Abstracts

Oils and Fats

Edited by
M. M. PISKUR

SPOILAGE OF MARGARINE. III. THE INFLUENCE OF THE FAT MIXTURE. H. Schmalfuss & Helene Schmalfuss. *Fette u. Seifen, 47,* 1-3 (1940). Two fat mixts., one contg. large portions of palm kernel oil and coco fat and the other contg. neither of these fats were investigated. The mixts. contd. hardened whale oil. hardened soy bean oil and peanut oil. The mixt. without palm kernel or coco fat was less stable. Mixts. contg. no milk or salt were more stable than those with these ingredients. Milk reduces the stability of the mixts. most. Salt reduces stability, but addn. of both milk and salt does not have as deleterious effect as milk alone. This effect of milk and salt is greater than that produced by the difference in fat mixt.

WIJS IODINE NUMBERS FOR CONJUGATED DOUBLE BONDS. INFLUENCE OF SAMPLE-REAGENTS RATIO. W. C. Forbes and H. A. Neville. *Ind. & Eng. Chem. Anal. ed. 12,* 72-4 (1940). Iodine numbers obtained by the Wijs method for systems containing conjugated double bonds are strongly influenced by the excess amts. of reagent present. Data are presented to show this effect for the conjugated systems (1) 9, 11-linoleic acid, (2) tung oil, and (3) dehydrated castor oil. Contrasting data show that the excess of reagent is of relatively slight importance for the isolated systems 9, 12-linoleic acid and 9, 12, 15-linolenic acid and for raw castor oil. A procedure is suggested by which the ratio of volume of reagent to wt. of sample is kept constant in order to obtain comparable iodine numbers if conjugated double bonds are present.

DETERMINING HYDROCARBONS IN UNSAPONIFIABLE. J. Grossfeld. *Z. Untersuch. Lebensm. 78,* 273-85 (1939). It had been observed that petroleum ether quickly exts. the hydrocarbons from alcoholic soap solns., while the sterols are extd. less easily. This lead to the development of new characteristics for the unsaponifiable matter of fats. The weighed unsaponifiable matter of a fat, 5 g. of a fat acid, 20 cc 96% alc., and 3 cc KOH (sp. gr. 1.5) are refluxed 5 mins., cooled, 50 cc. petrol. ether (b. 60-70°) and 20 cc. of H_2O are added, and the charge stoppered and vigorously shaken. The residue from 25 cc. of solvent is detd. If palmitic acid was the fat acid used the characteristic is called "palmitate hydrocarbon value" (I) which equals 100 (50/25) (Wt. of residue/wt. of unsaponifiable). With use of oleic acid in the detn. the characteristic is called "oleate hydrocarbon value" (II). Results on detg. I and II, resp., on some compounds were: Paraffin 109, 107, sterols 26, 27, cetyl acl. 39, 43 and "Boeson trennwax" 7.7, 7.9. The values for paraffin and paraffin oil as well as those for cholesterol and phytosterol were practically alike. The relative amt. of sterols and hydrocarbons in mixtures can be calcd. with the use of this characteristic and the above data.

THE THERMO-STABILITY OF SOME FATS. E. Glimm, H. Wittmeyer, and W. Jahn-Held. *Z. Untersuch. Lebensm. 78,* 285-93 (1939). Data on hydrolysis of beef tallow, lard, coco fat, palm kernel fat, sesame oil, peanut oil, olive oil and trioleins at temps. between 60-120° for time intervals of 7 days is presented graphically. The degree of splitting by warming was independent of the original content of free fat acids but rose with increases in temp. and time of heating. No appreciable splitting occurred in beef tallow or lard at temps. up to 60°. With vegetable oils it was found that each showed a critical temp. at and above which an appreciable increase in splitting occurred in 3 days. These critical temps. were: Coco fat 100°, palm kernel oil 90°, olive oil 90°, peanut oil 80°, soybean oil 80° and sesame oil 75°.

