ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR and RUTH LINDAHL

Aged fats in living organisms. H. Schmalfuss, H. Werner and A. Gehrke. *Hippokrates* 7, 1183-5 (1936); Chem. Zentr. *1937, I,* 1181. In no fats obtained from plants or animals so far investigated have aldehydes been found; ketones were found in traces only in linseed oil and in oil from the liver and roe of carp. The possibility of the aging of the fats *in vivo,* which could not be decided from these expts., is discussed. (*Chem. Abs.*)

The determination of unsaponifiable matter in whale oil by the draft method of the Norwegian standards association. E. R. Bolton and K. A. Williams. *Analyst* **63**, 652-4 (1938). The most important difference between the Norwegian standard method and the English Soc. of Pub. Anal. method lies in: (1) extn. from much more concd. soap soln. and (2) a double saponification. The methods were compared. The results indicated that only about 60% of the unsaponifiable was extd. by the Norwegian method.

Preparations of castor-oil-like product from soybean oil. Ryohei Oda. *J. Soc. Chem. Ind., Japan* **41**, Suppl. binding 195-6 (1938). The method consisted in adding 50 g. of soybean oil to 200 cc. of glacial acetic acid followed by 5-15 g. of 30% H_2O_2 and then agitating under a reflux condenser for 1 hr. and driving off the acetic acid under reduced pressure. The results for 15, 7.5 and 5 g. H_2O_2, resp. were: I no. 51.3, 72.6, —; acid no. 8.60, 6.89, 4.75; sapon. no. 246.3, 236.8, 227.5; Ac no. 88.2, 90.2, 50.5. The increase in sapon. no. over the original oil is probably due to the fact that some AcOH is combined as esters in the newly formed hydroxyl groups. The results in the case of the 7.5 g. H_2O_2 indicated an Ac no. of 54.19 for the combined acetic acid and an Ac no. of 78.22 in the case of the 15 g. H_2O_2 test. The product was very viscous. The same test was made with fish and castor oil. (*Chem. Abs.*)

Synthesis of glycerides with the aid of trityl-compounds and the applications of this new process. P. E. Verkade. *Fette u. Seifen* **45**, 457-65 (1938) The use of "tritylchloride," triphenylchloromethane, in the synthesis of glycerides is reviewed under the subject headings; mono-acid diglycerides, di-acid diglycerides, tri-acid glycerides, glycerol phosphatides, monoglycerides, polyhydroxyl compds. with primary and secondary OH groups and deacylizing of acyltritylglycerols.

The migration of fat reserves in the fasting mouse and the speed of mobilization of the fixed fat acids. L. Chevillard, F. Hamon and Andre Mayer. *Ann. physiol. physicochim. biol.* **13**, 533-8 (1937). At a certain period during fasting the animal utilizes fats almost exclusively. At this point the intensity of the respiratory metabolism may be an indication of the speed of removal of fat from the liver. If the fat content of the liver remains const., the speed of fat removal is equal to the speed of fat deposition. (*Chem. Abs.*)

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Apparatus for the continuous extraction of oils from oily materials. P. L. Fauth and J. Reichert. (Ges. Verwertung Fauth'scher Pat. m.b.H.). Ger. 659,575 Cl. 23a 2. The charge is passed over a series of swinging or vibrating sieves which are sprayed with solvent. The app. also includes means of recirculating solvent and filter for solvent. The swinging or vibrating motion and the pitch of the sieves cause the forward motion of the charge.

Fish liver oil. A. Thorsteinsson. Brit. 486,277. Oil is removed from fish livers by boiling the liver with caustic to dissolve the proteins, cooling, removing the upper layer of oil and water emulsion and separating the oil therefrom.

Continuous refining of fats and oils. Akt. Bol. Separator. Brit. 485,975. The continuous method depends on proportional mixers for alkali and water for washing and upon centrifuging.

Refining fats and oils. W. H. Irwin (to Indus. Pats. Corp.). Brit. 484,689. Moisture is removed from oils and fats by treating them with calcined gypsum.

Stabilizing shortening. Indus. Pats. Corp. Brit. 484,477. Small quantities of certain hydroxy aliphatic monobasic acids are used as antioxidants for shortening and lard.

