

IMPROVING THE TECHNOLOGY OF OIL EXTRACTION FROM PLUMS

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Abstract. *The article describes the scientific and research work on methods of extracting oil from plum seed kernels. In addition, the method of extracting almond seeds from the kernel and the methods of extracting oil from the kernel were compared, and recommendations for improving the technology were developed based on this. As a result of scientific and research work, the quality indicators of the oil are also covered in detail. Therefore, the positive effect of the oil on the human body was also mentioned. In this study, an advanced technology for extracting plum seed oil is also proposed.*

Key words : *Plum seeds, oil, microwave pretreatment, optimization, physicochemical properties, energy efficient.*

Enter. The use of existing renewable raw materials in production processes is one of the main principles of sustainable development[1-5]. The raw materials of the main direction of agriculture are directed not only to the production of food, but also to the production of energy and raw materials for industry. An example of these is biomass[6-9]. It is particularly important to mention biomass as a carbon-free renewable energy source that is constantly present in ecosystems. As a result of the burning of biomass, heat energy is produced, which in turn can be used for the production of electricity . The fuel obtained by turning this mass into liquid (biofuel) can also be used for energy purposes. Agricultural biomass, farming, animal husbandry, horticulture, viticulture and primary fruit processing waste can be used for bio-oil production. The food industry is constantly researching new ways to use by-products (seeds, fruit peels, etc.). As an example, plum kernels , which are not used as secondary raw materials in agriculture, can be cited. This

core can be used for purpose. 10 varieties of plums are grown in Uzbekistan and exported to Germany, Kazakhstan, Kyrgyzstan, United Arab Emirates, Russia, Mongolia and several other countries of the world. The most common variety is the Berton variety, **the height of the tree is 3.8 m**, the branches are wide pyramidal, **the fruit** is ovoid, dark blue, large, the average weight is 52 g. The flesh is white and yellow, sweet and fragrant. it ripens in **the first ten days of September** . It is a variety created in the USA, which was included in the State Register **in 1959** . Recommended for planting **in all regions** of Uzbekistan . Hungarian variety **is late** , the fruit ripens in the first ten days of September. the tree is tall, it begins to harvest in the fifth year after planting. **The fruit** is ovoid, dark blue, waxy, average weight - 43 g. The flesh is orange, juicy, very tasty. **Productivity** is 170.0 s/ha. Entered into the State Register **in 1975** . Recommended for planting in **Tashkent region** in our country . Washington variety **The height of the tree** is 5.1 m, the branches are round, and the plum tree begins to bear fruit in the sixth year after planting. The color of **the fruit** is dark red, large, weight - 34 g. The flesh is white and yellow, sweet and sour. Var **ertapishar** , the fruit ripens in the second ten days of July. **The yield** is 165.8 s/ha, the highest yield is 331.7 s/ha. It was created in the USA and was included in the State Register **in 1982** . It is recommended for planting in **the Samarkand region** of our country . These are mainly varieties of commercial importance. The chemical composition of plum varieties grown in Uzbekistan is detailed in Table 1.

Table 1

Chemical composition of plum varieties

No	Naming	Amount		
<i>In the fruit</i>		Hungarian variety	Burton variety	Washington variety
1.	Sugar (%)	10-11	9 - 10.5	10.1 -11.0
2.	Dyes (colorants) (%)	0.05-0.35	0.0 4 -0.3	0.0 3 -0.35
3.	Hemicellulose (%)	0.1-0.2	0.1-0.3	0.1 5 -0.2
4.	Starch (%)	0.1-0.21	0.1 1 - 0.23	0.1 5 -0.2 2
5.	Fiber (%)	0.5	0.5	0.5
6.	Pectin (%)	0.8-0.9	0.9	0.9 -1.0
7.	beta-carotene (mg%)	0.1	0, 2	0.1 5
8.	Tocopherol (mg%)	0.60-0.63	0.5 0-0.6 0	0.6 1 -0.6 5
9.	Vitamin (mg%)	8-10	8 -1 1	8,5 -10,2
10.	B vitamins; (mg%),			
11.	B ₁ B ₆	0.05-0.06	0.0 6 -0 .07	0.05-0.0 55
12.	B ₉	0.04-0.05	0.04-0.0 45	0.0 3 -0.0 6
13.		0.08-0.09	0.08-0.1	0.0 7 -0.1
14.	B ₁₅	0.15-0.16	0.1 1 -0.1 5	0.15-0.21
15.	PP, K; potassium (mg%),	214	21 5	21 6
16.	Calcium (mg%),	29	28	2 9.5

17.	Phosphorus (mg%),	27	2 6	27.5
18.	Magnesium (mg%),	17	16	1 6.5
19.	Sodium (mg%),	18	19	17
20.	Iron (mg%),	550	580	5 6 0
In the core				
21.	Oil, amygdalin glycoside, emulsion enzyme (%)	40	4 2	4 3

In the technology of oil extraction, the core of the plum seed is separated from the skin, dried and crushed, then crushed and continued to be extracted in an extractor, the extraction continued for 6 hours. The resulting distillate is distilled in a still and the finished oil is separated. The oil yield was 41.5% compared to the kernel, and the total amount of unsaturated fatty acids was 81.2% (Fig. 1).



Figure 1. Extraction technology of plum oil.

Oil extraction from plum seeds is usually done by cold pressing method , but also by Soxhlet extraction (SE) method with *extraction gasoline* . The main disadvantage of the cold pressing method is that it is not possible to get the oil to the end, that is, the level of oiliness cannot be reached at the end. In contrast to cold pressing, oil extraction by extraction method is the most suitable industrial method for oil production, but extraction method is considered its main

disadvantage considering that it takes a long time, but the possibility of final oil extraction is created.

In addition, the amount of plant material and organic solvent will depend on the size of the extractor used. These disadvantages make traditional methods uneconomical and unsustainable for commercial use. The use of advanced extraction methods is important in saving energy, reducing production time, increasing oil yield and reducing consumption of organic solvents.

In conclusion, it can be said that up to 5% extra oil can be extracted from plum kernels in the extraction method compared to the cold pressing method.

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