

## BRIEF COMMUNICATIONS

## FATTY ACID COMPOSITION OF ALFALFA SEED OIL

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The legume family (Leguminosae) is attracting the attention of researchers as a source of valuable food ingredients — proteins, lipids, and carbohydrates. The seeds of leguminous plants (peas, soybeans, kidney beans, lentils, lupins), are used as food products and also serve as the raw material for obtaining individual components — food fiber, protein, phospholipids, fatty acids. The fatty acids of the seeds of leguminous plants are distinguished by high food qualities.

The aim of the present work was to study the fatty acid composition of the seed oil of an alfalfa bred in the "Selektiya" Scientific Production Combine (Siberian Division of RASKhN [Russian Academy of Agricultural Sciences]) — PS-8 "Siberskaya" (1989 and 1990 harvests).

The oil was extracted from the seeds by the method of Folch et al. [1]. To determine its fatty acid composition we used gas chromatography (Hewlett-Packard 5890A chromatograph) with a mass-selective detector. Methyl esters were obtained by Stoffel's method [2]. The column was an Ultra-2 capillary column with a nonpolar phase consisting of 5% of diphenyl- and 95% of dimethylpolysiloxane (12 m × 0.2 mm × 0.33 μm). The peaks were identified by the use of model samples of fatty acid methyl esters and the mass spectra were analyzed by using a search system (data bank of about 50,000 compounds).

The following fatty acid composition was found (% of the total amount arranged in order of issuance from the column):

14:0	16:0	17:0	18:3	18:2	18:1	18:0	20:1	20:0	22:0
0.4	9.3	2.4	20.7	20.5	13.8	4.4	10.9	5.3	12.1

The alfalfa seed lipids contained 10 fatty acids, among which  $\alpha$ -linolenic and linoleic acids predominated. Our investigations also showed, in addition to those mentioned above, trace amounts of palmitoleic acid. In contrast to results from VNIIZh [All-Union Scientific-Research Institute of Fats] [3], we identified myristic, margaric, and gadoleic fatty acids in alfalfa seed oil. Regionality of the breeding of alfalfa was not greatly reflected on the fatty acid composition of the seed oil.

Among seed oils from the Leguminosae family, alfalfa seed oil occupies a leading position with respect to its content of  $\alpha$ -linolenic acid. Thus, soybean oil contains 7-9% of linolenic acid [4], pea oil 6-12% [5], clover seed oil 2% [3], and lupin oil 8.3% [6].

Thus, alfalfa seeds may be a source of the essential  $\alpha$ -linolenic acid, regardless of the zone of cultivation.

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