High molecular aldehydes. O. Schmidt, K. Huttner and G. Kab. (to I. G. Farbenind.). Ger. 660,735 Cl. 12o 7.03. High mol. wt. aldehydes are prepd. from fat acid by passing the fat acids with formic acid at 40 to 60 mm. Hg. pressure and at a high temp. over a catalyzer. The catalyzer is prepd. by subjecting a mixt. of pumice and $MnCO_3$ to reduction with methanol vapors at 350°.

Thiocyano fatty acid esters. A. K. Epstein and B. R. Harris. U. S. 2,123,186. The prepn. of thiocyano-acetate of aliphatic alcs. wherein the H of one OH group of the polyhydric alc. is substituted by a higher mol. wt. aliphatic radical of the group consisting of alkyl and acyl radicals is described.

Glycerin. Norddeutsche Hefe-industrie A.-G. Ger. 664,575 Cl. 6b Gr. 16/02. A soln. contg. 200 g. sugar, 50 g. NaCl, 20 g. $NaHCO_3$, 1 g. $(NH_4)_2SO_4$ per L. is treated with 10 g. yeast and fermented at 37°. The yield is about 25% glycerine; whereas without salt it is considerably less.

Glycerin. Henkel & Cie. Ger. 664,576 Cl. 6b Gr. 3. In the manuf. of glycerin by fermentation the fermented mass is dried and the glycerine is extd. with org. solvents.

ABSTRACTS

Soaps

Edited by M. L. SHEELY

Solid soap products under the microscope. *Industrial Chemist and Chem. Manuf.*, **1938**, 348. Most soaps are built up of anisotropic material and yield good photomicrographs. For the examination of solid commercial soaps the sections are cut by means of a simple microtome, mounted in liquid paraffin and examined between crossed and parallel nicols. A magnification of 60 diameters is recommended; soaps seldom yield sections of a thinness permitting good examination at magnifications above 100 diameters. "Fluid crystals" (often showing strong polarization colours) and "soap fibres" are very prominent and control many of the factors which govern the appearance of the soap. Soap fibres may appear as irregular tangled masses, or oriented into rope-like masses, radial crystals, or in other ways; fibres oriented in simple parallel fashion show strong double refraction. At temperatures of 60° to 90° C. the fibres visible by ordinary light will gradually fade out and the sections become transparent. For studying the behaviour and properties of the soap at temperatures approximating to those of the soap pan, an electric hot stage must be fitted to the microscope. The structure of filled soaps varies widely with the proportion of silicate present. With heavy filling the outstanding internal structure is one of numerous spherical crystalline globules in various states of aggregation, presumably cemented together by a mixture of soap fibre and silicate. A number of photomicrographs are reproduced in J. Soc. Chem. Ind., *42*, 393r (1923).

Fitting soap. J. S. Sulka. *Indian Soap J.* **4**, 290 (1938). With off-grade tallows, a coarser fit is more advantageous than a fine one. In winter, when the settling time is shorter than that allowed in summer, a coarser fit is of much help. A certain amount of free caustic is essential to keep the soap in a more fluid condition so as to be easily taken out in the frames. With a medium fine fit, the soap should have a clear tendency to flake, leaving the trowel dry here and there. The more the tendency to flake and the shorter the size of the flakes, the greater is the percentage of free alkali remaining behind in the dried chips. (*Soap.*)

Static electricity in dry-cleaning processes. L. Hartshorn and W. H. Ward. *J. Soc. Chem. Ind.* **57**, 182 (1938).

(1) The generation of static electric charges by the rubbing of fabrics in dry-cleaning processes is dependent almost entirely on the conductivities of the liquid employed, the fabric, and the atmosphere.

(2) The conductivity of the liquids may be increased by the addition of an adequate amount of a soluble soap which contains water.

(3) Fabrics remove the water from the liquid and thereby lower its conductivity. Fresh soap should therefore be added at intervals. Also the fabrics should not be dried before cleaning, otherwise it will be necessary to use more soap.

(4) The conductivity of the cleaning bath should have a value not less than 10×10^{-12} mho per cm., i.e., specific resistance less than 100,000 megohm cm.

(5) A high atmospheric humidity tends to prevent the generation of charges. The hot air used for the evaporation of the solvent should therefore preferably be moist.

