Abstracts

Oils and Fats

Edited by
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OXIDATIVE RANCIDITY IN EDIBLE FATS. L. R. Bryant. *Food in Can. 4,* No. 17 (1944).

THE CAUSES, CURES AND METHOD OF PREVENTING RANCIDITY. C. H. Castell. *Food in Can. 3,* No. 10, 11; No. 11, 11; No. 12; 10 (1943).

LIPOLYSIS AND FAT ABSORPTION. A. C. Frazer. *J. Physiol. 102,* 329 (1943).

DIFFERENTIATION IN THE ABSORPTION OF OLIVE OIL AND OLEIC ACID IN THE RAT. A. C. Frazer. *J. Physiol. 102,* 306 (1943).

RANCIDIFICATION OF LARD. Lauge Lauridsen. *Kem. Maanedsblad 23,* 117-28 (1942). The Greenbank and Holm method of evaluating deterioration by means of peroxide value was modified. The "rancidification no." (R no.) was defined as the no. of days necessary for 50 cc. of fat in an Erlenmeyer flask at 50° and in the absence of light to develop a peroxide value of 3. The R no. of lard decreases faster at high temps., it is independent of the freshness of the raw material and the pressure and temp. of rendering. *(Chem. Abs.)*

THE NEUTRAL RED FAT TEST AS A TEST FOR LARD AND BACON FOR THE BEGINNING AND THE COURSE OF RANCIDITY. F. Schönberg. *Z. Fleisch- u. Milchhyg. 53,* 61-2 (1943). The reagent is a freshly prepd. neutral red soln., 1:10,000, in tap water of pH 7.0-7.2. It has a yellowish-red color. The soln. is poured over a sample of fat the size of a hazelnut. Unobjectionable lard becomes greenish-yellow, old but still edible lard turns yellow to yellowish-brown; incipient rancid samples become yellowish brown to reddish and a rancid sample turns red to reddish-violet. Under ultraviolet the colors are, resp., yellow to greenish-yellow, yellowish-brown, reddish-orange and red to red-violet fluorescence. Tests can also be made on melted fats. *(Chem. Abs.)*

OIL DECOLORIZING. John P. Harris. *Soap 20,* No. 5, 31-2, 70 (1944). The process of decolorizing various fats and oils by treatment with active C is described.

REPORT OF AM. CHEM. SOC. COMMITTEES. ANALYSIS OF COMMERCIAL FATS AND OILS. V. C. Mehlenbacher *et al. Chem. Eng. News 22,* 606-8 (1944). In the Am. Chem. Soc. standard (SCN) no. detn. the reagent should be increased from 100-150 to 150-200%. New constants for calcns. of compn. of oils were recommended. These are based on av. values reported by various investigators. Work on the Halphen test for presence of cottonseed oil indicated that the test was principally qual. though roughly quant. Data developed in collaborative work on the Swift stability test for fats were presented.

UNSATURATED SYNTHETIC GLYCERIDES. VI. POLYMORPHISM OF SYMMETRICAL MONOOLEYL-DISATURATED TRIGLYCERIDES. B. F. Daubert and T. H. Clarke. *J. Am. Chem. Soc. 66,* 690-1 (1944). Transition point data for the polymorphic forms of a series of symmetrical monoöleyl-disatd. triglycerides obtained from cooling and warming curves are reported.

UNSATURATED SYNTHETIC GLYCERIDES. VII. PREPARATION AND PROPERTIES OF SYNTHETIC L-MONOGLYCERIDES AND SIMPLE TRIGLYCERIDES OF LINOLEIC AND LINOLENIC ACIDS. B. F. Daubert and A. R. Baldwin. *J. Am. Chem. Soc. 66,* 997-1000 (1944). Phys. and chem. data are reported for 2 new synthetic glycerides, 1-monolinolenin and trilinolenin.

THE MIXED UNSATURATED GLYCERIDES OF LIQUID FATS. V. LOW-TEMPERATURE CRYSTALLIZATION OF ICELANDIC HERRING OIL. O. B. Bjarnason and M. L. Meara. *J. Soc. Chem. Industry 63,* 61-3 (1944).

A MICROSCOPIC STUDY OF THE BEHAVIOR OF FATS IN CAKE BATTERS. G. T. Carlin. *Cereal Chem. 21,* 189-99 (1944).

THE ROLE OF THE FAT SOLUBLE VITAMINS A AND D IN NUTRITION (continued). J. Buckstein. *Am. J. Digestive Dis. 11,* 190-5 (1944).

FATS IN HUMAN NUTRITION. H. E. Longenecker. *J. Am. Dietetic Assoc. 20,* 83-5 (1944).

