ABSTRACTS

Oils and Fats

Edited by
W. F. BOLLENS and R. E. KISTLER

Studies on Chinese wax. II. The composition of fatty acids (2). Ryosei Koyama. *J. Chem. Soc. Japan* 55, 348-52 (1934); cf. *C. A.* 28, 1561.—Higher fatty acids of the wax consist of ibotacerotic acid, $C_{27}H_{54}O_2$ (I), m. 82°, cerotic acid, $C_{26}H_{32}O_2$ (II), and less acid with formula $C_{28}H_{56}O_2$ (III). The wax collected in the province of Echigo contained 70% I, 15% II and III and 15% lower fatty acids; behenic acid is absent. Oxidation of ceryl alc. and ibotaceryl alc. gives II and I, resp. Use of *Soxhlet's modified app.* for the sepn. of mixed crystals is efficient and an application of the cooling curve, if the purity of the crystal is known, gives good results and saves time and sample.
K. KITSUTA.

Coffee oil. A. Heiduschka and R. Kuhn. *J. prakt. Chem.* 139, 269-76 (1934).—The following consts. were detd. for the fats of non-roasted and roasted coffee beans extd. with petr. ether: solidifying point 4.5°, —; acid no. 5.33, 7.93; ester not. 175.04, 173.91; n_{25} 77.4, —; unsaponifiable, 1.96, —; Hehner no. 96.95, —; R.-M. no. 0.08, —; I no. 86.75, 93.48; glycerol 2.82, 9.50; neutral fat 95.22, 93.95%. The fat from non-roasted coffee beans contained: carnauleic acid 14.25, palmitic acid 23.60, stearic acid 1.05, capric acid 0.33, linoleic acid 37.60 and oleic acid 20.20%.
P. E.

Application of absorption spectra in oil research: distillation of palm oil. L. J. N. van der Hulst. *Rec. trav. chim.* 53, 672 (1934).—Distn. of a soln. of carotene in colorless palm oil gives a concn. of the former in the distillate and only a very small amt. of carotene in the residue. In the distn. of palm oil under the same conditions a small increase of carotene in the distillate is noted; the residue shows only a slight decrease. In the bleaching of palm oil in hexane soln. about 100% of bleaching earth (Terrana superior) absorbs carotene and other coloring leaving an oil with a spectrum which from 220 to 500 mμ is similar to that of a mixt. of oleic and stearic acids. E. SCHERUBEL.

The rancidity problem and new developments with particular reference to the effect of light. Mayne R. Coe. *Cereal Chem.* 11, 241-58 (1934).—Oxidative rancidity is believed to be developed wholly or in part by contact with air, light, heat, moisture, metals and possibly enzymes. Expts. showed that oil-bearing substances that were protected from the light by metal foil or a black or green wrapper did not develop rancidity as did similar samples that were not so protected. The foil and the black wrapper excluded all rays of light and the green excluded all rays except those having wave lengths from 4900 to 5800 A.
L. H. BAILEY.

Alcoholysis of fats. IV. Alcoholysis of olive oil and esterfication of olive oil fatty acids by mixtures of two different alcohols. Yashiyuki Toyama, Tomotaro Tsuchiya and Tokuzo Ishikawa. *J. Soc. Chem. Ind., Japan* 37, Suppl. binding 192-3 (1934); cf. *C. A.* 27, 3660.—Eight equimol. mixts. of alcs. were used in the alcoholysis of olive oil with addns. of HCl and KOH. The sapon. values of the mixed esters agree approx. with the corresponding values calcd. for equimol. mixts. of the esters of component alcs., which indicates that the reaction is nonselective. Olive-oil acids were esterified with the same alc. mixts. in presence of HCl and the resulting sapon. values gave the same results as in the alcoholysis expts.
K. K.

Estimation of aldehydes in rancid fats. Colin H. Lea. *Ind. Eng. Chem., Anal. Ed.* 6, 241-6 (1934).—The bisulfite method was investigated with a view to estg. small quantities of aldehydes in soln. in an oil or fat. Purified heptaldehyde was employed and the sensitivity of the method increased until the aldehyde content of 1 g. of cottonseed oil (contg. 1% of the aldehyde) can be detd. with an accuracy of 0.001%. Specimen data are given on the development of aldehydes in oxidizing fats.
E. S.

Press extraction of palm oil in Nigeria. D. Manlove and W. A. Watson. Nigeria Dept. Agr., *10th Ann. Bull.* 1931, 19-35.—The oil extd. from selected palm-oil fruits, picked when just ripe, contained 0.26-0.52% of free acids (calcd. as palmitic acid). Oil from very ripe, over-ripe and very over-ripe fruits contained 1.10, 6.90 and 28.50% of free acids, resp. Storage of the sterilized, just-ripe fruits for 5 days did not cause a significant increase in the free acid content. Oil from fruit picked 20 days before fully ripe contained 1.75-2.08% of free acids. Because of the presence of bruised and over-ripe fruits, bulk extns. of oil, even with min. delay between harvesting and sterilizing, rarely yielded an oil of less than 3% free acid, and more commonly one of 5-8%. Data are given on the relative efficiencies of different methods of extg. the oil.
K. D. JACOB.

