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IMPORTANCE OF DRYING AND PRE-PROCESSING METHOD IN DRYING APRICOT FRUITS

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Abstract. This article describes the results of the research conducted on the drying of different types of apricots. Experiments were conducted to study the chemical composition of apricots, the quality of the finished product after drying in three different ways, and the duration of drying. As a result of the research, scientifically based conclusions were made.

Keywords. Apricots, temperature, regime, dry matter, organoleptic assessment, drying method, quality

Enter. More than 4 million tons of apricots are grown every year around the world. In terms of apricot production, Uzbekistan ranks second after Turkey (730 thousand tons) and more than 660 thousand tons are grown. Iran (306,000 tons), Algeria (256,000 tons), Italy (237,000 tons), Pakistan (178,000 tons) and Spain (125,000 tons) are on the next places in production. Apricots contain 87% water, 11% carbohydrates, about 1% proteins and less than 1% lipids. Various micronutrients and vitamins are abundant in plums.

The purpose and specific issues of the research. Various methods of drying apricots and their properties have been studied. The purpose of this study was to study the optimal method and duration of drying of dried plum fruits.

Material and methods. Researches were conducted on the following plum varieties: Yubileynyy Navoi (control), Kursadyk, Arzami, Subkhoni.

The following were studied for the selected varieties: Biochemical composition of the selected varieties was analyzed; Apricots were dried and analyzed in three ways: whole, split into two, and seedless.

According to the method of conducting research:

1. To determine the duration and organoleptic evaluation of apricot fruits by natural method of drying apricot fruits whole, divided into two parts, and in seedless state without cracking.
2. To determine the duration and organoleptic assessment of drying apricots in whole, bisected, and seedless condition in a solar battery ventilator system (QBVT) equipment.
3. To determine the length of drying and organoleptic assessment of apricots in whole, divided into two halves, and in the state without seeds in an artificial drying device.

RESEARCH RESULT AND DISCUSSION

For research, 4 varieties of apricots were selected from fruit trees. Before the drying process, the fruits characteristic of these varieties were analyzed for their biochemical composition. During the analysis, the dry matter content, sugar content and vitamin C content calculated from the important indicators for drying were studied (Table 1).

Yubileynyy Navoi, Kursadyk, Arzami, Subkhoni varieties selected for experiments are regionalized in Uzbekistan and are grown mainly in the central zones of our country (see Table 1).

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1 – table

Biochemical composition of dry fruits of dried apricot varieties

Apricot varieties	Years	The amount of water,%	Dry matter, %	sugar,%	Acidity,%
Anniversary Navoi (control)	2019	74,0±0,5	26,0±0,5	19,8±0,4	0,9±0,06
	2020	72,5±0,5	27,5±0,5	20,9±0,4	0,9±0,06
	2021	75,6±0,5	24,4±0,5	18,5±0,4	1,0±0,06
	average	74,0±0,5	26,0±0,5	19,7±0,4	0,9±0,06
Kursadyk	2019	78,1±0,5	21,9±0,5	16,6±0,4	1,0±0,06
	2020	76,2±0,5	23,8±0,5	18,1±0,4	1,0±0,06
	2021	77,3±0,5	22,7±0,5	17,3±0,4	1,0±0,06
	average	77,2±0,5	22,8±0,5	17,3±0,4	1,0±0,06
Arzami	2019	82,3±0,5	17,7±0,5	13,5±0,4	1,1±0,06
	2020	84,2±0,5	15,8±0,5	12,0±0,4	1,1±0,06
	2021	84,2±0,5	15,8±0,5	12,0±0,4	1,1±0,06
	average	83,6±0,5	16,4±0,5	12,5±0,4	1,1±0,06
Subkhani	2019	75,3±0,5	24,7±0,5	18,8±0,4	1,0±0,06
	2020	78,2±0,5	21,8±0,5	16,6±0,4	1,0±0,06
	2021	77,3±0,5	22,7±0,5	17,3±0,4	1,0±0,06
	average	76,9±0,5	23,1±0,5	17,5±0,4	1,0±0,06

During the research period, the biochemical composition of fruits selected as raw materials was regularly analyzed. The highest indicator of dry matter content was observed in the Yubileynyy Navoi variety, the three-year average of which was 26.0%, while the lowest indicator was shown in the Arzami variety and was 16.4%. It was also 22.8 and 23.1% in Kursadyk and Subkhoni varieties, respectively. Sugar is the main part of the dry matter content of apricots. Also, the content of sugar is an important indicator of the organoleptic properties of fresh and dried apricots. During the experiments, the sugar content of the Yubileynyy Navoi variety, which was selected as a control, was 19.8% in 2019, 20.9% in 2020, and 18.5% in 2021, while the three-year average sugar content was 19.7%. did.

The lowest level of sugar content was observed in the Arzami variety, the three-year average was 12.5.3%. Also, a three-year average of 17.3% was recorded in the Kursadyk variety.

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Experiments were carried out on drying apricot fruit in three different ways - natural, solar battery fan system (QBVT) equipment and artificial drying device. Apricots for drying were placed in three types - with seeds and without seeds. Initially, experiments were conducted to determine the optimal duration of drying when whole dried apricots (see Table 2). During experiments, Yubileynyy Navoi variety, selected as a control, was dried in a natural way. On average, 27.6 kg of finished dried product was obtained from 100 kg of raw materials when dried in grain form. 28.7 kg of dry product with grains was obtained when dried in the QBVT equipment. Also, 29.8 kg of finished product was obtained when dried in an artificial drying device.

