ISSN 2181-8622

Manufacturing technology problems

Scientific and Technical Journal Namangan Institute of Engineering and Technology

INDEX COPERNICUS INTERNATIONAL

Volume 9
Issue 4
2024

Google Scholar Crossref doi SLIB.UZ Scientific library of Uzbekistan

PROSPECTS FOR THE USE OF ROSE HIPS IN FOOD TECHNOLOGY

ATAMIRZAEVA SOHIBA

Senior lecturer of Namangan Engineering and Construction Institute, Namangan, Uzbekistan
Phone.: (0891) 341-4353, E-mail.: sohiba4353@gmail.com

SARIBAEVA DILOROM

Associate professor of Namangan Institute Engineering and Technology, Namangan, Uzbekistan
Phone.: (0894) 158-5941, E-mail.: diloromsaribayeva@mail.ru
*Corresponding

KAYUMOVA ASALXON

Student of Namangan Institute Engineering and Technology, Namangan, Uzbekistan
Phone.: (0850) 581-0050, E-mail.: asaloy_kayumova@mail.ru

Abstract: A morphological study of 5 types of rose hips for use in the food industry was carried out. For comparison, we took the species growing in the Namangan region: dog rose *(Rosa canina L.)*, Kokand *(Rosa kokanica.Regel*), Fedchenko (*Rosa fedtschenkoana Regel*), Begger (*Rosa beggeriana Schrenk*), corymbifera (*Rosa corymbifera Borkh.*). The organoleptic and physico-chemical parameters of a biologically active additive of different varieties of rosehip were studied, the pre-prepared fruits were separated from the seeds and extracted with water and ethyl alcohol.

Keywords: rose hips, species, fruits, seeds, morphology, vitamin C, flavonoids, organoleptic and physico-chemical parameters, extracted, ethyl alcohol.

Introduction. The health of a modern person is characterized by deterioration, associated to a greater extent not with infectious diseases, but with poor nutrition and insufficient physical activity. The health of each person, and accordingly the nation, is determined by a typical diet. Food supplies the human body not only with the energy necessary for normal functioning and life, but also with the necessary nutrients that perform a number of important functions. The most important of them is the prevention of a number of diseases, mainly associated with disruption of the normal functioning of the gastrointestinal tract. Adequate nutrition ensures normal growth and development of people from birth and helps prevent diseases, increase efficiency and prolong a full life in adulthood. Currently, the probability of infection of the human body with viral infections is extremely high. Therefore, there is a need to increase immunity and form adaptive mechanisms. One of the main cellular mechanisms of adaptation formation is the antioxidant system of the body. It is able to neutralize the destructive effect of free radicals, both formed in the body and coming from the outside. The supply of nutrients with antioxidant properties can be replenished by creating healthy food products. This scientific topic has been of great interest in recent years the interest of industry scientists.

Methods. To solve the problem of fortification of food with antioxidants, it is necessary not only to study the potential of food raw materials, but also to find ways to limit the mobility of antioxidant molecules with the consolidation of their active center to maintain maximum efficiency. It is important to limit the activity of antioxidants or

immobilize them in order to maintain bioavailability during the digestion of food and delivery to individual organs and cells. Quantitative determination of flavonoids is achieved by the spectrophotometry method in 10 mm Quartz cuvettes with absorbable layer thickness in SF-46 device and "Lambda 35 UV/VIS" recorder. Differential spectrophotometry was used to develop a method for quantifying Flavonoid compounds.

It is known that during the flavonoid cleavage of aluminum chloride, the complex produces a reaction based on the basic solution, as a result of which the flavonoid cleavage occurs 330-350 dan 390-430 nm. Using this method, it is possible to obtain a pure liquid, crude olynadigan, the total amount of aluminum chloride in flavonoids can be accurately determined directly using a spectrophotometer.

Aluminum chloridning 5% Whether erythema extract of olingan alcohol-suvli is aged for 409 nm with a maximum content of utilation, as well as in accordance with the state standard of alumina chloridning (DSN)the maximum content of the shelter.

Flavonoid in multidimensional quantities can be consumed raw with an experimental approach under optimal conditions: copper – 2 mm; extractant – 70% ethanol; raw material-extractant in a ratio of 1:50; total duration of the extract – 1 hour (2 times); aluminum chlorination with 5% alcoholic erythrocyte to form a complex The reaction time is 30 minutes. The comprehensive rehabilitation lasted 1.5 hours. In its raw form, the flavonoid contains large amounts of rutin.

Results. Of great importance in ensuring healthy nutrition is the production of functional food products, which is a new promising direction.

Today, 7 main types of functional ingredients are effectively used: dietary fiber (soluble and insoluble), vitamins, minerals (calcium, iodine, selenium, iron, etc.), antioxidants (carotene, bioflavonoids, tocopherol, etc.), polyunsaturated fatty acids, prebiotics (inulin, lactose, lactic acid, etc.), probiotics (bifido- and lactobacilli, etc.).

