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Paper Authors

Normahmatov Ruziboy



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PERSIMMON IS A VALUABLE RAW MATERIAL FOR PROCESSING

Normahmatov Ruziboy

Samarkand Institute of Economics and Service, Samarkand, Uzbekistan

Annotation

A method has been developed for obtaining confiture from overripe persimmons, unsuitable for storage, using mashed lemons with skin. It has been established that the addition of mashed lemons with peel enriches the finished product with ascorbic acid, P-active compounds, dietary fiber and other useful components.

Also provided are the results of an organoleptic assessment of the quality of confiture made from three pomological persimmon varieties according to a 5-point system.

Key words: persimmon, organoleptic assessment, confiture, point system, biological value, enzyme, vitamin.

INTRODUCTION

Horticulture is the most important branch of agriculture in Uzbekistan. At present, constant attention in the republic is paid to the development of gardening, an increase in fruit production, and the provision of a year-round supply of these valuable products to the population. Today, a scientifically based scheme for the placement of agricultural crops is being introduced, which put an end to

the cotton monopoly in the republic. It is well known that fruits are important sources of a number of mineral elements and vitamins, contain water-soluble sugars, organic acids, fiber, pectin and protein substances. The bactericidal and medicinal properties of many fruits have also been revealed. These varied qualities of fruits make them an essential part of the human diet. In this regard, an increase in fruit production and a

reduction in losses during transportation and storage are of great economic importance. It is known that one of the ways to reduce losses is to develop a waste-free or low-waste technology for processing fruit and vegetable raw materials. On the other hand, the current unfavorable ecological situation in a number of regions of our republic requires the development and technology of food products with therapeutic and prophylactic properties. It is for the development of such products that overripe, non-transportable due to the soft consistency of persimmon fruits can be used as the main raw material. The results of this study will help to reduce the loss of persimmon fruits and it is possible to offer the developed products of persimmon confiture as a prophylactic agent for people living in unfavorable ecological zones.

METHODOLOGY

To obtain canned food, we used persimmon varieties Khiyakume, Zenji-maru and Denausky sugar from the orchards of the Bandykhan garden-vineyard experimental farm, bred by the South Uzbek fruit and grape experimental station of the Surkhandarya region of the Republic of Uzbekistan (Denau).

Hiyakume is an introduced variety of foreign origin. In Uzbekistan, it is distributed in the Surkhandarya region and some areas of the Fergana Valley. The fruit is rounded, slightly elongated towards the top. The average weight of the fruit is 150-200 g, some up to 400 g. The skin is light orange, dense, with a weak waxy bloom. The pulp is light orange, fibrous, the astringency disappears when fully ripe. In ripe fruits, the pulp is jelly-like, juicy, and

tasty. The keeping ability and transportability are good.

Zenji-maru is an introduced variety of foreign origin. On the territory of Uzbekistan, it is distributed in the Surkhandarya region and some areas of the Fergana Valley. Fruits are small or medium-sized (average fruit weight 100-130 g), round or rounded-oblong shape. The color of the fruit is brown-orange, the skin is of medium thickness, with a bluish bloom. In seed fruits, the pulp is dark brown, sweet, not tart, in a solid state, and when softened, it becomes juicy, sweet. In seedless varieties, the pulp is orange, tart, until it softens. The keeping ability is satisfactory.

Denausky Sugar is a round-square variety with four longitudinal grooves. Fruit height 3.0-3.5, diameter 7-8 cm. Average weight 150-170 g. Skin light orange, orange

when fully ripe, dense, above average thickness. The pulp is yellow, mealy, jelly-like in ripe fruits. Fruit keeping quality is good.

Assessment of the quality of the confiture obtained from the varieties Hiyakume, Zenji-maru and Denausky Sugar was made according to the organoleptic method. Determination of the appearance, color, consistency, taste and smell of the finished product was carried out using a five-point system. The average score was calculated by mathematical and statistical processing of the points given by the tasters.

Result and discussion

The current unfavorable environmental situation in a number of regions of our republic requires the development of formulations and technology of food products with therapeutic and prophylactic

properties. In this regard, at present, the problem of providing safe food products with therapeutic and prophylactic properties for the population living in ecologically unfavorable zones is acquiring special relevance. In recent years, the use of a number of chemical nutrients has been recommended in the field of creating such food products: acylated fatty acids, ascorbic acid, inositol triphosphate, ion-exchange resins such as Prussian blue, etc.

