

# ABSTRACTS

David Wesson, *Abstract Editor*

Further papers of interest in the Chemistry of Fats and Oils, which were presented at the meeting of the American Chemical Society, Cincinnati, September 8-12 are given in abstract as follows:

1. *A Comparison Of The Highly Unsaturated Acids Of Beef, Hog, And Sheep Brains.* J. B. Brown and W. C. Ault. Fresh beef, hog, and sheep brains were hydrolyzed by boiling 20 per cent sodium hydroxide, and the soaps extracted quantitatively from the solution by butyl alcohol. The fatty acids were recovered and brominated in cold ether. The polybromides were recovered and thoroughly washed. They were reduced by boiling with zinc dust in methyl alcohol. The methyl esters were distilled and analyzed. The yields of polybromides were essentially the same from the different lots of brains studied, showing a constant content of highly unsaturated acids. Analysis of the methyl esters from beef and sheep brains showed a decided similarity. One preparation (sheep) had an iodine number of 349. The molecular weight of the acids as well as the iodine number supported the probability of the presence of tetracosapentenoic acid,  $C_{24}H_{38}O_2$ , in beef and sheep brains. The acids obtained from hog brains gave analytical data very close to the theoretical for arachidonic acid, but the methyl ester polybromide did not melt.

2. *The Nature Of The Highly Unsaturated Fatty Acids Stored In The Lard From Pigs Fed On Menhaden Oil.* J. B. Brown. Two pigs, without previous starvation, were fed over a period of five weeks on an adequate diet containing approximately 14 per cent of refined menhaden oil. Two control pigs received the same diet without the oil. At the end of the feeding experiment the animals were killed and the livers, brains, and specimens of leaf and back fat were removed for analysis. The lipids and fatty acids of the livers of the oil-fed pigs showed greatly increased iodine numbers over those from the control animals; likewise the analytical data on the back and leaf fat indicated storage of the fish oil acids, although the effect was not as great as would have been obtained with previous starvation. The brains of the four animals contained prac-

tically the same amount of unsaturated acids. From the lard of the oil-fed pigs, the highly unsaturated acids were isolated and compared with those obtained from the menhaden oil in the same manner. The deposited acids were of about the same molecular weight, but were considerably less saturated than those from the fish oil. About 2.7 per cent of highly unsaturated acids was stored in the body fat under the conditions of this experiment.

3. *The Changes In The Total Fatty Acids, Phospholipid Fatty Acids, And Cholesterol During The Reproductive Cycle.* L. A. Maynard and E. S. Harrison. The total fatty acids, phospholipid fatty acids, and cholesterol have been determined periodically in the blood of milking cows throughout their reproductive cycle. During the dry period the values for all these constituents are low and fairly constant. After parturition there is a gradual rise in these blood lipids to maxima which are from 50 per cent to 100 per cent or more above the levels of the dry period. The values remain high for several months, gradually dropping to their original levels as lactation declines and ceases. Throughout the entire reproductive cycle the curves of the three constituents studied tend to parallel each other, showing a close metabolic relationship among them.

An exhaustive analysis of Japanese great herring oil, carried out on the original oil, on its mixed fatty acids, and on the separated solid fatty acids caused the authors of the work to arrive at the conclusion that the saturated fatty acids (15 percent of the mixed fatty acids) consisted chiefly of palmitic acid, some stearic and myristic acids and small quantities of arachidic and behenic acids. They also detected small quantities of a water-soluble fatty acid resembling butyric or valeric acid. *J. Soc. Chem Ind. Japan*, Suppl. Bind, 33, 62B, (1930).

For the removal of free fatty acids from lard, the lard may be treated with an excess of sodium bicarbonate in the presence of a limited quantity of water, with agitation, at a temperature of about 60-95°C. U. S. Pat. No. 1,767,999.