ABSTRACTS

Oils and Fats

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

Extraction of gossypol from cottonseed meal. Effect of moisture and repeated extraction with ether by different procedures. J. O. Halverson and F. H. Smith. *Ind. Eng. Chem., Anal. Ed.* 6, 356-7 (1934); cf. *C. A.* 27, 5206.—Further data are presented confirming the fact that there is no definite limit between the Et$_2$O-sol. and bound gossypol. Probably the most reliable and practical indication of the Et$_2$O-sol. gossypol content of cottonseed meal is obtained by extg. the meal contg. about 20% H$_2$O for 72 hrs. with Et$_2$O to which H$_2$O has been added in the receiving flask; however, further extn. under these conditions will probably yield a further slight amt. of gossypol.

A. PAPINEAU-COUTURE.

Determining the stability of fat emulsions. A. A. Pchelin and E. Z. Novik-Bam, *Tzentral. Nauch.-Issledovatel. Inst. Kozhevennoi Prom. Sbornik Rabot,* No. 4, 111-25 (1934).—In a glass-stoppered flask prep. 600 cc. of a 2% emulsion, shake for 5 min., transfer 500 cc. to a graduated cylinder provided with discharge cocks at each 100-cc. mark and let stand for 24 hrs. at 18-20°. Det. the fat contents of the original emulsion and of the 5 layers discharged separately from the graduated cylinder by heating with HC1 on a water bath to decompose the sulfonated products and soaps and then ext. with petr. ether. The av. fat content of the three lower layers expressed as percentage of the mean fat content of the entire emulsion is the numerical factor of the degree of the stability of the emulsion. Alizarin oil (pH = 5-6) gives stable emulsions. The stability of the emulsion of sulfonated train oil (pH = 4.2-5) decreases with the increase of the concentration. A mixture of alizarin oil and spindle oil gives an emulsion, the stability of which increases (pH = 6.9-7.0) with the increase of alizarin oil (from 10 to 40%). A mixt. of sulfonated train oil and spindle oil in general gives more stable emulsions than a similar mixt. with alizarin oil. The stability of a 5% emulsion of a mixt. contg. 50% spindle oil, 40% sulfonated train oil and 10% sulfonated petroleum increases with the increase in the pH. The stability of emulsions is not affected by temp. within 20-40°. A. A. B.

Different methods of determining and defining acetyl number. M. Th. Francois. *Ann. fals.* 27, 334-9 (1934).—From a discussion of the various definitions and methods of detg. the Ac no. of fats and oils a plea is made for the adoption of a single definition and method of detg. Ac no., and André's definition (no. of mg. of AcOH which can be fixed by 1 g. of lipide) and Delaby and Breugnot's method (*C. A.* 26, 4727) are proposed as being most suitable.

A. PAPINEAU-COUTURE.

The chemistry of ketone formation in fats. III. Behavior of fat acids at elevated temperatures. K. Täufel, H. Thaler and M. Martinez. *Margarine Ind.* 26, 37-9 (1933); *Chem. Zentr.* 1933, I, 4066; cf. *C. A.* 27, 479.—It can be shown by means of the salicylaldehyde reaction (cf. *C. A.* 26, 3394) that ketone formation takes place upon heating fat acids, the amt. at first increasing, then decreasing with long-continued heating. This decrease in the amt. of ketone present is probably due to a decompn. similar to that undergone by Me nonyl ketone in aq. or paraffin soln. The ketone reaction disappears completely with very long heating. Caprylic and lauric acids as well as many coconut fat acids contg. lauric acid undergo ketone formation more readily than palmitic, stearic and oleic acids. This behavior is parallel to that in the case of the Dakin decompn. as well as the case of ketone formation under the influence of microörganisms. The difference in the ease with which different fat acids undergo ketone formation is probably suitable for their analytical recognition. W. A. MOORE.

Ketone formation in purified fats. IV. H. Schmalfuss, H. Werner and A. Gehrke. *Margarine Ind.* 26, 3-4 (1933); *Chem. Zentr.* 1933, I, 4066-7; cf. *C. A.* 27, 3838.—It was shown that acids from propionic acid up, both satd., and unsatd., became ketonic through exposure to light just as glycerol does. Atm. O$_2$ favored ketone formation although the phenomenon also took place upon exposure to light in the absence of O$_2$ (investigations on lauric acid). *Ibid.* 87-9; *Chem. Zentr.* 1933, II, 1109-10.—The results of Täufel (cf. preceding abstr.) reporting the disappearance of ketonic properties after long heating of ketonic *lauric acid* and the destruction of *methyl nonyl ketone* by brief heating of its aq. soln. were checked, since they were not in agreement with data previously reported. Contrary to the findings of Täufel, lauric acid, which is ketonic at 110°, became more rather than less strongly so upon further heating. The claim that methyl nonyl ketone was destroyed at 110° was not substantiated. It is suggested that the tests used by Täufel for the ketone group were not reliable.

