ABSTRACTS

Oils and Fats

Edited by
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A micro method for the determination of the acetyl and of the hydroxyl number of fatty acids. Otto Fürth, Hans Kaunitz and Minna Stein. *Biochem. Z.* 268, 189-201 (1934).—Boil about ½ g. fat with at least 3 times the amt. of HCl for 9 hrs. under a reflux and in a N_2 atm., cool, make slightly alk. with 60% KOH, cool again and ppt. the sol. soaps with lime water. Filter off the Ca soaps, suspend the ppt. in H_2O and set free the fatty acids with HCl, warming the mixt. for a time on the water bath to secure complete decompn. of the soaps. Cool, and ext. with petr. ether in a separatory funnel. Distil off the petr. ether and dry the residue at 60°. Boil the mixt. of fatty acids in a N_2 atm. and under a reflux with purest Ac_2O, and ext. in a small separatory funnel with H_2O until the wash water is absolutely neutral. Now ext. the acetylated fatty acids with petr. ether, place in flat dishes and dry at about 70°. Place 0.2-0.3 g. of the carefully weighed substance in a 10 cc. flask with a ground-in reflux, boil 2 hrs. in a N_2 stream with 4 cc. 0.5 *N* alc. KOH, transfer the contents quantitatively to a 10 cc. vol. flask and dil. to the mark. With 3 cc. aliquots, the material is distd. in the Friedrich app. on a boiling water bath with 25 cc. 25% toluenesulfonic acid. Distd. H_2SO_3 is removed by adding starch and 0.01 *N* I_2 to the water, and finally the distd. AcOH is treated with KIO_3 and KI, and the I_2 set free titrated with 0.01 *N* $Na_2S_2O_3$. The method for calcg. the Ac no. or mg. KOH bound by AcOH from 1 g. of the Ac product is fully discussed. Cod-liver oil has an Ac value of 32-33; dog fat 9.5-12.3; human fat 25-27.

S. MORGULIS.

The determination of the iodine number. C. H. Liberalli. *Rev. soc. brasil. quim.* 4, 250-263 (1933).—L. discusses the Hübl, Hanus, Wijs, Waller and Winkler methods. The official labs. of Brazil have accepted the Winkler method for unity in official procedure.

JOHN LADINO.

Gravimetric microdetermination of unsaponifiable matter. G. Gorbach and A. Sablatnog. *Mikrochemie* 14, 256-62 (1934).—Dissolve 2-3 mg. of the fat or oil, or more if less than 2% of unsaponifiable matter is present, and transfer the soln. to a small sapon. flask. After the removal of all toluene by evacuation, det. the exact wt. of the sample taken on a microbalance. The sapon. flask which is recommended has a capacity of 1-15 cc. Place this flask in a wider vessel and add to the weighed fat 0.4-0.6 cc. of a mixt. of 2 parts *N* NaOH in EtOH and 1 part toluene. Heat in a Pregl drying block to 120-130°, under reflux condensation. After an hr. remove the condenser, evap. off the alc. and toluene almost completely and add 1 cc. of cold satd. $Ba(OH)_2$ soln. Evap. without boiling almost to dryness and dry in a vacuum at 30-50°. Subject the residue to extn. with low-boiling petr. ether. Minute directions are given for carrying out the entire procedure.

W. T. H.

Fatty oil of Parinarium macrophyllum (Néon oil). Alph. Steger and J. van Loon. *Rec. trav. chim.* 53, 197-204 (1934).—The consts. found for this oil were: d_4^{78} 0.8901, sapon. no. 190.0, R.-M. no. 0.33, n^7D 1.4741, unsaponifiable 0.9%, glycerol 4.3%. The percentage compn. of the acids was: satd. acids 11, eleostearic acid 32, linoleic acid 34, oleic acid 23. The extn. of Néon oil will not be carried out on a tech. scale on account of the low oil content of the nut, 5.9%, and the great difficulties connected with the removal of the very hard shell.

E. SCHERUBEL.

The properties of fatty oils at their ignition points. F. Eckert. *Fettchem. Umschau* 41, 21-5 (1934).—Method: A block of V_2A steel with 4 borings 15 mm. in diam. × 40 mm. deep is built into an elec. oven so that a regulated stream of O can be introduced (Jentzsch app.). A thermometer rests in one of the borings. The elec. current is regulated to 10° per min. When near the ignition point, a droplet of oil is placed upon a fresh combustion disk within the borings every 30 sec. until ignition occurs. The current is then cut out but testing is continued until ignition stops; the current is again cut in and regulated to 2-3° per min. The first ignition is considered the "point of self-ignition." Results: The fatty oils decompose at their initial ignition point so rapidly that not enough O can be supplied for combustion; this causes a break in the curve in plotting the O required against the temp. The mineral oils show no such interruption in their ignition points but simply demand more O up to a max.; they then drop off again. Several curves and 2 tables illustrate the values obtained for 8 vegetable and 3 fish oils, accompanied by a discussion of results.

