[CONTRIBUTION FROM THE OIL, FAT AND WAX LABORATORY, BUREAU OF CHEMISTRY, UNITED STATES DEPARTMENT OF AGRICULTURE]

THE CHEMICAL COMPOSITION OF SESAME OIL

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The sesame plant is widely cultivated throughout the warmer parts of Asia and Africa, particularly in India, Java, Siam, China, Egypt and the Levant. It is grown in smaller quantities in Brazil, Venezuela and Mexico. Sesame oil is an important part of the diet of many natives in India, China, Japan, other parts of Asia and Africa. In continental Europe it is an important article of commerce and is used for culinary purposes, as a salad oil, in the manufacture of margarine, and for soap making. In certain European countries it is obligatory to mix from 5 to 10% of sesame oil with margarine in order to facilitate the recognition of margarine, sesame oil being easily detected by color tests. Small annual importations of the oil have been made into the United States during the last ten or fifteen years. Recently these importations have been increasing. In this country the oil is used to a small extent in the manufacture of margarine, lard substitute, and soap.

The seed contains from 50 to 57% of oil. It is customary to make one or two pressings cold, followed by one hot. The first cold pressing produces the oil of the best quality. The hot-expressed oil is used chiefly for soap making. In some parts of China the seeds are roasted before being pressed. This process gives the oil a strong flavor and a dark color.

Practically no work on the composition of the oil is recorded in the literature.

The oil used in this investigation was cold pressed in the Oil, Fat and Wax Laboratory, by means of an expeller, from the yellow variety of seed grown in China and shipped from Hankow. The seed contained 55.1% of oil. The oil had a light yellow color and a slight, pleasant taste and odor.

Chemical and Physical Characteristics.—The more important characteristics are recorded in Table I. The percentages of saturated and unsaturated fatty acids were determined by the lead-salt-ether method and corrections were made for the small quantity of unsaturated acids that separate with the saturated acid fraction.[1] The percentage of unsaturated acids has also been corrected for the unsaponifiable matter, all of which separates with the unsaturated acid fraction. The iodine number of the unsaturated acid fraction containing the unsaponifiable matter was 129.0, and that of the unsaponifiable matter was 96.3. The iodine number of the pure unsaturated acids, therefore, is calculated to be 129.7.

[1] THIS JOURNAL, **42**, 2398 (1920); *Cotton Oil Press*, **6**, No. 1, 41 (1922).