W. A. MOORE.

Various methods of extracting olive oil. Fosco Provvedi. *Industria chimica* 9. 1040-4 (1934).—A comparison of the yields and acidity of singly *vs.* doubly expressed oils. Double expression gives a better yield. The acidity of the oil is independent of the method of oil recovery, and depends only on the control exercised over harmful fermentation processes.

A. W. CONTIERI.

The behavior of natural and refined olive oils under the influence of filtered ultra-violet rays. D. Cortese. *Industria chimica* 9, 1048-56 (1934).—A no. of samples of olive oil, both domestic and imported, were compared. First-expressed, refined, extd., mixts., etc., were studied under the Wood light, and the absorption and fluorescence spectra compared with those of solns. of chlorophyll and of carotene. Conclusion: Examg. the fluorescence under the Wood light cannot distinguish natural from refined oil, as addn. of chlorophyll or carotene imparts to refined oils the fluorescence characteristic of expressed oils. A. W. CONTIERI.

Alcohol-extracted soy-bean oil. I. Changes due to heat treatment. Yuichi Shinozaki and Masanori Sato. *J. Soc. Chem. Ind., Japan* 37, Suppl. binding 372 (1934).—Heat treatments at 120° to 250° were carried out on alc.-extd., benzine-extd. and pressed oils. Benzine-extd. and pressed oils always show "breaking" phenomena above 180° due to the coagulation of impurities in the oil, while alc.-extd. oils become clearer and lighter on heating. The coagulated matter on analysis gave P = 2.18% and N = 1.03% (phosphatide). Alc.-extd. oils showed less heating loss than the others. Alc.-extd. oil can be decolorized by heating at about 200° without any preliminary treatments, such as alk. or acid washing. **II. Changes of properties and compositions by ultra-violet light.** T. Inaba, K. Kitagawa and M. Sato. *Ibid.* 372-4.—Alc.-extd. and benzine-extd., pressed oils, both crude and purified, were exposed to the ultra-violet light (Hg-quartz lamp) for 60 hrs. After 20 hrs.' exposure alc.-extd. and purified pressed oil were almost water-white, while it took 35 hrs. to decolorize crude pressed oil and benzine-extd. oil. Red color was bleached more easily than yellow. Sp. gr., relative viscosity and *n* increased with the duration of exposure, the gradient becoming sharp after 50 hrs. For the first 30 hrs. the acid values remained const. but became 4 to 15 times the original values after 60 hrs., reaching values of 4.5 to 5.5 irrespective of the differences in original values. The I nos. did not change for 15 hrs. for alc.-extd. and pure pressed oil, and for 30 hrs. for benzine-extd. and crude pressed oil. Beyond these crit. points they decreased gradually. Fifty hrs.' exposure produced a substance sol. in petroleum ether, reaching 10-16% after 60 hrs. After 55 hrs. water-insol. acids decreased by 2-5% and unsaponifiable matter increased 0.4%. The O$_2$ content of the oils increased 4-5% after 10 hrs. Both original and treated oils gave 6-7% wt. increase after 33 days. No identical absorption bands were observed in the spectrum of the original and exposed oils (0.1 g. in 100 cc. ether). In general, soy-bean oil after ultra-violet exposure became transparent to the visible range and opaque to the invisible ultra-violet range, alc.-extd. oil becoming the least transparent oil. **III. Effect of ultra-violet light in oxygen, hydrogen and nitrogen atmosphere.** *Ibid.* 374 — Alc.-extd., benzine-extd. and pressed oil were exposed to ultra-violet light for 100 hrs., gas passing at the rate of 1 l./hr. Exptl. data for I no. decrease and *n* increase are presented. The effect of ultra-violet light upon color was found to be influenced by the gaseous atm.

K. K.

Determination of melting point in the investigation of cacao butter and of fat from chocolate. Heinrich Fincke. *Bull. off. intern. fabricants chocolat cacao* 2, 327-32 (1932); *Chem. Zentr.* 1933, I, 1045.—In the detn. of m. p. of fat extd. from chocolate Et$_2$O, not petr. ether, should be used for the extn.; petr. ether does not dissolve the wax of illipé fat. In the examn. of cacao butter the flow points and the clear m. ps. of both the fat and the fat acids should be detd. The flow point of the crude fat acid (residue from detn. of R.-M. no.) is 16-19° higher than that of the fat; the clear m. p. is 16.5-20° higher. The clear m. p. of the fat should not be more than 1.5° higher than the flow point. E. H.

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