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Development of the Method of Experimental Research of the Process of Extracting Oil from Grape Seeds

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ANNOTATION

The scientific research presents that when processing many oilseeds, the low oily outer (fruit or seed) shell of the seed is separated from the core, which is the main oily tissue. But the pulp of grape seeds is not divided into the core and skin. Crushed grape seeds are subjected to heat treatment and sent directly to the pressing device. In this article, in order to speed up the process of extracting oil from grape seeds, the factors influencing the process are identified and methods for their measurement are considered.

KEYWORDS: *grape seed, grape oil, process, crushed raw material, device, method.*

Introduction. The weight of vegetable oil production in the total food balance of the Republic of Uzbekistan is large. The oil industry of Uzbekistan has a long history and is one of the steadily developing sectors of the food industry. Over the years, the process of oil extraction has been accelerated and improved.

Production of high-quality food products in modern production enterprises has a positive effect on increasing the profitability of the enterprise, as well as providing the republican market with cheap quality products.

Currently, there are a number of problems in obtaining raw materials and high-quality oil for cosmetics and pharmaceuticals from the processing of grape seeds from grape processing enterprises. One of these problems is preparing the grapes for the pressing process, i.e. heat treatment. In this regard, it is of urgent importance to develop equipment and technological regimes for processing grape seeds in order to obtain raw materials for cosmetics and pharmaceuticals and to enrich vegetable oils [8,9].

Research methods. Extracting oil from seeds is an integral process in all enterprises of the oil industry. Grape seed pulp is not separated into core and skin. The crushed grape stem is thermally treated and sent directly to the pressing device.

In order to accelerate the process of extracting oil from grape seeds, the factors affecting it are:

Factor 1. The size of the solution, mm

Factor 2. Moisture content of the product, %;

Factor 3. Processing time of the solution in very high frequency, s.

Taking this into account, we will consider the methods of measuring the influencing factors seen above.

Results.

Moisture content of non-pre-dried seeds W1, %, is calculated according to the formula:

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$$W_1 = \frac{(m - m_1) \cdot 100}{m - m_2} \quad (1)$$

where *m*– the mass of the pod in which the seed is placed before drying, g; m_1 – the mass of the pod in which the seed is placed after drying, g; m_2 – empty bag mass, g.

The permissible difference between the results of two parallel determinations at a confidence level of p=0.95 should not exceed 0.25% abs. If the permissible difference between the results of two parallel determinations is exceeded, the analysis is repeated. As the final result of the analysis, the average arithmetic value is taken [1]

Discussions.

A microwave oven device (Fig. 1) was chosen for thermal treatment of grape pulp. Irradiation is used for heat treatment of food products in the food industry and at home. Convenient, noiseless, compact microwave ovens or microwave ovens of various sizes are used for effective food processing based on the energy generated by high-power lamps.

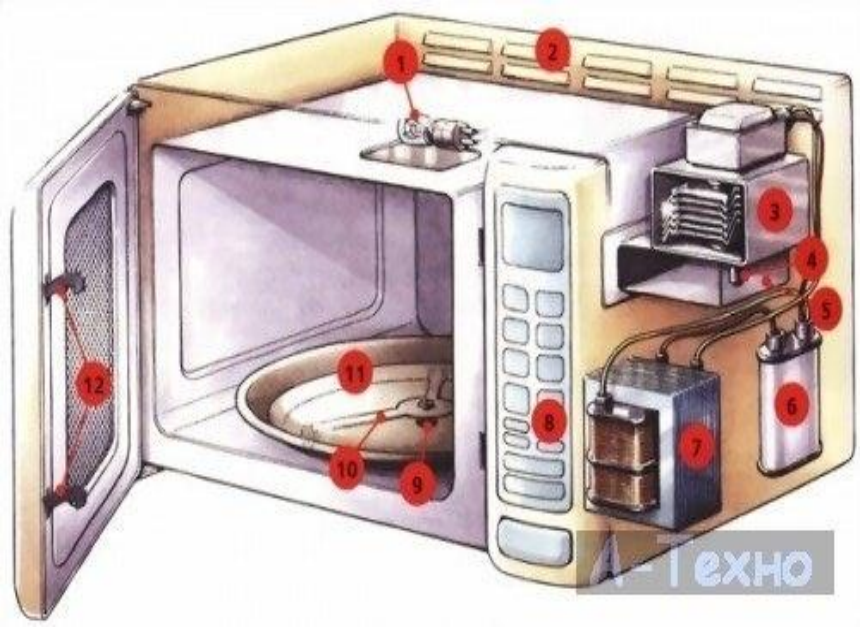

Figure 1. Microwave device:

1 – lighting lamp; 2 - ventilation holes; 3 - magnetron; 4 - antenna; 5 – waveguide; 6 - condenser; 7 - transformer; 8-control panel; 9 - transmission; 10 – rotating base; 11 – roller separator; 12 - door hook

Sorting is the determination of the percentage (by weight) of fractions in a powder or granular material consisting of particles of a certain size. Analysis is performed by sieving a sample of material through a set of standard sieves of various sizes [11]. The holes in the sieves are usually square or rectangular. The lower the sieve, the smaller the holes in it. Thus, particles of starting material smaller than the mesh size of the sieve pass to the lower sieve, and larger particles remain on the surface of the sieve. Usually, at least 5 and no more than 20 sieves are used, and the number of fractions is always one more than the number of sieves. Wires (steel, copper, brass) or threads (silk, nylon, nylon) are used as materials for the production of sieves, from which nets are woven. There are also sieves made of stamped metal bars. For very fine powders, nickel foil microsieves are used, with square openings that widen downwards (to prevent clogging). Sieve analysis is done manually or mechanically. Sieves are installed from top to bottom from large holes to small ones.

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Sieves are mostly square holes that fit the standard scale. The sample is poured into the upper sieve and the whole sieve set is shaken for 10-30 minutes [12]. The residue on each sieve is weighed on a technical scale with an accuracy of 0.01 g. The masses of all classes are determined by dividing the mass of each size class by their total mass, assuming that the sum is 100%.

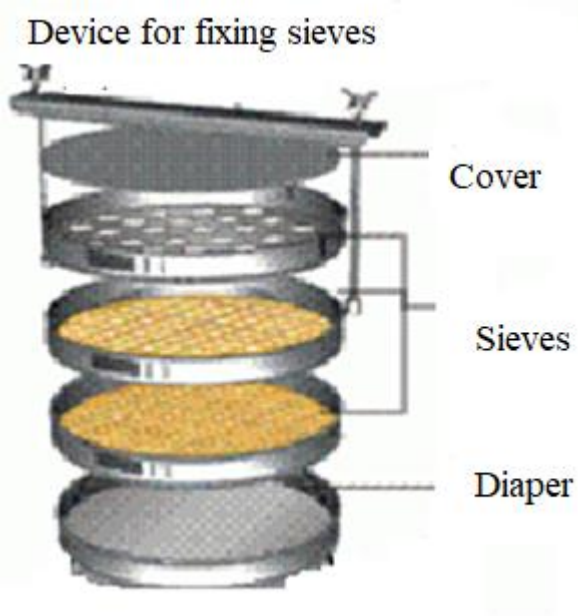

Figure 2. Sieves of analysis

In addition to these factors, scales were used to measure the mass of the product, SESH-3M drying devices were used to determine the initial moisture content of the product, etc. A special laboratory device was proposed for processing and pressing grape seed pulp in the field (Fig. 3).

Figure 3. Laboratory device for extracting oil from grape seed by pressing method

MPSh-30 screw press is one of the most common presses for extracting oil from seeds and fruit seeds.

The MPSh-30 press is used in the laboratories of medium and large oil enterprises or for conducting experiments with a capacity of 30 kg/h. This device is in high demand due to its mechanical reliability and technical strength. Today, screw oil presses are widely used in continuous operation and for experimental purposes [14]. Taking into account that these presses are mainly used in the

food industry, their working parts are made of corrosion-resistant alloyed steel. Screws made of alloyed and found steels are resistant to mechanical force and heat, which ensures that the pressing process is carried out in an optimal mode [13].

The set of this device includes an electric motor frequency converter, which can change the frequency of rotation depending on the type of product. As the subject of the experiment, an experiment was carried out using the seeds of the local grape variety "Muscat" of the 2021 harvest. This seed contains 10-12% fat, 30-35% protein. Bulk density of grape seed is 510 kg/m^3, and pulp density is 420 kg/m^3.