Recently, there has also been an increased interest in enriching products with biologically active substances, the source of which is plant components.

Among the various plants of our republic, rose hips are of the greatest interest, as they are a valuable source of vitamins and microelements.

Functional fruit and vegetable preserves enriched with vitamins are indispensable for nutrition, especially in winter.They can be used both for diseases associated with vitamin deficiency and to enhance the body's defenses. Consumption of foods enriched with vitamins reduces the risk of developing many common diseases, such as diabetes, cancer, and hypertension.

Based on the above, the current task of the food industry is to create products that will improve human health. These are functional fruit and vegetable preserves enriched with vitamins, minerals, dietary fiber, amino acids, flavonoids. The aim of this work is to research and develop the technology of functional fruit and vegetable preserves with rosehip extract and dietary fiber.

Studied morphological features of fruits of 5 species of this object.

For comparison, species growing in the Namangan region were taken - dog rose *(Rosa canina L.)*, Kokand *(Rosa kokanica.Regel)*, Fedchenko *(Rosa fedtschenkoana Regel)*, Begger *(Rosa beggeriana Schrenk)*, corymbifera (*Rosa corymbifera Borkh.*).

In this regard, special attention is paid to the efficient use of natural raw materials, the identification of biologically active substances in medicinal plants, their extracts and concentrates, and the improvement of biological indicators by adding them to food products.

Taking into account these properties of the plant, research work has been carried out on the technology of preparing functional canned food based on its biologically active substances. The fruits of the rose plant were collected in different areas of the Namangan region and collected during the period of full technical ripening of the fruits. It was dried at a temperature of 60°C to a moisture content of 5-14% (Fig. 1 and 2).

Figure 1. Fruits of the rosa plant (*Rosa L.)*

Figure 2. Dried rose hips (*Rosa L.)*

Macroscopic examination of the raw material was carried out visually. To determine the morphological and anatomical characteristics, the size, weight and color of the fruits, the presence of species characteristics were determined (Table 1).

Rosehip fruit indicators

Samples	Form	Color	Weight, g	Pulp, in %	Number of seeds per fruit, pcs.
№1	The fruits are spherical or flattened-spherical, less often ovoid, up to 1.5 cm in diameter.	Orange-red	1.669-2.56	58	26-49
№2	Fruits are 1.5-2.5 cm in diameter, ovoid or elliptical, strongly narrowed at the base	Red	0.792-1.365	63	45
№3	The fruits are elliptical, about 1 cm in diameter.	Red	1,476-1,539	61	29-36

№4	The fruits are fleshy, spherical or flattened-spherical, 3 cm or more in diameter.	Dark red	1,774-1,961	51	36-40
№5	The fruits are long, spindle-shaped, 2.5 cm in diameter.	Bright red	1,625-2,024	57	44

The average weight of the rose fruit was 0.79-2.56 g. 51-63% of it was the meat part, and the remaining 37-49% was hair and seeds. Depending on the variety, one fruit contains 26-49 seeds. The seed was separated and the peel was ground to 0.3-0.4 mm (Figures 3 and 4).

Figure 3. Dried rosehip hepanthia.

Figure 4. Hepanthia separated from the seed.

5. Crushed rosehip hepanthia.

Figure 6. Rosehip seeds.

Conclusion. Natural juices made from rosehip (500 mg to 100G) and blackcurrant (150 mg to 100 g) are the main source of ascorbic acid. These amounts are a pointer several times lower than fresh fruits and berries, since during the canning process, the proportion of vitamins in the raw materials decomposes by 20-35% compared to the initial pointer. These losses can be further increased in cases where the technology of processing raw

materials is violated. Juices do not differ from each other in the composition of vitamins of group B, since their content in raw materials will not be much, since, in the process of processing, additional losses are observed. The calorie content of 100 g of natural juice is 62 kkal (259 kDj). Sea-buckthorn, apricot, peach meat juices are sources of provitamin R-carotene A.

Rose hips vary in shape depending on the species. The fruit's stitches are wrinkled, thin, and fragile on the outside.

Studies have revealed that the outer epidermis has cells with uneven thickening. Cells of the pulp (parenchyma of the fruit) are orange-red to dark red.

Literature:

1. Resolution of the President of the Republic of Uzbekistan dated April 10, 2020 No. PQ-4670 "On measures to protect medicinal plants growing in the wild, cultivated cultivation, processing and rational use of available resources."

2. Shibamoto, T., Kanazawa, K., Shahidi, F., 2008. In: Funct food health. ACS Symposium. ISBN: 978-0-8412-6982-8, p. 993.

3. Saribayeva D.A. Technology off preparation of medicinal beverages on the basis of plant exteacts// Namangan Muhandislik-tekhnologiya Institute "Ilmiy-tekhnika" journal. ISSN 2181-8622, VOL 6 - Issue (3) 2021, -B.84-88. (05.00.00. No. 33).