The effect of treating cottonseed with gaseous hydrogen chloride on the quality of the oil. R. L. Raskina. *Trest Khlopkochistitelnoĭ Prom.* (Cotton Ind. Trust), *Collection of Papers* No. 1, 83-6 (1933).—No injurious effects were apparent in the cottonseed oil because of the HCl treatment in the delinting process, as noted by the acid no., I no. and sapon. The hulls absorb as much as 2% HCl, but it is easily washed off. No change in the acidity of the kernel was noted. J. S. JOFFE.

Production of furfural from cottonseed hulls. A. P. Zakoshchikov, V. T. Ivanova and A. M. Kurennova. *Trest Khlopkochistitelnoĭ Prom.* (Cotton Ind. Trust), *Collection of Papers* No. 1, 87-102 (1933).—The presence of tannins in the hulls causes a lower yield of furfural. From ordinary hulls 15% by wt. of furfural can be obtained. From delinted cottonseed the percentage might go up to 20. Washing the seed with water increases the yield of furfural. The removal of lignin by chlorination also helps to increase the yield of furfural. J. S. J.

Further yields from the Calabar plantation oil palms. E. H. G. Smith. Nigeria Dept. Agr., *10th Ann. Bull.* 1931, 1-18.—The cooker-press process of oil extn. gave an approx. 50% increase in oil yield over the native washing method for the fruit of the ordinary thick-shell and the green-fruited thick-shell palms, and an increase of approx. 100% for the mantled thick-shell and the thin-shell palms.
K. D. JACOB.

Theory of hydrogenation of vegetable oils. F. Bloemen. *Fettchem. Umschau* 41, 95-8 (1934).—On the suppositions that catalytic hydrogenation is a reversible reaction with pos. heat evolution, that hardening occurs in a stepwise satn. of the double bonds with equil. relation, and that the catalyst transforms the heterogenous system H-oil-catalyst into a homogenous reaction phase, B. develops some math. equations which lead to the following conclusions: (1) Selective satn. increases with increased temp. (2) Selectivity decreases with increased pressure. (3) The reaction speed rises to a max., then falls; the max. for oleic acid is 170°, for linolenic acid 250°. Iso-oleic acid increases with rising temp. and decreases with increasing pressure.
P. ESCHER.

Examination of soy-bean lecithin products. M. Auerbach. *Fettchem. Umschau* 40, 218-19 (1933).—The content of soy-bean oil in products such as cacao fat contg. soy-bean lecithin can be detd. approx. by sapong. an $COMe_2$ ext. of the material, sepg. the liquid acids (Pb-salt sepn.), and subjecting them to the hexabromide test.
B. C. A.

The Finkener method for determining the solidifying points of fats. J. Lund. *Fettchem. Umschau* 41, 86-90 (1934).—The Finkener method gives good results with fatty acids, but shows poorly defined end points with hardened oils or with fats contg. 3% fatty acids. L. proposes the following modification for correct results with fats: Transfer the filtered fat to the Finkener flask at a temp. 20° above the expected titer; when the temp. sinks no more than 0.2° in 2 min., remove the flask from the box, shake vigorously 8-10 times and replace in the box. If the temp. does not rise within 10 min., repeat shaking; the temp. should rise 3-5°. The highest temp. is reported as the solidifying point. In the official method the shaking is omitted and this causes discrepancies.
P. ESCHER.

Rancidity of oils and fats. A. Taffel and Cecil Revis. *Chemistry & Industry* 1933, 880; cf. Giles, *C. A.* 28, 354^6.—The ordinary peroxide test for rancidity should be made at room temp., as there is a possibility that the labile peroxides characteristic of the early stages of oxidation may change to more stable forms at higher temp.; *e. g.*, peroxide values for a blown arachis oil of 1.8 and 4.8 were recorded at room temp. and 100°, resp. (A few cc. of CCl_4 may be added to the AcOH in order to dissolve solid fats.)
B. C. A.

Rancidity of oils and fats. Colin H. Lea. *Chemistry & Industry* 1933, 917-18; cf. preceding abstr.—Attention is drawn to the test described (cf. *C. A.* 25, 4424, 5780), whereby 1 g. of fat, dissolved in AcOH-$CHCl_3$, is heated with solid KI, zero blank tests being obtained with perfectly fresh fats.
B. C. A.

Courtesy Chemical Abstracts