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IMPROVEMENT OF INITIAL PROCESSING IN STACK DRYING OF SEEDLESS GRAPE VARIETIES

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Abstract. This article analyzes the results of experiments on studying the effect of alkali treatment on the quality of the product and the speed of the process when drying the seedless varieties of grapes by the stack method. As a result of the experiments, the criteria of indicators important for evaluating the organoleptic properties of grapes after stack drying were studied. As a result of the research, scientifically based conclusions were made.

Keywords. Grapes, raisins, productivity, dry matter, quality, autumn and winter varieties, drying technology, stack, alkali.

Enter. Currently, about 73 million tons of grapes are grown in the world every year. The People's Republic of China, Italy and Spain are world leaders in terms of production volume, and in these countries, 11.2 million, 8.1 million and 6.1 million tons of grapes are harvested each year, respectively. Also, countries such as the USA, France, Turkey, and India are among the largest producers of grapes. More than 1.7 million tons of grapes are grown in Uzbekistan every year. For the rational use of all of them, it is necessary to establish the cultivation of varieties intended for consumption, export, and industry. Our country has unique experiences in the preparation of dried grape products, and the production of dried products by the Soyaki method is a unique method of the region. Improving this method and introducing it into production is one of the requirements of the present time.

The purpose and specific issues of the research. In order to increase the quality of the finished product in the drying of seedless varieties of grapes, it is necessary to study the importance of the technological properties and biochemical composition of raw materials.

Material and methods. Seedless grape varieties such as "Kishmish belyy", "Kishmish Botir", "Kishmish rozovy", "Kishmish Sogdiana", "Kishmish chyornyy" were selected for research.

According to the method of conducting research:

Studies on determining the most effective concentration of alkali solution in the initial treatment during drying of selected varieties.

In order to speed up the process of obtaining a dried product from seedless grapes, experiments were carried out on forming micro-slits in the skin of grape seeds by treating with an alkaline solution. Experiments were conducted to determine the optimal concentration of the alkali solution. Including NaOH

- *with 1%*
- *with 2%*
- *with 3%*
- *with 4%*
- *The effectiveness of treatment with 5% solution was determined.*

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These experiments were carried out in 4 repetitions.

RESEARCH RESULT AND DISCUSSION

When analyzing the time required for the formation of microcracks when applying different concentrations of NaOH solution to seedless grape varieties in the 2020-2022 period, in order to reduce the duration of the establishment of grape varieties, NaOH solution with different concentrations, i.e. 1%, 2%, 3%, 4%, 5% by increasing the amount of cracks formed on the surface of the grape grains when used as (Table 1).

According to the characteristics of different grape varieties, the time interval for the formation of dispersions through NaOH solution varied due to the different degrees of skin thickness. For example, Kishmish Botir variety was treated with a 1% NaOH solution, cracks were formed in 8 seconds, when treated with a 2% NaOH solution, cracks were formed in 7 seconds. formation of slits was achieved. When treated with NaOH solution with a concentration of 5% for the thickness of the skin of the Kishmish Rozovyi variety, it took 5 seconds to form cracks. Similarly, Kishmish belyy cultivar developed cracks in 3 seconds when treated with 5% NaOH solution.

Table 1

The time required for the formation of microcracks when drying seedless grape varieties using different concentrations of NaOH solution, s (2020-2022).

№	Varieties	Concentration of NaOH solution				
		1%	2%	3%	4%	5%
1	Kishmish Botir	8	7	5	3	2
2	Kishmish Rozovy	9	8	7	6	5
3	Kishmish chyornyy	11	10	9	4	3
4	Kishmish bely	9	8	6	5	3
5	Kishmish Sogdiana	7	6	4	3	2

In the analyzed Kishmish chyorny variety, cracks were formed in 11 seconds when treated with NaOH solution with a concentration of 1%, and cracks were formed in 3 seconds when treated with NaOH solution with a concentration of 5%. Similarly, this pattern was repeated in Kishmish Sogdiana variety. According to it, when treated with a NaOH solution with a concentration of 1%, a crack was formed in 7 seconds, and when treated with a NaOH solution with a concentration of 2%, a crack was formed in 6 seconds. It was found that when treated with a 4% NaOH solution, a crack was formed in 4 seconds, and when treated with a 4 and 5% NaOH solution, a crack was formed in 3 and 2 seconds.

