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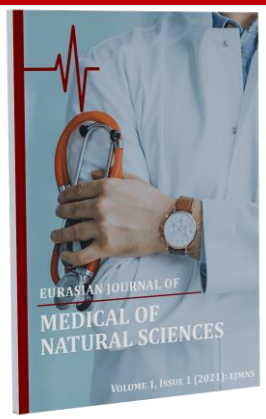

RESEARCH ON EXTRACTING VEGETABLE OIL FROM CORN STALKS USING ETHANOL

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ABSTRACT

Researches were conducted on extracting oil from corn kernels grown in Khorezm region. The methods of extracting the husk from the corn grain have been determined. Ethanol and extra gasoline were used as extractants to extract oil from corn kernels. Optimum parameters of corn oil extraction were determined.

INTRODUCTION

Maize is one of the promising multi-purpose and physiologically valuable grain crops in Uzbekistan. There are more than 150 food and technical products that come from it. Currently, grain, flour, corn flakes, starch, molasses, alcohol, as well as physiologically valuable oils are regarded produced on a large scale. [1-4].

Figure 1. Corn stew

The referenced scientific work presents the results of scientific research on the creation of an effective technology for extracting oil from corn kernels. In our research, we focused on tests aimed at maximum extraction of corn husk, which has the main effect on the process of separating oil from corn husk. Because, when the literature is analyzed, none of the available technological solutions until now have a small amount of research aimed at ensuring the integrity and quality of separated corn husks [5,6].

Based on the above, it is urgent to develop an effective technology for the process of oil extraction from corn kernels and to study the consumption characteristics of the resulting products and biological active additives.

RESULTS

We started the preliminary tests by studying the chemical composition of Uzbekistan 601 grade corn grains. In the tests, we determined the amount of protein, fat, starch and fiber. The results of the studies are presented in Table 1.

Table 1

Chemical composition of corn grains of Khorezm region

Indicator names	Indicator value
Mass percentage of dry matter, %	
Protein	8,9
Fat	12,0
Starch	72,3
Fibers	1,5
The composition of carotenoids, mg / kg	3,2

It was found that the samples of corn grain selected for the study meet the requirements of SS 13634-90, which is used for grain and corn sent for processing, and belong to the second class in terms of quality.

At the same time, taking into account the significant difference in the composition of the hydrophilic part of the extracted mulberry, the methods of heat treatment of the mulberry moisture due to the change in the botanical properties of the raw material and the effect of the developed technology were determined. In addition, taking into account the high physiological value of mulberry, along with obtaining physiologically valuable fat, they solved the problem of using food products as raw materials for the production of dietary supplements.

In this regard, it was proposed to use ethyl alcohol with a percentage of ethanol of 96.2% as an extractant.

In the optimization of heat treatment methods, moisture (from 8 to 14%) and temperature (from 60 to 90°C) of corn grain changes. Then the husk is separated from the corn grain using a separator.

The resulting mixture is dried at a temperature of 105^{0}C for 40 minutes. The

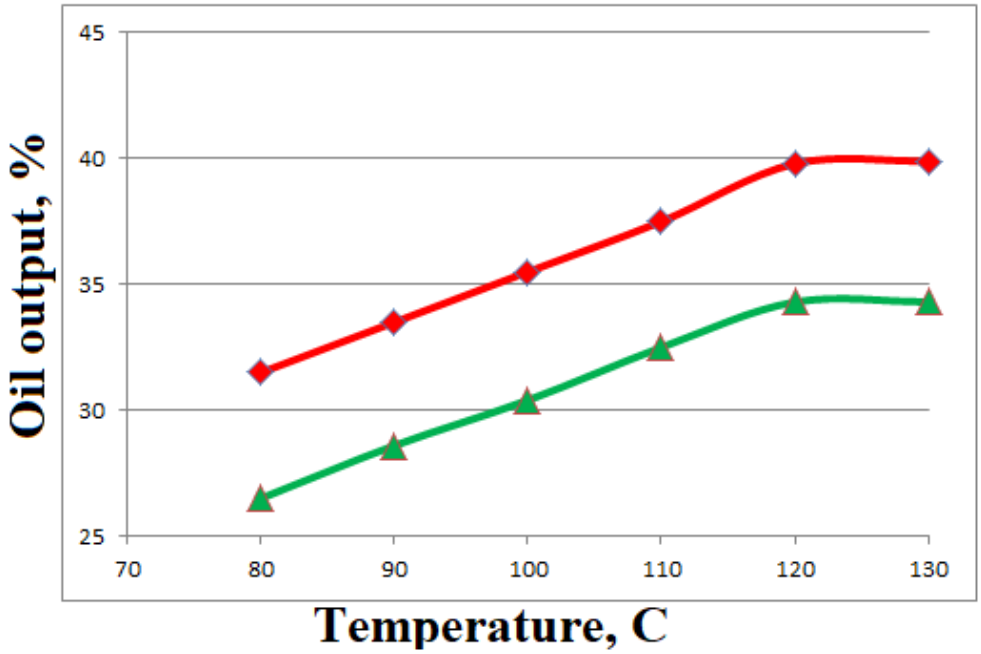
dried fruit is crushed and placed in an extractor. We used extra gasoline and ethanol as solvents to extract oil from corn cobs. The optimal parameters for extracting oil from corn stalks are presented in Table 2.

Table 2

Effect of temperature on oil extraction from corn husk

Separation of oil in the solvent, %	Temperature, ^{0}C					
	80	90	100	110	120	130
Ethanol	31,5	33,5	35,5	37,5	39,8	39,8
Extra gasoline	26,5	28,6	30,4	32,5	34,3	34,3

Based on Table 2, the following graph can be formed.



Graph 1. Effect of temperature on oil extraction from corn husk

From the obtained results, it was found that ethanol is the most effective extractant for extracting oil from corn husks. The duration of oil extraction with the help of ethanol in the extractor is 240 minutes. The optimum temperature for oil release is 120^{0}C. The oil extraction rate was 39.8%.

CONCLUSION

Ethanol was found to be the most effective extractant for extracting oil from corn husks. The duration of oil extraction with the help of ethanol in the extractor is 240 minutes. The optimum temperature for oil release is 120^{0}C. The oil extraction rate was 39.8%.

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