Recent Work on Iso-Oleic Acid*

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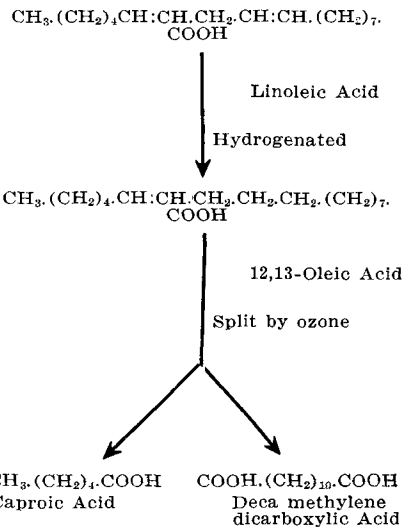
THE designation "iso-oleic acids" is applied to all isomeric oleic acids which have the double bond of the eighteen carbon atom chain at some other place in the chain instead of between the ninth and tenth carbon atoms. Of the iso-oleic acids in natural oils, up to the present only the 6,7-oleic acid, petroselinic, has been found in parsley seed oil. The constitution of this acid has been elucidated by Vongerich and Eibner. The other members of this series have mostly been prepared synthetically. Iso-oleic acids have gained considerable interest as they occur and have been detected in hardened oils. They differ from oleic acid in that they are solid at ordinary temperatures, and are obtained as insoluble lead salts when the mixture of lead salts of both acids are extracted with alcohol or ether.

Some time ago it was attempted to separate the solid and liquid fatty acids, and isolate the iso-oleic acid by a combination of Twitchell's method with the brom-ester method of Grün and Jankow. This attempt was afterward abandoned. It was then attempted to break down the solid unsaturated acids of a hardened peanut oil to determine their composition. Baur and Mitsotakis separated the solid fatty acids in the form of their methyl esters by Twitchell's method and subjected them to splitting by means of ozone. On working up the split products deca methylene carbonic acid and caproic acid were obtained, so that the iso-oleic acid appears to exist in the hardened peanut oil as a 12,13-oleic acid. Such an acid can be obtained by hydrogenation of linoleic acid in such a manner that only the double bond in the 9,10-position will be hydrogenated, whereas that in the 12,13-position will remain unchanged. This is evident from the following structural formulae:



This discovery is an elaboration of the observation of Kaufmann who has proven by similar means that the hydrogenation of oils takes place first at the expense of linoleic acid.

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