

ABSTRACTS

Oils and Fats

Edited by

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Determination of lead soap in oils and greases. Harry Levin. *Ind. Eng. Chem., Anal. Ed.* 6, 333 (1934).—Weigh 2-10 g. of sample into an Erlenmeyer flask, add 45 cc. of glacial AcOH-benzene mixt. (1-2 by vol.) and reflux the mass for 1 hr., cool and transfer to a globe-shaped separatory funnel. Next add 50 cc. of distd. H₂O and shake, allow to settle and withdraw the aq. layer into another separatory funnel. Wash the benzene layer with 50-cc. portions of distd. H₂O until the aq. ext. is free from AcOH. Filter the combined washings and ppt. the Pb in the filtrate as chromate with excess of 10% KCrO₄ soln., filter the ppt. on a Gooch crucible, wash, dry at 105°, weigh and calc. to the particular Pb soap involved by a suitable factor such as 2.381 for Pb oleate.

E. SCHERUBEL.

Theory of the hydrogenation of vegetable oils.—II. Frans Bloemen. *Fettchem. Umschau* 41, 151-4 (1934); cf. *C. A.* 28, 4926⁵.—Strictly speaking, the laws of equil. as previously formulated apply only to the hypothetical case that all the fat mols. are subject to a catalytic influence of uniform intensity. This condition is never met practically, due to the limited sphere of influence of each catalyst particle and to the fact that the intensity of catalytic action is greater at or very near the surface of the catalyst particles. These considerations both explain why previously drawn conclusions as to the effect of temp. and pressure on the course of hydrogenation are of qual. rather than quant. nature, and also offer a theoretical explanation of the known importance of controlling the amt. of catalyst as a means of influencing the degree of selectivity of hydrogenation. A uniform soft fat can be prepd. from certain oils, e.g., peanut oil, by hydrogenating under such conditions as to favor formation of glycerides of the desired consistency contg. isooleic acid residues. Certain other oils, e.g., linseed oil, do not yield satisfactory soft fats due perhaps to the formation of glycerides which contain residues of other isooleic acids and which are too soft and semifluid.

J. W. PERRY.

The formation of isomeric unsaturated fat acids (so-called isooleic acid) in the hydrogenation of oils.—VII. The effect of hydrogenation temperature and the quantity of catalyst on the formation of solid unsaturated fat acid. Sei-ichi Ueno. *J. Soc. Chem. Ind., Japan* 37, Suppl. binding 457-8 (1934); cf. *C. A.* 27, 1533. Hydrogenation at higher temps. decreases the formation of isooleic acid. The quantity of catalyst had practically no relation to the formation of isooleic acid. At higher temps., above 275°, the formation ratios were much more irregular than those at 250°, and it is concluded that the hydrogenation includes side reactions like polymerization, decompn., etc. Exptl. results are presented for temps. of 250-300°, time 57-176 min., and Ni catalyst 1-10%, at 25 mm. H₂O pressure. The yields of isooleic acid varied from 1.93 to 12.22%.

KARL KAMMERMEYER.

The influence of carbon monoxide on the hydrogenation of fats. S. Danilov and R. Sviridovskaya. *Masloboino-Zhirovoe Delo* 1933, No. 6, 5-11.—The presence of CO in high concns. in H₂ retards the hydrogenation and practically arrests it at the stage of formation of oleic acid. The CO is decomposed by the Ni catalyst into CO₂ and C, and the latter deposits on the Ni. The hydrogenation with water gas is therefore inefficient.

E. BIELOUSS.

Soy lecithin.—II. The hydrogenation under high pressure. Yuichi Shinozaki and Masanori Sato. *J. Soc. Chem. Ind., Japan* 37, Suppl. binding 432-3 (1934); cf. *C. A.* 27, 5563. Hydrogenation with Ni catalysts at pressures above 80 atm. gave a hydrolecithin contg. P 3.82, N 2.23, C 64.63, H 11.33 and amino N 0.10%, with I no. 0.38 and m. p. 84°. The effects of addns. of the lecithin and hydrolecithin on the colloidal properties of cacao butter (m. 34°, acid value 1.14) were examd. by detg. the change in relative viscosity at 60° and 70° and in the relative no. of drops. Conclusions: The emulsifying power of cacao butter against water is increased by the addn. of lecithin or hydrogenated lecithin, and the latter gives better results than the former.

KARL KAMMERMEYER.