Fatty acids from paraffins. *Chem. Industries* **43**, 288 (1938). Between 1928 and 1930 several forms of synthetic fatty acids made at the I. G. Plant at Oppau were supplied to the larger German soap works and found suitable for the production of ordinary grades of soap. In 1931 the I. G., in cooperation with Standard Oil of New Jersey, erected in Baton Rouge, Louisiana, a plant with a daily capacity of 3 tons of fatty acid, using mineral paraffin as raw material.

The paraffin is oxidized in the liquid phase at a temperature between 80° and 170°. All the available evidence points to the oxidation products being practically wholly straight chain materials. The attack of the oxygen consequently seems to be mainly of tertiary carbon atom. The fatty acids formed are on the average of shorter chain length than the original paraffin and the fact that the fatty acids are mixtures of products of varying chain lengths indicates that any one of the CH_2 groups in the molecule may be the one chosen for oxidation. In addition to the true fatty acids, oxy-acids are invariably produced.

PATENTS

Putty. Storry, Witty & Co., Ltd., and Geo. F. Holdcroft. Brit. 481,332, March 9, 1938. To putty consisting of whiting and linseed oil, a fatty acid is added and then, shortly before use, an oxide of a bi- or multi-valent metal that is capable of forming a soap with the fatty acid; the oil is thus prevented from exuding. An oxidizing agent may also be added to accelerate hardening. (*Chem. Abs.*)

Wetting and cleansing agents. Procter & Gamble Company of Cincinnati. Brit. Pat. 489,097. (1) The lathering property of the commercial alkyl sulphate detergent is improved when the content of unsulphated alcohol is adjusted to a suitable amount; (2) the detergent property is likewise improved as in (1); (3) there is in most cases an optimum figure for the use of each alcohol, which is usually different for the lathering and detergent properties, respectively; (4) there is in most cases a maximum amount for each alcohol beyond which improved results in either lathering or detergency are not obtained; (5) the C_{10} and C_{12} alcohols are the most efficient but the C_8 alcohol can be used in the highest percentages without harmful effect; (6) from a practical standpoint, the effect of C_{10} and C_{12} alcohols is of particular interest and importance because these alcohols are readily obtainable in large quantities from coconut oil and similar oils by reduction or otherwise. (*Perfumery and Essential Oil Record.*)

Saponifying oils and fats. Lorenz Patents Corp. French 828,022, May 9, 1938. Anhyd. soap and glycerol are obtained by spraying a fatty oil or fat and a caustic alkali soln. into a current of superheated steam which flows continuously through a reaction chamber. Steam at a temp. of 250-300° is preferred. The glycerol is recovered by condensation, and the soap is withdrawn from the reaction chamber. Soap compns. may be obtained by introducing appropriate substances, e.g., borax, Na_3PO_4 or soda, into the chamber. App. is described. (*Chem. Abs.*)

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Soaps

Edited by **M. L. SHEELY**

Cleansing article. George W. Brooks, LaGrange, Ill., assignor to The S.O.S. Co. U. S. 2,125,099, July 26, 1938. A combined metal wool and soap cleaning pad comprising a body of metal wool with soap distributed throughout its extent in two distinct portions, one portion entirely inclosing and surrounding the other portion to provide an inner and an outer portion, most of the soap in each portion being in the form of coatings about substantially all of the fibres of the metal wool and providing voids among the coated fibres, the soap coatings of the inner portion being of such different character from the soap coatings of the outer portion as to provide an inner soap distribution having a slower rate of dissolving and hence forming a reserve soap supply for the outer portion of the pad.

Wetting and other agents. Serge Z. Perlmuteer. French 826,299, March 28, 1938. Compds. are used resulting from the esterification of an amino alc. with fatty acids, which are condensed with a mono- or polycyclic compd. substituted in the ring and having at least 2 SO_3H groups, and the complex thus formed being subsequently sulfonated. Thus, a mixt. of palm, olive and spermaceti oil is esterified with monoethanolamine and caused to react with a mixt. of cresolmonosulfonic and naphthalenedisulfonic acid, and the compd. obtained is sulfonated. (*Chem. Abs.*)

