use of Food Additives in the Production of Rusk Products. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(2), 96-100. Retrieved from <http://www.inovatus.es/index.php/ejine/article/view/1484>

41. Baqoyeva, S. S., Amanov, B. N., & Amonova, Z. M. (2023). Biological Value of Pumpkin Powder when Used in Production. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(4), 133-137. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1629>

42. Muxamedova, M. E. ., & Amanov, B. N. . (2023). Treatment of Pullorosis in Chickens of Biological Control of an Incubation Egg. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(6), 169-176. Retrieved from <http://inovatus.es/index.php/ejine/article/view/1823>

43. B.N Amanov, Z.M.Amonova, B.S.Abdullayev, & Q.G.Majidov. (2023). STUDY OF THE FUNCTIONAL PROPERTIES OF PROTEINS FROM WHEAT BRAN IN BAKERY PRODUCTS. Multidisciplinary Journal of Science and Technology, 3(4), 102-108. Retrieved from <http://mjstjournal.com/index.php/mjst/article/view/311>

44. Sh.Sh.Baqoyeva, B.N.Amanov, & Z.M.Amonova. (2023). USING PUMPKIN FLOUR IN COOKIE PRODUCTION. Multidisciplinary Journal of Science and Technology, 3(4), 119-125. Retrieved from <http://mjstjournal.com/index.php/mjst/article/view/314>

45. Хакимова Н. Х., Курвантаев Р. (2020). Эволюция реликтовых почв среднего течения реки Зеравшан. Annali-d'Italia. Рим, (4), 68-71.

46. Мажидова, Н. К. (2010). Повышение качества и обеспечение пищевой безопасности саломасов, получаемых гидрогенизацией хлопкового масла. Ташкент: ТашХТИ.