Based on the results of our analysis, it was proved that cracks were formed in 2 and 3 seconds for the thinness of the skin parts of the Kishmish chyornyi and Kishmish Sogdiana varieties of the experimental varieties, when treated with a NaOH solution with a concentration of 5%, and it was possible to obtain a high-quality and high-quality finished product.

Table 2

Effect of different concentrations of NaOH solution on the yield of the finished product when drying seedless grape varieties in the stack method, % (2020-2022)

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№	Varieties	Normal stack (control)	Concentration of NaOH solution				
			1%	2%	3%	4%	5%
1	Kishmish Botir	22,8	24,0	23,5	23,0	22,6	22,1
2	Kishmish Rozovy	24,7	26,0	25,5	25,0	24,5	24,0
3	Kishmish chyornyy	19	20,0	19,6	19,2	18,8	18,4
4	Kishmish bely	28,5	30,0	29,4	28,8	28,2	27,7
5	Kishmish Sogdiana	14,25	15,0	14,7	14,4	14,1	13,8

When drying seedless grape varieties using the stack method, the output of the finished product was analyzed using different concentrations of NaOH solution, mainly depending on the thickness of the skin of the grape varieties, they were treated with NaOH solution at different concentrations and the product output was determined. According to him, Kishmish Botir variety from the thick-skinned raisin varieties produced 22.8% finished product yield in the normal stack (control) method, and 24.0% finished product yield when dried with 1% NaOH solution. When this variety was treated with a 2% NaOH solution and dried, the yield of the finished product was 23.5%. The yield of the finished product was 23.0% when dried by treatment with a NaOH solution with a concentration of 3%, while the yield of the finished product was 22.6% when treated with a solution of NaOH with a concentration of 4%, and with a concentration of 5% After drying with NaOH solution, the yield of the finished product decreased by 22.1%. (Table 7)

In Kishmish rozovy variety, when dried by a simple stack (control) method, it was 24.7%, when dried with a 1% NaOH solution, the yield of the finished product increased by 26.0%, when treated with a 2% NaOH solution. the yield of the finished product when dried was 25.5 percent, and the yield of the finished product decreased when treated with NaOH solution with a concentration of 3.4 and 5 percent. In the same way, cases of reduction were found in the Kishmiy Belyy variety.

Among these analyzed varieties, the highest finished product yield was observed in the Kishmi Belyy variety. Compared to other varieties, it can be observed that the output of the product is 5-6 percent higher. Due to the thinness of the skin of the investigated Kishmish chyornyy and Kishmish Sogdiana varieties, the yield of the finished product decreased when these varieties were dried by treating with NaOH solution.

From the kishmishbop grape varieties listed in the table, only Kishmish Botir, Kishmish rozovyy and Kishmish belyy varieties received high-quality ready-made products due to the skin thickness, or on the contrary, 20 and 15% of ready-made products were obtained for thin-skinned varieties, i.e. Kishmish chyornyy and Kishmish Sogdiana varieties. it was found that the quantity of quality products has decreased.

According to the analysis, when the Kishmish chyornyi and Kishmish Sogdiana varieties were dried by treating with NaOH solution in a simple stacking method, the grape grains were

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crushed, their color was lost, and it was determined that it was impossible to obtain a high-quality finished product.

Table 3

The effect of different concentrations of NaOH solution on the organoleptic evaluation of the finished product during stack drying of seedless grape varieties (2020-2022)

№	Varieties	Оддий штабел (назорат)	NaOH эритмасининг концентрацияси				
			1%	2%	3%	4%	5%
1	Kishmish Botir	91,2	96,0	94,1	92,2	90,4	88,5
2	Kishmish Rozovy	90,25	95,0	93,1	91,2	89,4	87,6
3	Kishmish chyornyy	89,87	94,6	92,7	90,9	89,0	87,3
4	Kishmish bely	89,015	93,7	91,8	90,0	88,2	86,4
5	Kishmish Sogdiana	87,685	92,3	90,5	88,6	86,9	85,1

