FATTY-ACID COMPOSITION OF THE OILS OF THE SEEDS OF Anethum graveolens DURING THEIR RIPENING

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We have studied the dynamics of the accumulation of petroselinic acid in the oils of the seeds of Anethum graveolens (dill), family Umbelliferae, during their ripening. The seeds ripened completely in 35 days.

The seeds were collected at intervals of five days and the oils from them were analyzed from the 5th to the 35th day of ripening. The acid numbers were determined for the 5-day and 35-day oils, i.e., at the beginning and end of the investigations: 57.3 and 8.1 mg KOH/g, respectively. During this period, the oil content of the seeds rose from 0.1 to 14.7%.

The oil was extracted from the seeds with chloroform–methanol (2:1), the extract was washed with water, the bulk of the solvent was evaporated off from the extract, and then the fatty oil was extracted with petroleum ether [1]. The petroleum ether was distilled off, giving the oil, from which the fatty acids were isolated, and their composition was determined by the GLC method (Table 1) [2].

The data in the table show that in the initial stage of ripening the seeds are characterized by a considerable content of saturated acids and a comparatively large amount of linoleic acid.

The seeds that have developed for five days contain a considerable amount of linoleic acid, which disappears completely in the later stages.

The total percentage of monoenoic acids rises rapidly during ripening from 10 to almost 85%.

However, as the seeds develop, with an increasing amount of monounsaturated acids a redistribution of the oleic and petroselinic acids takes place: oleic acid is present from the first days of development and its amount rises to 55%, and then it falls relative to the petroselinic acid and, finally, becomes constant.

Petroselinic acid appears on about the 10th day of ripening and its amount increases continuously, reaching a constant level in the ripe seeds, since this acid is a specific chemical classification characteristic of plants of the family Umbelliferae.

TABLE 1

Acids	Days						
	5	10	15	20	25	30	32–35
Lauric	28,2	24,0	10,3	1,7	—	—	—
Myristic	4,7	4,2	0,7	0,4	—	—	—
Palmitic	16,7	15,6	7,9	7,4	7,0	5,8	5,8
Petroselinic	—	Traces	10,8	38,4	62,6	66,9	68,2
Oleic	10,6	40,2	55,5	41,8	20,0	17,4	16,2
Linoleic	26,9	16,0	14,8	10,3	10,1	9,9	9,8
Linolenic	12,9	Traces	—	—	—	—	—

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