Figure 4. Grape seeds and crushed

Conclusion. Processing grains without heat treatments results in a lower fatty acid count. In order to obtain high-quality oil, it is necessary to carry out the storage and processing of grains and processes based on optimal regimes. In addition to the method of separation, grains have size, shell, core and physico-chemical properties. In the following years, great attention is being paid to the cultivation of grapes and their processing.

The oil content of grape seed is 10-15%. The oil obtained from grape seeds has valuable medicinal properties and can be used in the food, perfumery and confectionery industry. In addition, various medicines can be prepared based on it.

References

1. N.Z. Sharipov, F.S. Kuldosheva, J. Jumaev. Research of the Effect of Factors on the Process of Separation of Shadow Seeds from the Peel/ Journal Eurasian Research Bulletin, Volume 7,Pages 86-91.
2. F.S. Kuldasheva, R.R. Ibragimov, The benefits and harms of grape seed oil / Journal International journal of discourse on innovation, integration and education, Volume 2, Pages 244.
3. N. Z. Sharipov. Analysis of the process of preparing oilseeds for oil production. academicia An International Multidisciplinary Research Journal. Vol. 10, Issue 11, November 2020. p. 2075-2079
4. N.Z.Sharipov , K.KH.Gafurov, M.S.Mizomov. Soya seeds from the peel seperating of local growing. International Journal For Innovative Engineering and Management Research. Volume 10 , February issue 2021. p. 337-339

5. N.Z. Sharipov, S. A. Bo'ronov, Soliev F. Analysis of the process of preparation of local soybean seeds for oil. International Journal of Discourse on Innovation, Integration and Education (IJDIIE). Vol. 3 No. 2 (2021). p. 227-229
6. N.Z. Sharipov, F.S. Kuldosheva, J.Jumaev Research of the Effect of Factors on the Process of Separation of Shadow Seeds from the Peel. Eurasian Research Bulletin, Volume 7, April, 2022. p. 86-91
7. N. Z. Sharipov "Determination of parametes influencing the separation of local soya seeds". The collection includes reports of the participants of the XIV International Scientific and Technical Conference "Technique and Technology of Food Production", dedicated to topical issues of food technology and technology. 2022/4/22 p. 53
8. N. Z. Sharipov, K. X. Gafurov, B. Nurmurodov "Study of aerodynamic properties of local shadow seed seeds" The collection includes reports of the participants of the XIV International Scientific and Technical Conference "Technique and Technology of Food Production", dedicated to topical issues of food technology and technology. 2022/4/22 p. 51
9. N. Z. Sharipov, F. S.Kuldosheva, B. Nurmurodov "Exploring the powers that go to showing shadow seeds" The collection includes reports of the participants of the XIV International Scientific and Technical Conference "Technique and Technology of Food Production", dedicated to topical issues of food technology and technology. 2022/4/22 p. 49
10. Sharipov N.Z., Narziyev M.S., Yuldasheva Sh.J., Ismatova N.N. "Functional Properties of the Processing Soybeans Products" Eurasian Research Bulletin, Volume 12 September, 2022, Pages: 50-54
11. Kh.F.Djuraev, Yodgorova M., Usmonov A., Mizomov M.S. Experimental study of the extraction process of coniferous plants, IOP Conf. Series: Earth and Environmental Science 839 (2021) 042019
12. Djurayev Kh.F., M.S.Mizomov, Analyzing Moisture at the Drying Process of Spice Plants, Texas Journal of Agriculture and Biological Sciences ISSN NO: 2771-8840, 84-88 pages, https://zienjournals.com/
13. Нарзиев М. С., Абдуллаева М. А., Шарипов Н. З. Определение оптимальной начальной концентрации этилового спирта для проведения процесса дезодорации хлопкового масла //ТЕХНОЛОГИИ ПРОИЗВОДСТВА ПИЩЕВЫХ ПРОДУКТОВ ПИТАНИЯ И ЭКСПЕРТИЗА ТОВАРОВ. – 2015. – С. 138-140.
14. Сафаров А.Ф. Гафуров К.Х. Применение сжиженного углекислого газа как растворителя для получения экстрактов из растительного сырья. (Монография) - Бухара: Изд-во «Бухара», 2014.- 117 с.