A Rapid Color Reaction of Crude Sesame Oil

The new color reaction of sesame oil (*Sesamum indicum*) described by Rao et al. (1) shows that the addition of trichloroacetic acid solution in chloroform to 50% ethereal solution of the oil gives initially a pale blue color and then sky blue and gradually turns to green in a few hours. The reaction for the color formation as explained by the authors is due to methylenedioxyphenoxy group, a sesame oil constituent, by a free radical mechanism in the presence of peroxides, normally formed in oil by autoxidation.

It was much earlier observed by the present author that the addition of concentrated HCl to sesame oil, especially to older samples, gives a dark green color. This reaction was found to be very rapid presumably because the concentrated HCl is stronger than trichloroacetic acid and hence no blue color as intermediate stage was formed. This green color formed immediately after addition of HCl persisted for a long time.

The test is performed as follows: 1 ml of concentrated HCl is added to 1–2 ml of a 50% petroleum ether solution of sesame oil (v/v) and shaken thoroughly. A green color immediately appears which is more pronounced in older samples probably because of higher peroxide content of these samples.

Several trials were made with fresh sesame oil prepared from pure seeds as well as raw sesame oil purchased from market. A comparative study of the two tests confirms that the present test gives a sharp change of color to green and the other test, with trichloroacetic acid, takes a longer time, i.e., several hours to complete the reaction.

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A Simple Method for Preparation of Methyl *trans*-10, *cis*-12 Octadecadienoate

Abstract

A simple crystallization procedure is described for the preparation of *trans*-10,*cis*-12 octadecadienoate from methyl esters of alkali-isomerized linoleic acid.

Conjugated isomers of methyl linoleate are useful model compounds to study the mechanism of hydrogenation. *Trans*-10,*cis*-12 isomer of methyl linoleate has been separated from methyl esters of alkali-isomerized linoleic acid by a series of crystallizations (1). A simple two-step crystallization procedure gives improved yields of *trans*-10,*cis*-12 octadecadienoate from methyl esters of alkali-isomerized linoleic acid.

Fifty grams of methyl linoleate was added to 100 g of distilled ethylene glycol and 26 g of potassium hydroxide which had been heated under nitrogen to 180 C. Heating was continued for 30 min and the isomerized acids were recovered from the reaction mixture in the usual manner. The acids were esterified with methanol and sulfuric acid catalyst. In 556 ml acetone (12.5 ml/g) 44.5 g of distilled methyl esters ($a_{233\,m\mu} = 91.6$; $\frac{a_{10.2\,\mu}}{a_{10.6\,\mu}} = 1.18$) were dissolved and the solution was cooled to −57 to −59 C. The crystalline fraction was redissolved in 200 ml acetone and recrystallized at the same temperature to obtain 16.7 g ($a_{233\,\mu} = 96.2$; $\frac{a_{10.2\,\mu}}{a_{10.6\,\mu}} = 1.30$) of methyl *trans*-10,*cis*-12 octadecadienoate. Gas liquid chromatography indicated that there were traces of the *cis,cis* isomer as an impurity and that the *trans, trans* isomer was not present. The yield of the product corresponds to 37.5% of the starting material. About 75% recovery has been accomplished by this procedure since the starting material contained 50% of the *trans*-10,*cis*-12 isomer. Reductive ozonolysis (2) followed by gas liquid chromatography indicated 1–2% of $\Delta^{9,11}$ isomer as an impurity. Reduction of a similarly prepared material with potassium azodicarboxylate (3) followed by periodate-permanganate oxidation (4) of the *cis* and *trans* monoenes showed that the double bond at the 10,11-position had *trans* configuration while the 12,13 double bond possessed *cis* configuration.

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