

Research of Technology of Deodorization of Sunflower and Cotton Oil and Their Analysis.

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Abstract: In this article, I have summarized my findings on the quality indicators, analysis, and changes identified in the process of deodorizing sunflower and cottonseed oil in the course of my research. Experiments have shown that deodorized oils are safe to eat, and that they are different from non-deodorized oils. In order to ensure food safety, special attention is paid to scientific research on the modernization of production technology using deodorized oils. The main goal is to improve the performance of deodorized oils in the world, reduce material and technological costs for their production, optimize the technological conditions of production, ensure the quality of consumer products and food safety.

Key words: cottonseed oil, sunflower oil, deodorization technology, refractive index, relative density, tocopherols, stearin, physicochemical parameters.

Introduction.

The oil and gas industry is one of the leaders in the food industry of Uzbekistan. This sector, which has a positive impact on improving and deepening the integration process in the agro-industrial complex of the country, is also important in improving the quality and expanding the range of products, full and efficient use of raw materials, meeting the needs and employment.

General information about oil deodorization. The final stage of the refining process is deodorization, which aims to eliminate the unpleasant taste and odor in the oil.

It aims to meet the needs of the population of the republic in food products, especially for children and adults, at the expense of local products. [3]

Vegetable oils need to be deodorized to improve their quality and remove additional odors and tastes. Deodorization is one of the ways to drive fluids.

Volatiles consist of a complex complex of substances of different composition in terms of quality and quantity. They have more vapor elasticity than triglycerides, which means they are more volatile. Deodorization efficiency depends on the composition, volatility and process temperature of the fragrances.

Materials and methods.

The final stage of the refining process is deodorization deodorization, its purpose is to eliminate the unpleasant taste and odor in the oil.

Toxic silicates are also lost during deodorization. The essence of the deodorization process: the deodorization process consists of 3 stages: the transfer of aromatic substances from the liquid layer to the evaporation layer; evaporation of aromatic substances; substances that evaporate from the evaporating layer loss of molecules.

Experiments show that stearic acid in deodorized oil up to 0.02%, in which case the oil is considered odorless. One of the general requirements for obtaining high quality deodorized oil except (high temperature, low vacuum) the following requirements must be met:

1. Deodorize as long as possible at high temperatures no need to catch.
2. Deaeration of oils before deodorization condition
3. Moist when heating oils, during deodorization and during cooling avoid contact with air.

4. After deodorization, if the equipment is stopped, remove the oil. should be emptied and all parts washed and cleaned. [21]

Some factors that affect the deodorization process.

1. Vacuum-residual pressure 2-5 mm sim.ust. Should be in this vacuum is created by a vacuum pump with a multi-stage steam ejector.

2. Deodorization temperature. Periodic as shown above deodorization is carried out at a temperature of 170-210⁰C. Each oil is unique has an optimal temperature. These include sunflower, cotton, soy, hemp and some other oils deodorize well at 165-190⁰C.

3. Input steam. It is known that in the process of deodorization only water cheap gases that are neutral and odorless to oil, not vapor can be used.

Deodorizing steam should be dry. Because wet steam may cause hydrolytic degradation of the oil.

Research to find physical and chemical methods for evaluating the taste and odor of deodorized oils has so far yielded no positive results. Therefore, the quality of deodorization is assessed on a scale of 50 on the following criteria: no taste and odor - 47... 50 points, deodorized oil has a slight defect in taste - 43... 46 points, deodorized oil has a weak unpleasant taste - 41... 42 points.

Well-deodorized oil is usually rated 44 and above. Oils rated at 43 points may be used for refining. However, deodorants with a lower score are not recommended for use in manufacturing, such as margarine products.

2.2. Determination of the components of oils.

The differences in fats are mainly in the amount of fatty acids and their amounts, and the following table is an example of a common fat.

However, it is not possible to express the complete properties of oils in general. In order to fully understand the properties of fats, we need to know the exact components of the fats obtained by studying the quality of the animal or plant and the temperature, pressure and other factors that affect its technology at the time of extraction. A complete understanding of the above reasons can be found only through the department of petro chemistry.