4. Saribaeva D.A., Zokirova M.S., Mallabaev O.T. Study of the process of obtaining biologically active substances from aqueous and alcoholic extraction of ginger// Namangan Muhandislik-tekhnologiya Institute "Ilmiy-tekhnika" journal. ISSN 2181-8622, VOL 6 - Issue (3) 2021, -B.88-92. (05.00.00. No. 33).

5. Saribaeva D.A., Zokirova M.S. Study of the elemental and amino acid composition of ginger // Scientific Journal "Universum". - Moscow, November, 2021 No. 11 (92). -P. 86-90. (DOI - 10.32743 / UniTech.2021.92.11).

6. Saribayeva DA, Zokirova MS, Xoldarova GA Development and analysis of medicine and natural beverages //International Journal of Advanced Research in Management and Social Sciences. Impact Factor: 7.624. Vol. 10 | No. 12 | Dec 2021 www.garph.co.uk IJARMSS ISSN: 2278-6236.pp.31-36.

7. Saribaeva Dilorom, Zokirova Mashkhura, Kholdarova Gulsanam Researching the technology of making beverages containing fruit juice // Universum: technical sciences. 2022. No. 1-3 (94). URL: https://cyberleninka.ru/article/n/researching-the-technology-of-making-beverages-of-containing-fruit-juice (Date of access: 03.11.2022).

8. Мелибоев М.Ф., Маматов Ш.М., Эргашев О.К. Энергопотребление и экономические показатели при сублимационной и микроволновой сублимационной сушке слив // Universum: технические науки. – Москва-2022. - №5 (98). – С.9-12

9. Zokirova M., Saribaeva D., Xojieva S. Research technology of production of herbal and natural preserves //European Journal of Molecular & Clinical Medicine. – 2020. – Т. 7. – №. 2. – С. 325-333.

10. Saribaeva Dilorom Akramzhanovna, Zokirova Mashkhura Sodikzhanovna Study of the elemental and amino acid composition of ginger extract // Universum: technical sciences. 2021. No. 11-3 (92). (Date of access: 11/03/2022).022).

11. Saribaeva D. et al. Ginger root as a source of biologically active substances //E3S Web of Conferences. – EDP Sciences, 2024. – Т. 486. – С. 02028.

12. Akramjanovna D. S., Aripova K. O. Producing the processes of obtaining functional drinks based on medicinal plants extract //E3S Web of Conferences. – EDP Sciences, 2024. – Т. 486. – С. 02018.

13. Turg'unovna A. S., Akramjanovna S. D. Receiving vitamin-rich complexes and food additives in the production of food products //International Multidisciplinary Journal for Research & Development. – 2024. – Т. 11. – №. 04.

14. Основные технологические процессы естественной сушки хурмы (Diospyros) // Universum: технические науки: электрон. научн. журн. Курбанов Н.М. [и др.]. 2022. 5(98). URL: https://7universum.com/ru/tech/archive/item/13758 (дата обращения: 05.11.2024).

15. Сарибаева, Д. А. Перспективы использования расторопши в производстве пищевых продуктов / Д. А. Сарибаева // Наука молодых - Наука будущего: сборник статей III Международной научно-практической конференции, Петрозаводск, 02 февраля 2023 года. Том Часть 2. – Петрозаводск: Международный центр научного партнерства «Новая Наука» (ИП Ивановская И.И.), 2023. – С. 134-138. – EDN MPHOFU.

16.Пулатов, А. С. Влияние тепловой обработки на пищевую и биологическую ценность баранины при приготовлении узбекских национальных блюд / А. С. Пулатов, Е. Г. Екубжанова, Д. А. Сарибаева // Современные научные исследования и инновации. – 2015. – № 7-2(51). – С. 11-13. – EDNUHWHPD.

17.Атамирзаева Сохиба Тургуновна, Сарибаева Дилором Акрамжановна Исследование тяжелых металлов и макро-микроэлементов в плодах шиповника, произрастающего в Узбекистане // Universum: технические науки. 2024. №8 (125). URL: https://cyberleninka.ru/article/n/issledovanie-tyazhelyh-metallov-i-makro-mikroelementov-v-plodah-shipovnika-proizrastayuschego-v-uzbekistane (дата обращения: 20.11.2024).

18. Atamirzayeva Sohiba Turg'unovna, Saribayeva Dilorom Akramjanovna. (2024). Receiving vitamin-rich complexes and food additives in the production of food products. *International Multidisciplinary Journal for Research & Development*, *11*(04). Retrieved from http://www.ijmrd.in/index.php/imjrd/article/view/1281.

CONTENTS

PRIMARY PROCESSING OF COTTON, TEXTILE AND LIGHT INDUSTRY

GROWING, STORAGE, PROCESSING AND AGRICULTURAL PRODUCTS AND FOOD TECHNOLOGIES

CHEMICAL TECHNOLOGIES