Subkhoni variety had the highest yield of dried apricots, and an average of 28.1 kg of dried apricots was obtained from 100 kg of raw material in the natural method, 28.7 in the QBVT equipment, and 31.0 kg in the artificial drying equipment. In particular, when dried naturally, Yubileynyy Navoi (control) yielded 27.5 kg in 2019 research, 29.7 kg in 2020 research, 25.6 kg in 2021 research, three-year average of 27.6 kg. During natural drying, an average of 28.4 kg of Kursadyk variety and 26.0 kg of Arzami variety were produced in three years. Also, the duration of the drying process when whole apricots are dried varies by variety. That is, the process lasted for 244 hours in Yubileynyy Navoi, which was selected as a control when dried naturally, and was recorded as the shortest duration. The Kursadyk variety took the longest time and was 288 hours. On the other hand, the drying process of Arzami variety lasted 260 hours, and Subkhani variety lasted 252 hours. During natural drying, the air temperature during the day was 30-35°C.

When dried in a solar powered fan tunnel dryer, the process for all varieties was almost 3 times faster. For example, it took 288 hours for the Kursadyk variety to dry naturally, and 96 hours for the QBVT equipment. The reason for this is that the equipment has been adapted to make maximum use of the sun's rays effectively. At the same time, the duration of artificial drying for all varieties was 6-8 hours. When the finished product was assessed by organoleptic method, a significantly higher index was noted in artificially dried products compared to other drying methods.

Table 2

Process duration and output of finished product in drying whole apricots by different methods (2019-2021)

Varieties	Drying method	Product output from 100 kg of raw materials, kg				Duration of drying, (h)	Tasting grade, maximum 100 points
		2019 y	2020 y	2021 y	Average		
Anniversary Navoi (control)	In a natural way	27,5±0,5	29,7±0,5	25,6±0,5	27,6±0,5	244,0	75,4
	in QBVT equipment	28,6±0,5	30,9±0,5	26,6±0,5	28,7±0,5	81,3	81,1
	In an	29,7±0,5	32,1±0,5	27,6±0,5	29,8±0,5	6,8	88,1

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	artificial drying device						
Kursadyk	In a natural way	28,3±0,5	30,6±0,5	26,3±0,5	28,4±0,5	288,0	76,1
	in QBVT equipment	29,4±0,5	31,8±0,5	27,4±0,5	29,5±0,5	96,0	81,8
	In an artificial drying device	30,6±0,5	33,0±0,5	28,4±0,5	30,7±0,5	8,0	88,9
Arzami	In a natural way	25,9±0,5	28,0±0,5	24,1±0,5	26,0±0,5	260,0	72,0
	in QBVT equipment	26,9±0,5	29,1±0,5	25,1±0,5	27,0±0,5	86,7	77,4
	In an artificial drying device	28,0±0,5	30,2±0,5	26,0±0,5	28,1±0,5	7,2	84,1
Subkhani	In a natural way	28,6±0,5	30,9±0,5	26,6±0,5	28,7±0,5	252,0	76,9
	in QBVT equipment	29,7±0,5	32,1±0,5	27,7±0,5	29,8±0,5	84,0	65,8
	In an artificial drying device	30,9±0,5	33,4±0,5	28,7±0,5	31,0±0,5	7,0	89,9
	$ЭКФ_{05}$	0,8	0,8	0,8	0,8	0,7	0,8
	Sx	4,8	4,8	4,8	4,8	4,8	4,8

Prior to drying, the process parameters were unique when the apricots were split into two stages and dried in the seedless state (see Table 3).

The duration was somewhat shorter when raw apricots were split into two halves and dried pitted. Yubileyniy Navoi variety, which was selected as a control for research, was naturally

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divided into two phases and dried in the seedless state, an average of 22.6 kg of ready-dried product was prepared from 100 kg of raw material. The highest productivity was reflected in the Subhoni variety when three-year indicators were analyzed when dried naturally, and 23.5 kg of dried product was obtained. The lowest productivity was recorded in the Arzami variety, the three-year average of which was 21.3 kg.

Dry product yield was slightly higher when dried in the QBVT equipment compared to natural drying. This situation is explained by the short duration of drying. Because the longer the duration of drying, the less amount of dried product due to decomposition as a result of biochemical processes in addition to dehydration. The highest productivity was reflected in the Subhoni variety when three-year indicators were analyzed when dried naturally, and 23.5 kg of dried product was obtained. The lowest productivity was recorded in the Arzami variety, the three-year average of which was 21.3 kg.

Dry product yield was slightly higher when dried in the QBVT equipment compared to natural drying. This situation is explained by the short duration of drying. Because the longer the duration of drying, the less amount of dried product due to decomposition as a result of biochemical processes in addition to dehydration. The organoleptic parameters of apricots were evaluated very well when they were dried without cracking and without seeds. In the QBVT equipment, slightly lower values of dried products were recorded.

As a result of research on drying apricots, it can be concluded as follows:

- The content of dried apricots and the high organoleptic indicators depend on the amount of sugar contained in plum fruits as raw materials.

- The duration of drying in the grainless state is 25-30% less than that in the grain state.

The time spent drying apricots in the QBVT equipment is 3 times less and the organoleptic value is higher.

- When apricots are dried artificially, all the parameters of the finished product are the highest, and the process takes the shortest time.

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