The fatty acids that make up any fat or oil can be divided into two main groups according to the amount of that fat or oil:

The fatty acid content of fats

Tabel-1

№	Name of oils and fats	Saturated fatty acids %				Unsaturated fatty acids %			
		Ara-xin	Miris-tin	Steo-rin	Palmi-tin	Ole-in	Li-nol	Lino-len	Va boshqa-lar
1	Cottonseed oil	-	0-5	2-5	20-30	29-36	34-57	-	-
2	Soybean oil	0.4-1	-	3-5	6-8	25-36	52-65	2-3	-
3	Sunflower oil	-	-	1.5-5.5	3.5-11.5	23-50	42-66	-	-
4	Corn oil	-	-	6	5-18	23-49	48-56	-	-
5	Olive oil	-	1.2	1	9.7	80-88	7.5	-	Lignosser in 0.4

2.3. Quality indicators of non-deodorized sunflower oil:

№	alkali solution concentration g/l	Excess alkali, %	Acid number mg, KOH	The color of iodine mg	Output of refined oil, %
1	200	20	0,35	30	95,2
2	250	20	0,33	30	96,3
3	150	25	0,27	25	94,8

4	150	30	0,18	25	94,3
5	300	50	0,15	25	94,5

As a result, an increase in the concentration and alkalinity of the alkaline solution leads to a decrease in the acidity and color content of refined sunflower oil, as well as a decrease in the separation of refined sunflower oil.

With an increase in alkali from 20% to 30% at the same concentration of alkali solution 150 g / l, the acid number of the refined oil decreases from 0.4 mg KOH to 0.18 mg KOH, the color count of iodine decreases from 30 mg to 25 mg, and the oil recovery Reduces from 96.5% to 94.3%.

2.4. Quality and physicochemical parameters of cottonseed oil samples.

Physicochemical properties of refined oils	Size
Acid number, mg KOH/gr	0,19-0,21
Moisture and volatile matter content, %, with most	0,1-0,2
The amount of non-soapy substances, %, with most	Traces
Density, 20 ⁰ , gr/sm ³ da	918-935
Refractive index at 200C	1,4729-1,4760
Kinematic viscosity at 200C	66,610
Number of soaps, mgKOH/gr	189-199
Iodine number, %, J ₂	100-116

The data in the table above show the differences in the quality and physicochemical properties of cottonseed oil involved in deodorization technology.

The analysis of the results of the study allowed to determine the need for periodic deodorization of sunflower oil for deodorization at a temperature of steam heated to 230⁰C for 85-90 minutes, the residual pressure in the deodorizer does not exceed 2-3 mm Hg.

№	Name of indicators	Sunflower oil	Cottonseed oil
1	Relative density (x ⁰ C/water 20 ⁰ C x=20 ⁰ C	0,899-0,914 x=20 ⁰ C	0,918-0,926 x=20 ⁰ C
2	Refractive index (40 ⁰ C)	1,461-1,468	1,458-1,466
3	Iodine number	118-141	100-123

The research was carried out in the areas of preparation of raw materials for deodorization, improvement of deodorization technology, improvement of the quality of deodorized oil. In the process of drying and adsorption of cottonseed oil, the technology of preparation of cottonseed oil for deodorization by exposure to orthophosphate acid and carbon dioxide has been improved

Result.

Physicochemical and qualitative parameters of deodorized oils were studied on the basis of experiments. The fatty acid content of vegetable oils was determined, and the presence of saturated and unsaturated fatty acids was studied. Depending on what fatty acids are in the oil, we can determine the properties of our oils. During the study of physicochemical and qualitative parameters of deodorized sunflower oil and cottonseed oil, the number of acids, the number of iodine, the number of colors, the number of saponification, the refractive index were determined. During the experiment, the oil was sterilized by heating it to 230-250⁰C for 80-90 minutes. And compliance with safety criteria and standard requirements was studied

Conclusion

This means that paying attention to the duration of deodorization has a positive effect on its quality and helps to obtain quality oil. It is important to strengthen the incentives for the oil industry to continuously improve the quality of vegetable oil, as well as to further improve the mechanism of interaction between the

republic's cotton ginning and oil companies. At the same time, research is being conducted on the use of food additives and aromatic substances to improve the quality of deodorized oils.

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