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IMPROVING THE TECHNOLOGY OF OBTAINING OIL BY RE-PRODUCING LOCAL SOY VARIETIES

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ANNOTATION

Improving the technology of obtaining oil by re-producing local soy varieties. A modern and convenient method of obtaining oil from soybeans is processing through IEM. In modern technological conditions, the pressing method is usually used before the extraction process. Extraction of oil only by pressing method is carried out only in small volumes. The main amount of oil is released when the particles are significantly condensed due to their deformation and coalescence.

Keywords: soybean plant, oil, re-producing, technology, local, solar energy, obtaining.

INTRODUCTION

In the process of pressing the mezga, its physicochemical properties change continuously. Prior to the pressing process, the mesga is in the form of a porous depositional mass, and the surface of its particles is covered with an adsorption layer of oil, which itself blocks the particles with air. In the initial phase of mezga compression, the particles are deformed and converged by pressing, the air is compressed, the spaces between the particles become smaller. Certain gaps are completely filled with oil, which is initially on the surface of the particles. The separation of oil from the gaps between the particles begins.

100 g of soybean oil contains 16 g of saturated fat, 23 g of monounsaturated fat, and 58 g of polyunsaturated fat. The main unsaturated fatty acids in soybean oil are triglycerides polyunsaturated alpha-linolenic acid (C-18:3), 7-10% and linoleic acid (C-18:2), 51%; and monounsaturated oleic acid (C-18:1), 23%. In addition, it contains saturated fatty acids stearic acid (C-18: 0), 4% and palmitic acid (C-16: 0), 10%. A high proportion of polyunsaturated fatty acid, which is prone to oxidation, is not necessary for some uses, such as cooking oils. Three companies, Monsanto, DuPont/Bunge, and Asoyia, introduced a low-linolenic product in 2004, Round Ready Soybean. Hydrogenation can be used to reduce the unsaturation in linolenic acid. The resulting oil is called hydrogenated soybean oil. If the hydrogenation is partially complete, the oil may contain small amounts of trans fat.

A modern and convenient method of obtaining oil from soybeans is processing through IEM. Impulse electric fields (IEM) food storageis a non-thermal method, which is a short electric for microbial inactivation uses pulses and is minimally harmful to food quality characteristics has an effect. IEM technology provides consumers with high-quality foods aims to offer its products. Food quality characteristics. In terms of IEM technology is superior to conventional thermal treatment methods is considered because it is harmful in the emotional and physical properties of food prevent or significantly reduce changes. IEM technology is more useful than heat treatment because it has the original color, taste, texture and nutrition of unprocessed foods neutralizes microorganisms while preserving its value better. IEM liquid or semi-solid

technology placed between two electrodes involves the application of high voltage pulses to products. Most IEM studies milk, dairy products, egg products, juices and processing with IEM in other liquid food products focused on the effect on microbial inactivation.

In modern technological conditions, the pressing method is usually used before the extraction process. Extraction of oil only by pressing method is carried out only in small volumes. The method of extracting vegetable oils only by pressing method is carried out in screws of different constructions. Previously, hydraulic presses were used for this purpose, but they have significant disadvantages: the process is periodic, heavy manual labor is required in the process of loading and unloading the product from the apparatus, many auxiliary equipment are required for the process to be carried out, the resulting The amount of residual oil in the kunjara is high (7...8%). Currently, these presses are used only in laboratory conditions, and in industry, screw presses are used in all technological schemes of oil extraction. In the process of pressing mezga, its physical and mechanical properties change continuously. Before the pressing process, the pulp is in the form of a pore-flowing mass, the surface of its particles is covered with an oil adsorption layer, and the particles themselves are blocked with air. Deforms and approaches each other, air is squeezed out, the spaces between the particles become smaller. Some cavities are completely filled with oil that was originally on the surface of the particles. Separation of oil begins from the spaces between the particles. Schematic of the process of compressing the pulp. The main amount of oil is released when the particles are significantly condensed due to their deformation and coalescence. As a result of the convergence of the internal surfaces, oil separation from the internal surfaces also begins. As a result of the convergence of the external and internal surfaces, the gaps are significantly reduced and completely filled with oil.