At the same time, natural food products from plant raw materials, in particular mashed fruits, can also be successfully used to develop formulations for food products for dietary and prophylactic purposes, since they are rich in biologically and physiologically active substances - vitamins, polyphenolic compounds, easily digestible sugars, pectin, minerals, etc.

The study of literary sources (1) and our comprehensive study of the nutritional and biological value of apricots, peaches, plums, pomegranates and persimmons shows that, in comparison with other fruits, persimmon has a unique chemical composition (2,3,4). In view of the poor transportability and preservation of significant practical interest is the use of persimmon fruits for obtaining canned products from them. With a slight mechanical shock, the skin is damaged, a valuable part flows out of the persimmon - the pulp of the fruit. This creates inconvenience when consumed fresh. As a result, a significant amount of persimmon fruit is lost or wasted. This and other features explains the need for research to study the possibility of using persimmon for processing.

It should be noted that among the subtropical fruits, persimmon

belongs to the fruits that are difficult to process. During the processing of persimmon fruits, the pronounced pleasant golden-brown color of the pulp changes, and the resulting product acquires an unattractive dark brown color. In our opinion, these features of persimmon fruits are explained primarily by the high content of polyphenolic compounds and the high activity of redox enzymes. One of the ways to prevent undesirable changes in the natural color of fruits during processing is to boil the raw fruit with the addition of citric acid.

To obtain canned food, the fruits of persimmons of the pomological varieties Hiyakume, Zenji-maru and Denausk Sugar, taken at the stage of consumer maturity, were used. The use of persimmon fruits at the stage of technical maturity to obtain jam

turned out to be impractical, since the particles of the fruits when cooked in sugar syrup become tough and difficult to chew. Therefore, a mashed mass of fruits was used for cooking. When receiving finished products from persimmons of varieties Zenji-maru and Denausk Sugar, washed, seed-free raw materials were passed through a tissue grinder, obtaining a mashed mass. After that, the mashed mass was boiled down with the addition of granulated sugar at the rate of 400 g per 1 kg of fruit and 0.01-0.05% citric acid. The mass was boiled down to a soluble solids content of 60-64%.

When receiving products from persimmons of the Hiyakume variety, the mashed mass was boiled down with the addition of grated fresh lemon fruits with skin at the rate of 150-160 g per 1 kg. In this case, sugar was added at the rate of 500 g per 1

kg of fruit. Lemons with peels are used as a source of aromatic substances, since the fruits of the Hiyakume persimmon are less aromatic compared to other pomological varieties. On the other hand, the addition of grated lemons with skin enriches the finished

product with ascorbic acid, P-active compounds, dietary fiber and other useful components. The general technology for the production of persimmon jam is shown in Fig. 1.