THE WATER CONTENT OF VARIOUS ORGANS OF THE ALBINO RAT ON A HIGH CARBOHYDRATE AND A HIGH DIET. J. H. and G. Giddings. *Amer. J. Physiol. 128,* 537-43 (1940). The effect of prolonged feeding of a high carbohydrate and a high fat diet on the water content of the organs of the albino rat has been determined on both non-exercising and exercising animals. Neither the carbohydrate nor the fat diet had any effect on the hydration of the heart, lungs, gonads, and pituitary. Both diets had a dehydrating effect on the brain, spleen, and adrenals. The carbohydrate diet produced a slight increase in the water content of the muscle whereas the fat diet had a dehydrating effect on the liver, kidneys, thymus, and thyroid.

THE COMPARATIVE NUTRITIVE VALUE OF BUTTER FAT AND CERTAIN VEGETABLE OILS. E. J. Schantz et al. *J. Dairy Sci. 23,* 181-9 (1940). Rats on butter fat made better and more efficient gains during the first 2 or 3 wks. on the experiment than rats on the vegetable oils homogenized into skimmed milk. This growth-stimulating property of butter fat appeared to lie in the saponifiable fraction since feeding the non-saponifiable fraction along with corn oil or coconut oil did not give the same response as was obtained with butter fat. Rats raised on butter fat milk had a much better appearing coat of hair throughout the experiment than the rats raised on the vegetable oil milks. It appears that the kind of fat in the diet is important in the nutrition of the young growing animal.

PATENTS

EXTRACTING FISH OILS. Porton-Pew Fisheries Co. *Brit. 507,742.* Fish liver oils are extd. by buffering with aq. alkaline buffers to a pH of 8.5 to 12.5 to liquify the solid material and thereafter separate the oil.

PROCESS OF SPLITTING GLYCERIDES AND RECOVERING GLYCERIN. B. H. Thurman (to Refining, Inc.). *U. S. 2,190,616.* An app. and method for continuously splitting fats by autoclaving with water is described.

PROCESS OF REFINING ANIMAL AND VEGETABLE OILS. B. Clayton (to Refining, Inc.). *U. S. 2,190,593-5.* App. are described for continuous systems in which after injection and treatment with refining agent the mixt. is subject to dehydration and thereafter rehydrated and subjected to a separation process.

METHOD OF REFINING GLYCERIDE-TYPE OILS. B. Clayton (to Refining, Inc.). *U.S. 2,190,588-9.* Lower alcs. are used as de-emulsifying agent in the process.

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PROCESS OF REFINING GLYCERIDE OILS. B. Clayton (to Refining, Inc.). *U. S. 2,190,590.* Agent for reducing sapon. of neutral fats and a de-emulsification agent are used in the continuous refining process.

ADSORBENT MATERIAL FOR TREATING OILS AND SLUDGES. H. R. Kraybill et al. *U. S. 2,174,177.* An adsorbent material for removing phosphatides, mucilages, sterols, pigments and associated substances from vegetable oils and vegetable oils sludges is obtained by mixing aq. Na silicate soln. with aq. soln. of acid Al salts to form gelatinous ppt., let stand, filtering excess water, and drying.

BODYING TUNG OIL. L. H. Hilles (to Vellumoid Co.). *U. S. 2,172,974.* The method comprises heating to approx. 540°F and before gelation occurs cooling the oil to below 350°F, the process being conducted in absence of resin.

POLYGLYCOL ESTERS OF FAT ACIDS. Lever Bros. *Ger. 679,971.* Aq. solns. of Na_2SO_4 are used to wash out the excess glycerin.

THE MANUFACTURE OF MODIFIED, HEAT-BODIED OIL PRODUCTS. L. Auer (to J. Randolph Newman). *U. S. 2,189,772.* Na oxalate is incorporated in the oil, it is heated to between 300 and 350°C until it thickens; then it is cooled.

THICKENING OF SOLUTIONS. M. B. Katzman and F. J. Cahn (to Emulsol Corp.). *U. S. 2,189,803.* Emulsifiers are thickened by addns. of inorganic salts of alkalo amines.

