

Silk Berries Beet Roots in The Production of Muffins

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Abstract. Traditionally, flour confectionery products, which include muffins, are in significant demand among almost all age groups of the population. The aim of the study was to develop a recipe and technology for preparing muffins using paste from white mulberry and sugar beet root crops. The experimental part of the work was carried out in the laboratories of the food technology department of the Bukhara Engineering Technological Institute.

Keywords: Vegetable, Fruit, Flour Confectionery Products, Muffins

The possibility of using orange-ginseng syrup for fortification of functional and technological properties of muffins has been determined. The optimal dosage of syrup introduced at the stage of whipping instead of sugar or egg-sugar mixture has been established and is 10.0% [27].

Studies on the use of various fruit and vegetable powders, fruit pastes as additives to semi-finished products from biscuit and cake dough have proved the expediency of their use to reduce calorie content and increase the nutritional value of products [28, 29].

So, G.M. Kharchuk [30] studied the possibility of using fruit pastes (quince and apple) in the production of biscuits. A decrease in the caloric content and an increase in the nutritional value of these products was established due to a decrease in the content of total sugar, an increase in monosaccharides and pectin substances when they are used instead of part of the prescription amount of fat and sugar.

The use of fruit and vegetable additives in the production of MCI made it possible to increase the stability of foams and emulsions as a result of the formation of protein-polysaccharide complexes acting as surfactants through the forces of electrostatic attraction arising between polyelectrolytes, which are pectin substances and proteins [31].

By Perfilova O.V. [28] a technology has been developed for the production of muffins containing carrot, beet, apple and hawthorn powders from pomace obtained in the production of directly squeezed juices. The specificity of this technology lies in the fact that these powders are introduced directly into the melange to swell the polysaccharides. The enrichment of muffins with powders made it possible to increase the degree of satisfaction of the human body's need for vital nutrients, and also made it possible to extend the shelf life of products from 7 to 10 days.

Based on the above, we can conclude that in order to improve the quality and nutritional value of muffins, it is advisable to use processed products of berries, fruits and vegetables (powders, pastes, mashed potatoes, etc.), characterized not only by high nutritional value, but also by a certain technological potential, which is confirmed by numerous studies. However, the raw materials offered for the production of MKI, in particular, blueberries, hawthorn, sea buckthorn, raspberries, black currants, strawberries, bird cherry, Jerusalem artichoke, pumpkin, etc., with the exception of pumpkin, are scarce and expensive for enterprises in Uzbekistan, since they are not grown in volumes required for mass production of confectionery. At the same time, the potential capabilities of the required amount of domestic raw materials have not been practically studied.

Result.

The fruits of the white mulberry (Latin *Morus alba*) belong to the mulberry family (Latin *Moraceae*). Mulberry is the main berry of Central Asia with great potential for development. The fruits are used for food purposes, for the manufacture of syrups, flour (powder) is prepared from the dried fruit. They are distinguished by a high sugar content (up to 22.0% fructose and glucose) and a low acid content (0.1% phosphoric acid); they also contain tannins, pectin compounds, essential oils (cineole, geraniol, camphor, etc.), flavonoids, some proteins. The mineral composition is represented mainly by phosphorus, potassium,

calcium, magnesium, zinc, iron, etc. Vitamins are represented by β -carotene, C, B1, B2, B3, B6, B9, K, etc. phytoalexin - resveratrol, which has neuroprotective, anticarcinogenic, antioxidant and anti-inflammatory properties; a unique glycoside - Tutin, which, like other glycosides, is characterized by tonic, sedative, choleric properties [32].

As follows from the research results presented in table 4, a significant part of the dry matter of sugar-containing pastes falls on the carbohydrate complex. At the same time, the carbohydrates of the mulberry paste are represented mainly by fructose and glucose, and sugar beet - by sucrose. It is known that cellulose and pectin, which are included in the composition of sugar-containing pastes, being hydrophilic components, can have a positive effect on the rheological properties of the dough and are of certain importance for increasing the shelf life of finished products. In addition, fiber plays a significant role in the digestion process, and pectin substances are capable of removing heavy metals from the body. It should be especially noted that the ratio of Ca : P in both pastes is close to optimal, which increases the degree of assimilation of phosphorus.