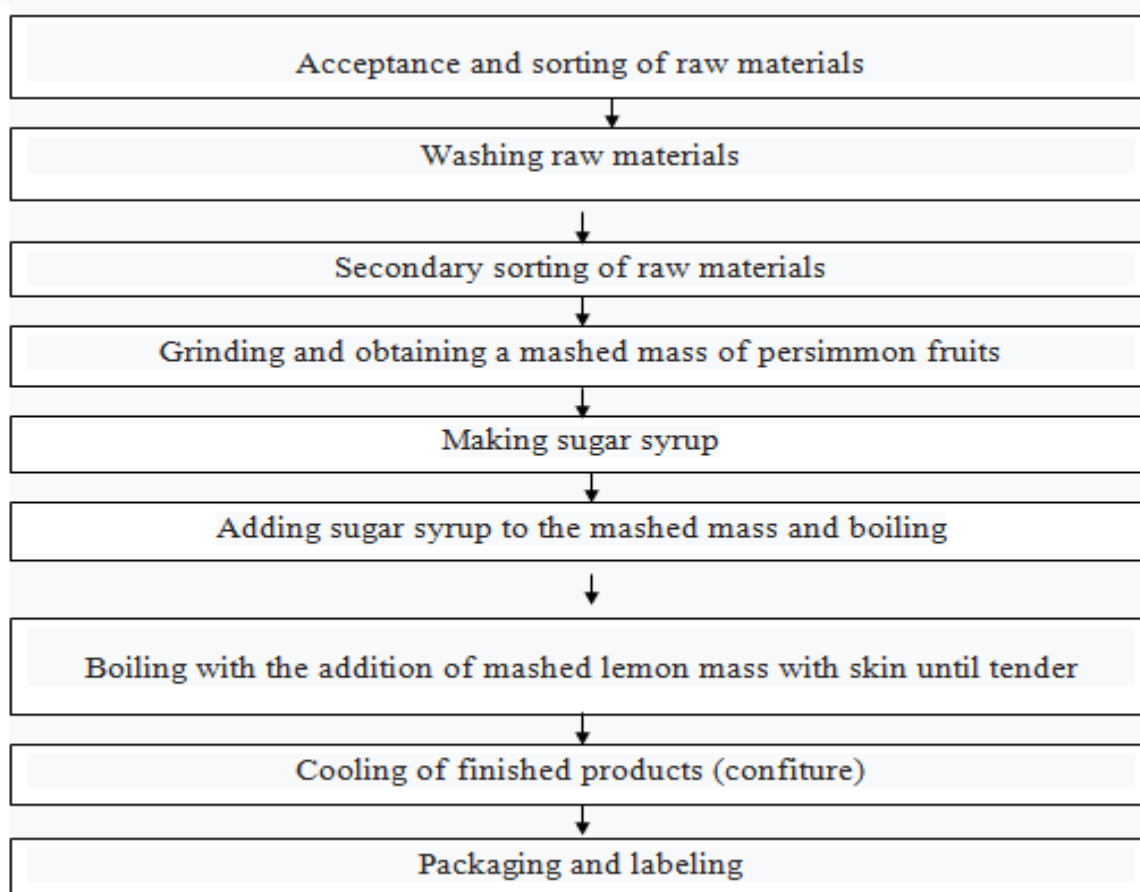


Figure: 1. Technological scheme for the production of persimmon confiture.

The tasting assessment of the quality of the products was made according to a five-point system according to the following indicators: appearance, color, texture, taste and aroma. Generalized data on the results of the tasting commission are presented in Table 1.

From the data in Table 1, it can be seen that of the presented samples, the highest scores were obtained for the confiture of persimmons of the Denausky sugar

variety with the addition of 0.05% citric acid and Hiyakume with the addition of mashed lemons with peels.

The confiture of fresh persimmons of the Denausky sugar variety with the addition of 0.05% citric acid has a red color, an attractive appearance and a pleasant taste, due to the high content of sugars in this variety. Sugar consumption for the manufacture of these products is much less.

Table 1

Assessment of the quality of jam (mashed with sugar) on a five-point system.

INDICATORS	Pomological varieties		
	Hiakume	Zenji-maru	Denaus Sugar
Appearance	4,1	4,0	4,9
Colour	4,3	4,1	5,0
Consistency	4,0	4,3	4,8
Taste	4,7	4,6	3,7
Aroma (smell)	4,8	3,9	4,1
The average	4,4	4,2	4,5

Jam from fresh fruits of persimmons of the Zenji-maru variety with the addition of 0.01% citric acid has a pleasant taste and aroma due to the high content of carotene and P-active compounds (bioflavonoids) in fresh fruits of this pomological variety and is an important additional source of a number of useful components for the body human.

Jam from fresh persimmons of the Hiyakume variety with the addition of mashed fresh lemon fruits with skin has a more pronounced pleasant taste and aroma, contains a number of useful biologically active components (vitamin C, P-active compounds, essential oils, etc.) due to the presence of pure pureed lemons in it.

The tasting commission of the departments of commodity science and examination of goods and food

technology of the Samarkand Cooperative Institute noted the expediency of using mashed lemons with peels in the processing of persimmon fruits, since this significantly increases the organoleptic characteristics and biological value of the finished product recommended for industrial implementation.

Based on the experimental studies obtained, it can be concluded that persimmon fruits, unsuitable for storage and transportation due to a softened consistency and overripe, can be successfully used to obtain canned products such as confiture. This makes it possible to significantly reduce the loss of valuable raw materials and provide the population with multivitamin and iodine-containing food.

The present study was carried out with the aim of obtaining a jam with a high content of biologically active substances that can be used for therapeutic and prophylactic purposes. Persimmons of the varieties Hiyakume, Zenji-maru and Denauskyy Sugar were used as objects of research to obtain confiture. Based on the experimental studies obtained, it can be concluded that persimmon fruits, unsuitable for storage and transportation due to a softened consistency and overripe, can be successfully used to obtain canned products such as confiture.

This makes it possible to significantly reduce the loss of valuable raw materials and provide the population with multivitamin and iodine-containing food.

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