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BRIEF COMMUNICATIONS

FATTY ACID COMPOSITION OF THE HYDROGENATION PRODUCTS OF MIXTURES OF COTTONSEED AND SOYBEAN OILS

A. B. Dzhamalov[a] and K. Kh. Mazhidov[b]

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In the hydrogenation of oils and fats, the fatty acid composition of the initial fatty raw material affects the quality of the final product [1]. In view of this and the prospects of processing soybeans in oils and fats enterprises of the Republic of Uzbekistan, we have studied the changes in the fatty acid compositions of mixtures of cottonseed and soybean oils during their hydrogenation in the presence of a disperse powdered nickel-copper catalyst [2, 3].

Hydrogenation was conducted in a laboratory apparatus at 200°C for 60 min. Hydrogen with a purity of 99.99% was used. Table 1 gives the fatty acid compositions of the oils investigated. It can be seen that cottonseed and soybean oils differed substantially in their linolenic and palmitic acid contents.

We used various ratios of cottonseed and soybean oils for hydrogenation (Table 2). Table 2 shows the quantitative changes in the 16:0 and 18:3 acids.

The compositions of the hydrogenates are given in Table 3, from which it can be seen that in the hydrogenation process the first stage is the saturation of the linolenic and linoleic acids with their conversion into oleic and stearic, the rate

TABLE 1. Fatty Acid Composition of Samples of the Vegetable Oils, % GLC

Oil	18:3	18:2	18:1	18:0	16:0
Cottonseed	0.4	53.2	21.4	3.0	22.0
Soybean	7.8	54.6	23.4	4.2	10.0

TABLE 2. Fatty Acid Compositions of the Initial Mixtures of Vegetable Oils, % GLC

Ratio of the oils, cottonseed:soybean, %	18:3	18:2	18:1	18:0	16:0
75:25	2.4	54.1	22.0	3.4	18.1
50:50	4.2	54.4	22.6	3.8	15.1
25:75	6.6	54.5	22.8	4.0	12.1

TABLE 3. Fatty Acid Compositions of the Hydrogenates, %

Ratio of the oils, cottonseed:soybean	18:3	18:2	18:1	18:0	16:0	mp, °C
75:25	0	3.3	64.4	14.2	18.1	34–37
50:50	0	3.5	62.9	18.6	15.0	32–36
25:75	0	3.8	63.7	20.4	12.1	28–31

a) Uzmaslozhirtabakprom Association, Tashkent, fax (3712) 54 48 46; b) Bukhara Technological Institute of the Food and Light Industries, fax (3652) 23 78 84. Translated from Khimiya Prirodnykh Soedinenii, No. 4, pp. 548-549, July-August, 1998. Original article submitted April 20, 1998.

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of formation of monoenoic acids being relatively higher than that of saturated acids. This witnesses a selective occurrence of the saturation of the dienoic acids in the samples investigated.

The hydrogenates obtained had melting points corresponding to the requirements of the standard for a food product.

Thus, the experimental results show the desirability of using mixtures of cottonseed and soybean oils in the technology of oil hydrogenation with the aim of producing margarine and other edible fats.

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