Research was conducted on the use of mulberry and sugar beet paste in the production of muffins. The dough was prepared using chemical leavening agents. The paste was introduced in an amount of 20.0% by weight of flour with a partial replacement of the prescription amount of sugar, fat and high-quality wheat flour. The recalculation was carried out taking into account the dry matter content and the chemical composition of the paste. The dosage of the paste is determined by the recommendations of a number of researchers [34, 35] on the use of puree (12.0 - 20.0% of dry matter) from fruit, berry and vegetable raw materials in the production of flour products, no more than 30.0% by weight of flour, and the paste is more concentrated product (25.0 - 40.0% of dry substances and more), therefore, its dosage was adopted 20.0% to the mass of flour from the original recipe - 67.4 kg.

Conclusion.

Thus, the involvement of non-traditional types of plant raw materials in the production of flour confectionery products is a promising and relevant scientific direction of research, which is of practical importance from the point of view of providing the population with enriched products. This determines the implementation of the priority directions of the state development strategy in the field of healthy nutrition of the population and food security, the economic component in terms of reducing the cost of production by replacing imported and expensive raw materials with local unconventional resources or additional products of complex processing of raw materials.

References

1. Kanarskaya, Z.A. Trends in the development of confectionery technology / Z.A. Kanarskaya, F.K. Khuzin, A.R. Ivleva, V.M. Gematdinova // Bulletin of VSUIT. 2016. No. 3. P.195-204.
2. Vitol, I.S. Introduction to food technology / I.S. Vitol, V. I. Gorbatyuk, E. S. Gorenkov [and others]; ed. A.P. Nechaev. - M.: DeLi plus, 2013. 720 p.
3. Tutelyan, V.A. Theoretical and practical aspects of diet therapy in type 2 diabetes mellitus / V.A. Tutelyan, H.H. Sharafetdinov, A.A. Kochetkova. Moscow: BIBLIO-GLOBUS, 2016. 244 p.
4. Mulina, N.A. The problem of insufficient nutritional status and approaches to its solution / N.A. Mulina, N.I. Evstigneeva, E.A. Yurkov // Storage and processing of agricultural raw materials. 2006. No. 6. P.71-72.
5. Savenkova, T.V. Production of functional confectionery - problems and solutions / T.V. Savenkova // Confectionery and bakery production. 2012. No. 7. P.6-9.
6. Renzyaeva T.V., Tuboltseva A.S., Renzyaev A.O. Flour confectionery products for functional use based on multicomponent mixtures. Food Processing: Techniques and Technology, 2017, vol. 47, no. 4, pp. 77-83 (In Russian). DOI: 10.21179 / 2074-9414-2017-4-77-83.
7. Ambrozevich, E.G. Features of European and Asian approaches to ingredients for healthy food / E.G. Ambrozevich // Food Industry. 2005. No. 4. P.12-13.
8. Drobot, V.I. The use of fruit and berry additives in bakery production / V.I. Drobot, V.F. Dotsenko // Food industry. 1986. No. 3. P. 35-37.