P. ESCHER.

Polymerization of fatty oils. III. The boiling of linseed oil in connection with the production of turbidity in the stand oils prepared therefrom. Alph. Steger and J. van Loon. *Rec. trav. chim.* 52, 1073-82 (1933); cf. *C. A.* 27, 201.—Both crude and pretreated linseed oils which are free from mucin and protein show a characteristic turbidity after boiling. In the prepn. of stand oils, linseed oils undergo decompn.; the unsaponifiable ingredients thus formed are liquid and oil-sol. even at low temp. and do not cause turbidity. However, at the same time there are produced free acids which are half-solid at room temp. The higher the acid no. of a stand oil, the more turbid it becomes as a result of the presence of these free, satd., slightly sol. acids. Stand oils which contain practically no free fatty acids always show a distinct opalescence if they are cooled at ice-box temp.; at room temp. they are transparent. Possibly during the polymerization there occurs a slight enrichment of satd. acids or their glycerides, as a result of the greater decompn. of the unsatd. portions as compared with the satd. From one linseed oil was isolated the very insol. cerotic acid, which caused turbidity in the unboiled oil. The lower the content of satd. acids in different linseed oils, the less turbid do the stand oils prepd. therefrom become. The glycerides which contain these satd. acids are somewhat less sol. in the stand oil than in the linseed oil and therefore sep. from the former at a somewhat higher temp. than in the unpolymerized material.

LOUISE KELLEY.

Train oil and its adulterants. S. Salm. *Allgem. Oel-u. Fett-Ztg.* 30, 385-7 (1933).—Several commercial mixts. labeled as "Kunsttran" or "Helltran" consist only of mineral oils mixed with not more than 10-20% of marine-animal oils.

B. C. A.

Recovery of palm oil in Sumatra and Java. Hans Junwirt. *Chem. App.* 20, 137-9 (1933).

M. C. R.

Possibilities in pecan oil. W. D. Sims. Texas Pecan Growers' Assoc., *Proc. 13th Ann. Meeting* 1933, 41-3.—For cooking purposes, pecan oil can be substituted for nearly all other cooking oils with comparable results; it clouds at a lower temp. than other cooking oils and has a lower smoking temp. than cottonseed oil. A yield of 40 lb. of oil was obtained from 140 lb. of native (Texas) pecans, crushed in the hull and extd. by the cold process.

K. D. JACOB.

The constituents of Menuke oil. I. Determination of the aliphatic acids. Sei-ichi Ueno and Masayoshi Iwai. *J. Soc. Chem. Ind., Japan* 37, Suppl. binding 52-3 (1934).—Phys. and chem. consts. of the oil and acids are given. The acids consist of about 12% satd. and 88% unsatd. acids. The following satd. acids were identified: myristic, palmitic and stearic acids, the palmitic acid amounting to about 70%. Unsatd. acids found were $C_{16}H_{30}O_2$ (probably zoomaric acid), mainly oleic acid, $C_{20}H_{38}O_2$ (gadoleic acid) and $C_{22}H_{42}O_2$ (probably cetoleic acid). Some more strongly unsatd. acids were also found, with 18, 20 and 22 C atoms. The acids of Menuke oil are characterized by the high contents of C_{20} and C_{22} acids of the oleic acid series, which are analogous to those of herring oil.

KARL KAMMERMEYER.

Polysulfonation and purification of oils. J. Abramovitch. *Tiba* 11, 803-11 (1933).—In order to obtain higher sulfonation products than can be obtained by direct treatment of oils by H_2SO_4 the oil may be chlorinated (oils having a high content of unsatd. acids are treated with Cl gas, preferably not above 30-40°, to obtain the dichlorinated acids; oils with a low unsatd. acid content are treated with $SOCl_2$ to obtain the acid chlorides, which are sepd. by distn. at about 125-30°), the chlorinated deriv. (or acid chloride) is sapond. with aq. NaOH to obtain the corresponding di- or tri-hydroxy acid, and the latter is treated with the theoretical amt. of 66° Bé. H_2SO_4 at not over 28-30°. A dry trihydroxy acid heated for about 3 hours at 125-50° thickened considerably, presumably because of formation of lactones and (or) lactides, and careful sulfonation of the cooled reaction product with $H_2SO_4.SO_3$ yielded a disulfonated tri- or tetrahydroxy alc. (this reaction was obtained once; but all subsequent attempts to repeat it were unsuccessful).

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