Changes in fats during storage. C. H. Lea. *Dept. of Sci. Ind. Research, Rept. Food Investigation Board* 1933, 33-7 (1934); cf. *C. A.* 27, 5436.—Not only peroxides, but also small amts. of aldehydes, may be produced when fats are oxidized. Small amts. of Me(CH₂)₅CHO in fats can be detd. by dissolving 1 g.

fat in benzene (about 2 cc.), shaking 60 min. with 20 cc. of 0.5 N NaHSO₃, centrifuging to break the emulsion and titrating the combined NaHSO₃ in the aq. layer with 0.002 N I₂ in the presence of NaHCO₃. Added Me(CH₂)₅CHO was recovered within about 1% (cf. *C. A.* 28, 5265²). In the course of oxidation of cottonseed oil in light, detn. of aldehyde by this method showed that aldehyde appears only after about 5 days, with a 100-w. lamp at 3 ft., while peroxide appears under the same conditions in considerable amts. in 1 day.

K. V. THIMANN.

Highly unsaturated C₂₄ acids in hearing, cod-liver, pilot whale and aburazame-liver oils. Yoshiyuki Toyama and Tomotaro Tsuchiya. *J. Soc. Chem. Ind., Japan* 37, Suppl. binding 530-4 (1934).—Highly unsatd. C₂₄ acids of herring oil were sepd. and fractionated to different degrees of unsatn. The most unsatd. fraction gave a new acid, C₂₄H₄₀O₂, which was named *nistimic acid*. The other liver oils also contained this acid. Analytical results are given.

KARL KAMMERMEYER.

Properties of oils and fats in relation to uses. H. E. Corman. *Can. Chem. Met.* 18, 223-4 (1934).—The Twitchell method of fat acid sepn. gives percentage of satd. acids, the percentage of solid unsatd. acids and together with the I value gives a basis for calcg. the content of oleic and linolic acids. The Kaufman thiocyanogen no. gives the percentage of unsatn., and by difference the amt. of satd. acids. The percentage of acids having more than 1 unsatd. bond can be obtained by comparison with the I value. SCN is taken up by only 1 bond, 1 by all the unsatd. bonds; hence the difference between the 2 values indicates the presence of unsatd. acids having more than 1 unsatd. bond in their structure, and the amt. of the difference gives the percentage of such acids present. Chem. const. of 9 fats and oils are tabulated.

W. H. BOYNTON.

Rancidity reactions in Greek olive oils. Socrates Kalogreas and Stavros Kotsonis. *Praktika (Akad. Athenon)* 8, 169-73 (1933).—Color reactions alone are inadequate for detg. rancidity; smell and taste are the final criteria. Olive oils, however, can be distinguished because of their contents of oxidizable matter, 2 kinds of which are recognized: (1) those which are sol. and produce an odor and (2) those which result from the decompn. of glycerides. The results which are expressed in g. % of O₂ indicate that less of these occur in refined than in natural oils.

LUCIEN Y. DYRENFORTH.

The negative catalysts for the hydrogenation of oils.—X. The inhibiting influences of dyestuffs at lower (hydrogenation) temperatures. Sei-ichi Ueno. *J. Soc. Chem. Ind., Japan* 37, Suppl. binding 497-505 (1934); cf. *C. A.* 27, 1463. Fifty-eight dyestuffs were tested by adding 1% of the dye to the soy-bean oil which was to be hydrogenated. Two % of a Ni catalyst was used. Direct colors showed a weak inhibiting action, and a lower hydrogenating temp. tended to diminish this influence. Acid colors had slight effects, excepting some colors, as the SO₂Na and OH radicals are ineffective. Basic colors showed remarkable inhibiting effects. S colors acted as poisons. Ice colors contg. the NO₂ radical showed a pronounced retarding ability. In general OH, SO₂Na and COONa radicals had slight retarding effects while NH₂ and NO₂ gave remarkable anticatalytic action. But when NH₂ and OH, or NO₂ and NH₂ co-existed in a dye mol., the inhibiting actions of these radicals seemed to be lessened.

KARL KAMMERMEYER.

PATENTS

Hydrogenating fats and fatty oils. 1. G. Farbenind. A.-G. Fr. 765,379, June 8, 1934. Sulfides of heavy metals such as W are used as catalysts.

Lecithins. Benjamin H. Thurman (to Benjamin Clayton). Brit. 413,923, July 26, 1934. Vegetable oils, e.g., cottonseed, soy bean, rapeseed, coconut, etc., are treated, before or after purification, with H₂O, alc. or an electrolyte, e.g., dil. aq. solns. of H₃BO₃, H₂SO₄, AcOH, Na₃PO₄, triethanolamine, Na₂SO₄, Na borate, to ppt. the phosphatides. The ppt. may be purified by washing with H₂O, Me₂CO or hot alc. and dissolving in Et₂O. The phosphatides may be dried and used as addns. to chocolate coating materials, margarine and other fats.

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