9. Diet, Nutrition and the Prevention of Chronic diseases; Report of a Joint WHO /FAO Expert Consultation; World Health Organization, Geneva, 2003.148 p.
10. Matveeva, T.V. Functional flour confectionery. Scientific bases, technologies, recipes: monograph / T.V. Matveeva, S.Ya. Koryachkin. - Oryol: FGOU VPO "State University - UNPK", 2011. 358 p.
11. Collection of recipes for flour confectionery and bakery products for public catering enterprises. - M.: Economics, 1986.295 p.
12. Magomedov, M.G. Technology of obtaining paste from sugar beet / M.G. Magomedov // Vestnik VSUIT. 2014. No. 3 (61). - P.138-141.
13. Karusheva, N.V. Technochemical control of confectionery production / N.V. Karusheva, I.S. Lurie.- M.: Agropromizdat, 1990.160 p.
14. Oleinikova, A. Ya. Confectionery technology. Workshop: Textbook. allowance. - SPb .: GIORD, 2015.600 p.
15. Sokol, N.V. Methodical instructions for laboratory and practical work in the discipline "Technology of functional confectionery". Calculation of food, energy and biological value of confectionery / N.V. Sokol, O.P. Gaidukova, N.S. Khramova. - Krasnodar: FGOU VPO "Kuban State Agrarian University", 2009. 32 p.
16. Pashuk, Z.N. Bakery production technology: reference book / Z.N. Pashuk, T.K. Apet, I. I. Apet. SPb .: GIORD, 2009.400 p.
17. The chemical composition of food: Book 1: Reference tables of the content of basic nutrients and the energy value of food products / Ed. THEM. Skurikhin, M.N. Volgaryov. - 2nd ed., Rev. and add. - M .: VO "Agropromizdat", 1987.224 p.
18. Skurikhin, I.M., Nechaev, A.P. All About Food from the Point of View of a Chemist: A Reference Book. - Higher school, 1991.288 p.
19. Lobosova, L.A. Vegetable raw materials for new species in the recipe for shortbread cookies / L.A. Lobosova, M.G. Magomedov, A.V. Maksimenkova, I.Kh. Arsanukaev // Confectionery production. 2015. No. 6. P.10-12.
20. Lozovaya, T.M. Non-traditional raw materials for muffins of increased biological value / T.M. Lozovaya, H.I. Kovalchuk // Confectionery production. 2013. No. 3. P.21.
21. Tipsina, N.N. Powder from a Siberian pear for the production of muffins / N.N. Tipsina, E.N. Piguleva, A.E. Tumanova // Food industry. 2014. No. 2. Pages 34 - 35.
22. Zharkova, I. Non-traditional vegetable raw materials in cake technology / I. Zharkova, T. Malyutina, E Akhtemirov // Khleboprodukty. 2011. No. 8. P.40-41.
23. Pashchenko, V. Use of whole-ground flour from hawthorn fruits in biscuit technology / V. Pashchenko, G. Magomedov, T. Ermolenko // Khleboprodukty. 2011. No. 6. P. 38-39.
24. Lesnikova, N.A. Efficiency of using non-traditional raw materials in the production of cookies / N.A. Lesnikova, L.Yu. Lavrova, E.L. Bortsova // Confectionery production. 2014. No. 3. P.12-13.
25. Tatarnikova, E.A. Influence of arabinogalactan on the recipe for flour confectionery / E.A. Tatarnikova, E.N. Medvedeva // Confectionery production. 2013. No. 3. P. 15-16.
26. Rummyantseva, V.V. Efficiency of using non-traditional raw materials in the production of confectionery emulsions / V.V. Rummyantseva, A.Yu. Gurov, I. Efremova // Tere production. 2012. No. 1. P. 20-22.
27. Evdokimova, O. Orange - ginseng syrup in the technology of biscuit semi-finished product [Text] / O. Evdokimova, T. Matveeva, E. Kholodova // Bread products. 2010. No. 3. P.42-43.
28. Perfilova, O. V. Fruit and vegetable pomace powders in the confectionery industry [Text] / O.V. Perfilova, B.A. Baranov, Yu.G. Skripnikov // Storage and processing of agricultural raw materials. 2009. No. 9. P. 52-54.
29. Dotsenko, V.F. Investigation of the possibility of using fruit powders in the technology of biscuit semi-finished products / V.F. Dotsenko, Yu.A. Miroshnik, E.B. Shidlovskaya, I.M. Medvid // Eastern European Journal of Advanced Technologies. 2014. No. 3/10 (69). P.64-69.
30. Kharchuk, G.M. New recipes and technology for the preparation of flour confectionery products with reduced calorie content. Express information [Text] /G.M. Kharchuk, V.D. Androsov. - TsNIINTEITorgovli, 1987. No. 22. P. 23.