The influence of different concentrations of NaOH solution on the organoleptic evaluation of the final product when drying Kishmishbop grape varieties in the stack method was performed (Table 3) compared to a simple stack (control). While the organoleptic value of drying in a normal stack was estimated from 87.6 to 91.2 points, the organoleptic value of the finished product dried using a 1% NaOH solution was evaluated based on the coefficient of importance. According to the evaluation, Kishmish Botir variety got 91 points and 94.1 points when treated and dried in NaOH solution with 2% concentration. Similarly, 92.2 points were scored in 3 percent, 90.4 points in 4 percent and 88.5 points in 5 percent. According to this analysis, treatment and drying in 1% NaOH solution scored 7.5 points higher than treatment and drying in 5% NaOH solution. 2.7 points lower compared to the normal stack (control). When treated and dried in a NaOH solution with a concentration of 1 percent compared to the normal stack (control), it scored 4.8 points higher.

According to the assessment based on the essence coefficient, the Kishmish rozovy variety was evaluated with 95 points when treated and dried in a 1% NaOH solution, and 93.1 points when treated and dried in a 2% NaOH solution. Similarly, 91.2 points were scored in 3 percent, 89.4 points in 4 percent and 87.6 points in 5 percent. According to this analysis, treatment and drying in 1% NaOH solution scored 7.4 points higher than treatment and drying in 5% NaOH solution. 2.6 points lower compared to the normal stack (control). When treated and dried in a NaOH solution with a concentration of 1 percent compared to the normal stack (control), it scored 4.8 points higher.

According to the evaluation based on the coefficient of mochiity, Kishmish rozovy variety was evaluated with 95 points when processed and dried in NaOH solution with 1% concentration, and 93.1 points when processed and dried in NaOH solution with 2% concentration. Similarly, 91.2 points were scored in 3 percent, 89.4 points in 4 percent and 87.6 points in 5 percent. According to this analysis, treatment and drying in 1% NaOH solution scored 7.4 points higher than treatment and drying in 5% NaOH solution. 2.6 points lower compared to the normal stack (control). When

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treated and dried in a NaOH solution with a concentration of 1 percent compared to the normal stack (control), it scored 4.8 points higher.

Kishmish chyornyi variety was evaluated with 94.6 points when processed and dried in NaOH solution with 1% concentration, and 92.7 points when processed and dried in NaOH solution with 2% concentration. Similarly, 90.9 points were scored in 3 percent, 89.0 points in 4 percent and 87.3 points in 5 percent. According to this analysis, the treatment and drying in 1% NaOH solution scored 7.3 points higher than the treatment and drying in 5% NaOH solution. 2.5 points lower compared to the normal stack (control). When treated and dried in a NaOH solution with a concentration of 1 percent compared to the normal stack (control), it scored 4.8 points higher. Kishmish Bely variety was evaluated with 93.7 points when processed and dried in NaOH solution with 1% concentration, and 91.8 points when processed and dried in NaOH solution with 2% concentration. Similarly, 90.0 points were scored in 3 percent, 88.2 points in 4 percent and 86.4 points in 5 percent. According to this analysis, the treatment and drying in 1% NaOH solution scored 7.3 points higher than the treatment and drying in 5% NaOH solution. 2.6 points lower compared to the normal stack (control). When treated and dried in a NaOH solution with a concentration of 1 percent compared to the normal stack (control), it scored 4.7 points higher.

Kishmish Sogdiana cultivar was evaluated with 92.3 points when treated and dried in NaOH solution with 1% concentration, and 90.5 points when treated and dried with NaOH solution with 2% concentration. Similarly, 3 percent scored 88.6 points, 4 percent scored 86.9 points, and 5 percent scored 85.1 points. According to this analysis, 7.2 points were scored higher when treated and dried in a 1% NaOH solution compared to treated and dried in a 5% NaOH solution. 2.5 points lower compared to the normal stack (control). When treated and dried in a NaOH solution with a concentration of 1 percent compared to the normal stack (control), it scored 4.7 points higher.

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