Soap and glycerol. Robert A. Duncan (to Procter & Gamble Co.). U. S. 2,126,099, Aug. 9. In connection with the production of molten anhyd. soap by distn. of water and glycerol from a highly heated soap, an operation is employed involving cooling the soap from an anhyd. molten condition at a high temp. to an anhyd. condition at a high temp. to an anhyd. condition at a lower temp., which comprises continuously mixing a flowing current of anhyd. molten soap with a flowing current of liquid water and discharging the soap and water mixture into an atm. having a pressure sufficiently below the original pressure of the mixt. to cause volatilization of the water with absorption of heat from the mixt., the amt. of added water being adjusted with relation to the total heat of the mixt. and the reduced atm. pressure into which it is to be discharged so that the heat absorbed from the mixt. by volatilization of the water at the reduced pressure will cool the soap and leave substantially no water unvolatilized. (*Chem. Abs.*)

Detergents. F. W. Muncie (Colgate-Palmolive-Peet Co.). U. S. 2,130,361-2. The process for manuf. and the use of sulfates of monoglycerides as detergents is described.

Wetting agent. H. Bertsch (Bohme Fett-Chemie G.m.b.H.). Ger. 659,528 Cl. 8o. Example: 400 kg. castor oil fat acids are mixed with 100 kg. BuOH and this is treated at 10° C. or less, with 650 kg. concd. H_2SO_4. The reaction product is treated with ice and washed with Na_2SO_4 soln. and the excess H_2SO_4 is removed.

High sulfonated fatty acids. Bohme Fett-Chem. G.m.b.H. Ger. 664,387 Cl. 120 Gr. 23/02. About 200% con. H_2SO_4 as based on the fat acids is used at 0° in the presence of a solvent for sulfonating.

Wetting, cleansing and emulsifying agent. F. Gunther. U. S. 2,130, 668. The products comprise a naphthalene sulfonic acid substituted by an alkyl group and a substantial proportion up to equiv. amts. of an org. N contg.-base selected from the group consisting of aliphatic amine and monocyclic pyridine bases.

Treatment of mixtures of fatty oils and soaps. Aktiebolaget Separator. French 827,903, May 6, 1938. Particulars are given of a method of sepg. mixts. of fatty oils and soaps, produced by neutralizing free acids in fatty oils with aq. caustic alkali. The mixts. are treated with salt in a proportion sufficient to raise the sp. gr. of the aq. phase to a value between 1.058 and 1.2, and are then treated in a high-speed centrifuge having 3 discharge apertures to recover soap paste, neutral oil and salt soln. (*Chem. Abs.*)

Soap. Friedrich Schmocker. Swiss 193,628, Jan. 17, 1938 (Cl. 38e). A superfatting agent for making toilet soap is prepd. by mixing a hydrogenated fatty acid with an unsaponifiable emulgator and stabilizing and preserving agents. Buffer salts may also be present. Thus, hydrogenated castor oil fatty acid is mixed with an emulgator such as cetyl alc., cholesterol, etc., a preserving or anti-rancidity agent such as triethanolamine, diphenylguanidine, etc., a reducing agent such as Na_2SO_3 and optionally, a disinfectant or perfume. (*Chem. Abs.*)

Solid or semi-solid compositions containing glycerol or like substance. Gustav Snock. French 827,095, Apr. 15, 1938. Glycerol, glycols and like substances are mixed with a higher aliphatic alc., e.g., cetyl or myristyl alc., and preferably with a soap substitute not having an alk. reaction, e.g., a salt of a sulfuric ester of a higher aliphatic alc. Solid or semisolid compns. useful as lubricants or cosmetics are obtained, and may be mixed with other appropriate substances. An example is given. (*Chem. Abs.*)

Detergent and method of preparation. Fred Weaver Muncie (to Colgate-Palmolive-Peet Co.). U. S. 2,130,362, Sept. 20, 1938. Claim 1. In a process of forming a composition of matter including a substantial proportion of a salt of a sulphuric acid ester of a monoglyceride, the steps that comprise reacting a monoglyceride with fuming sulphuric acid of such strength and quantity as will react therewith and leave an excess of sulphuric acid in the mixture, which excess will, after the completion of the reaction, have a concentration of not less than about 99.3% sulphuric acid, and thereafter neutralizing the mixture.