With a sharp decrease in the gaps, monomolecular layers of oil remain on the surfaces, they are held most firmly on the surfaces, the compression process is stopped, the monomolecular layer does not separate during pressing, and a small amount of gaps remain. But these spaces are closed, and the oil in them is packed as if in a capsule. As a result of strained deformations, cracks and crevices are formed, as a result of which the oil that did not get out of the press can be reabsorbed. Thus, residual oil in soybeans is composed of a monomolecular layer, oil in closed spaces, and oil in intact cells.

Pressure effect. The driving force of the compression process is the pressure generated in the press. The level of compression depends on the nature of the pressure increase, its maximum value, and the duration of the pressure applied to the material. The pressure in the press is determined by the properties of the finished product. In order to fully separate the oil, the properties of the pulp tension and plasticity are taken into account. When pressing the pulp with low plasticity (dried), the separated oil moves towards the exit of the press, and the pressed material is a dry, rough, flour-like mass with a high oil content or separated in the form of crumbs. Therefore, an increase in pressure is observed.

Effect of compression level. As a result of pressing, the volume of the pulp decreases due to the separation of oil, compaction of particles, evaporation of moisture and densification of the material. This is the actual compression ratio. Its value is in the range of 2.81...2.96 in FP-presses, and in the range of 3.49...4.41 in expellers. The theoretical or geometric degree of compaction consists of the ratio of the theoretical volume productivity in conditions where the

filling coefficient of the first and last revolutions of the screw shaft is equal to one and the material does not turn and move back. The theoretical compression ratio for FP-presses is 14.3. But this value does not take into account the mechanism of movement of the material from the press and its physical and mechanical properties. As a result of compression of the material in the press, oil is released, the percentage of tension deformations and the resistance to pressure increase. The effect of temperature. The temperature at which the process takes place has a great influence on the quantity and quality of the extracted oil. In a cold press, the main part of the separated oil moves towards the exit from the press, the oil separation is reduced, and the soyabean shell is difficult to form. Therefore, before the process, the press is heated to a temperature of 70-80 0C. At this temperature, a stable shell of the soyabean is formed and the oil begins to separate. he press, including the forepress, does not need to be heated during the next working process, because the heat is released due to the friction of the screw shaft and the seal, and the temperature at the exit from the roasting apparatus is maintained. it can get hot. In this case, the burning of the surface of the kunjara, the increase in the amount of residual oil in the composition, and the increase in the color index of the separated oil are observed. The effect of the duration of pressing. The normal pressing duration of presses is approximately equal to the time the material is in the press. The longer the pressing duration is, the higher the complete oil separation (up to certain limits), but the press productivity decreases. Depends on the size, the nature of movement of the material in the press, tension-plastic properties and other factors.

Organic solvents that meet certain requirements are used for soybean oil extraction. These requirements, first of all, should ensure the maximum separation of oil while maintaining the biological value of the extraction products

- oil and whey should be a chemically homogeneous substance with a low boiling point, a low heat capacity, and a low heat of vaporization. This requirement, on the one hand, determines the economic efficiency of the process in terms of energy costs, and on the other hand, guarantees the quality of the oil in terms of air temperature;
- it should not change its chemical composition and properties during storage and technological process;
- it should be completely separated from the composition of oil and whey, it should not give them a foreign smell and taste, it should not form dangerous substances for humans and animals;
- it should not have a harmful effect on technological equipment;
- fire and explosion it should be safe;
- it should not be cheap and scarce for use in large volumes on an industrial scale. A solvent that meets all the above requirements can be considered the most ideal. But nature does not have a solvent that meets all the requirements, and the extractants used in industry meet only a part of the requirements.

CONCLUSION

To produce soybean oil, soybeans are cracked, adjusted to moisture levels, heated to 60 to 88 °C (140 to 190 °F), pelleted, and extracted with a solvent. hexanes. The oil is then refined, blended for various applications, and sometimes hydrogenated. Liquid and partially hydrogenated soybean oils are sold as "vegetable oil" or are ingredients in various processed foods. Most of the

residue (soybean meal) is used as animal feed.

During the 2002-2003 growing season, 30.6 million tons (MT) of soybean oil were produced worldwide, accounting for approximately half of all vegetable oil production consumed worldwide, and all oils and fats produces thirty percent of the world's, including animal fats and oils obtained from tropical plants. In 2018-2019, world production is 57.4 million China (16.6 MT), US (10.9 MT), Argentina (8.4 MT), Brazil (8.2 MT) and EU (3.2 MT).

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