ANTIOXIDANT. D. Craig (to B. F. Goodrich Co.). *U. S. 2,189,417.* Deterioration of rubber and oxidation of fats and oils is retarded by treatment with metallic salts of aminophenols.

PRODUCTION OF GLYCERIN BY FERMENTATION. H. Haehn. *U. S. 2,189,793.* The fermentation mixt. is aerated to provide for energetic respiration of the yeast.

LUBRICANT. M. W. Freeman. *U. S. 2,189,788.* Fat acid amines of b.p. not less than 45.3°F are incorporated in lubricants to prevent corrosion.

GREASE AND METHOD OF MAKING THE SAME. S. E. Jolly and W. M. McKee (to Sun Oil Co.). *U. S. 2,188,863-4.* The greases contain fat acid soaps.

Abstracts

Soaps

Edited by M. L. SHEELY

TALL OIL SOAPS. *Soap 16,* No. 3, 59 (1940). In Finland, an important producer of tall oil, soap is prepared by saponification of the tall oil with caustic soda solution of 35° Be. Tall oil soap has good foaming action and excellent emulsifying power. Heavy soil containing mineral oil, tar and soot is readily removed with tall oil soap. It is therefore useful in garages, machine shops, printing shops, etc. for the cleaning of floors, since it has a more efficient cleansing action than the usual paste soaps. Potash soap made with 8 parts of caustic potash, 10 parts of water and 20 parts of tall oil, is particularly suitable for incorporation in polishing materials.

SOAP MICELLES. Joachim Stauff. *Kelloid Z. 89,* 224-33 (1939). A study of x-ray absorption of various soap solutions shows that at concentrations of 0.1 normal sodium tetradecyl sulfate solution, and 0.2-0.25 normal sodium laurate solution, large colloidal particles or large micelles correspond to that of liquid crystals, showing that the micelle consists of a system of soap-water. The water molecules are arranged between the polar groups of the soap molecules, as shown by x-ray investigations. These results bridge over the contradictions between the results and theories of Hartley on the one hand and McBain, Thiessen and others on the other hand. The formation of large micelles explains the minima in the conductivity curves of soap solutions, was well as their osmotic properties. (Soap)

ASBESTOS FLOATS FOR ABRASIVE SOAPS. *American Perfumer 40,* No. 2, 58 (1940). The use of asbestos "floats," 150-200 mesh, for special abrasive soaps intended for cleansing domestic utensils, appears to be worthy of some consideration. The asbestos has a smooth abrasive action and can be incorporated easily in the soap. It is said by one manufacturer to be used best in conjunction with feldspar. The only danger seems to lie in the fact that asbestos sometimes may contain traces of iron oxide which is liable to cause discoloration of the soap. Only chrysalite is suitable for use; the blue asbestos, besides causing the soap to be rather mottled, contains a relatively high percentage of iron.

A BRITISH SYNTHETIC DRYING OIL. *Oil and Trades 97,* 188 (1940). Under the name of "Doboline," Cray Valley Products, Ltd., St. Mary Cray, Orpington, Kent, are now offering a new synthetic drying oil.

In describing the oil they refer to the work of Schieber and others, and state that, accepting the arguments put forward as a foundation stone, after concentrated research, they have produced a fatty acid possessing the essential structure, namely, 9, 11-octadecadienoic acid. Esterifying this product with glycerol resulted in the formation of the drying oil, which they have called "Doboline."

The oil is said to equal tung oil in regard to resistance to water, alkali and acid. It retains its flexibility after prolonged exposure, and does not yellow. It may be blended with the usual varnish oils, resins, solvents and driers.

SILICATES IN DETERGENT PROCESSES. *Chemical Industries 46,* 2, 243 (1940). McBain and Woo published an article in Kolloid Zeitschrift on detergent action. The senior author has made many contributions to the understanding of soap systems as colloids but now he brings forward evidence that between colloid systems there are stable equilibria which may be reached from either direction. Starting with a