ASSOCIATIVE DYNAMIC EFFECTS OF PROTEIN, CARBOHYDRATE AND FAT. E. B. Forbes and R. W. Swift. *Science 99,* 476-8 (1944).

CHOLINE AND THE PREVENTION OF HEMORRHAGIC KIDNEYS IN THE RAT. II. PHOSPHOLIPID TURNOVER DETERMINED WITH RADIOACTIVE PHOSPHORUS. J. M. Patterson, N. B. Keevil and E. W. McHenry. *J. Biol. Chem. 153,* 489-93 (1944). The results of a previous study, that choline deficiency causes a diminished concn. of phospholipid in the livers and kidneys of young rats in which kidney damage is produced by the dietary regime, have been confirmed. These results support the hypothesis that the kidney damage is consequent to an inadequate supply of phospholipid.

METABOLISM OF PHOSPHORYLCHOLINE. II. PARTITION OF PHOSPHORYLCHOLINE PHOSPHORUS BETWEEN BLOOD PHOSPHATE FRACTIONS. III. PARTITION OF PHOSPHORYLCHOLINE PHOSPHORUS BETWEEN TISSUES. IV. DISTRIBUTION OF PHOSPHORYLCHOLINE PHOSPHORUS IN TISSUE LIPIDS. R. F. Riley, *J. Biol. Chem. 153,* 535-49 (1944).

THE EFFECT OF DIETARY CHOLINE UPON THE RATE OF TURNOVER OF PHOSPHATIDE CHOLINE. G. E. Boxer and D. Stetten. *J. Biol. Chem. 153,* 617-25 (1944). When choline was fed, the half life of phosphatide choline was about 6 days, and the daily replacements of choline in the phosphatides, 3.9 mg. per rat. When no choline was fed, while the rats were developing severe fatty livers, the half life of choline increased to 18 days, and the daily replacement decreased to 1.3 mg. The effect of choline deprivation has been markedly to retard the rate of incorporation of new choline into the phosphatides of the body without altering the quantity of choline in the phosphatides.

THE MECHANISM OF FATTY ACID OXIDATION. S. Weinhouse, G. Medes and N. F. Floyd. *J. Biol. Chem. 153,* 689-90 (1944). The breakdown of a typical fatty acid (e.g. *n*-octanoic) labeled by the incorporation of C^{13} in the carboxyl group was studied. The results clearly indicate that at least in the liver the oxidation of fatty acid proceeds by a mechanism involving splitting into 2-C fragments followed by condensation to the ketone bodies.

THE ROLE OF THIAMINE IN THE SYNTHESIS OF FATTY ACIDS FROM CARBOHYDRATE PRECURSORS. G. E. Boxer and D. Stetten. *J. Biol. Chem. 153,* 607-16 (1944). The findings indicate that the decrease in fat content in rats on thiamine-deficient diets results from failure

of synthesis and deposition of fat acids, and that this failure is attributable chiefly to the diminished food intake rather than to any specific action of thiamine. The satd. fat acids were found to be consistently richer in deuterium than the singly unsatd. fat acids. This fact was taken to support the belief that the satd. acids are the primary products of fat acid synthesis in rats, and that oleic and palmitoleic acids are formed from these by secondary dehydrogenation.

FAT AND CALCIUM METABOLISM. 4. THE INFLUENCE OF BUTTER AND MARGARINE UPON THE CA METABOLISM OF FULL-GROWN RATS. A. Westerlund. *Lantbruks-Högsk. Ann. 10,* 74-108 (1942). The Ca balance of two groups of rats, one receiving butter in the ration, the other margarine, was measured in terms of faecal Ca loss, and the effects of the butter and margarine were shown to be equal when the simple arithmetical means of the exptl. data were compared. By statistical treatment of the data, however, a significant difference was brought to light, a higher excretion of Ca occurring in the rats fed on margarine than in the group which received butter. This occurred, however, only under conditions of a negative or near negative Ca balance and when the margarine intake exceeded 2 g. daily for each ⅓ kg. of body wt. *(Nutr. Abs. and Revs.)*

DERMATITIS FROM CUTTING OILS, SOLVENTS AND DIELECTRICS, INCLUDING CHLORACNE. S. M. Peck. *J. Am. Med. Assoc. 125,* 190-6 (1944).

PRODUCTION OF RESINS FROM MONOGLYCERIDES. A. A. Blagonravova and V. M. Kobetskaya. *Byull. Obmen Opytom Lakokrasochnoi Prom. No. 9,* 12-13 (1940). Poor alkyd bases were obtained by condensation of monoglycerides of plant oils with alkyd resins (acid no. 260) and rosin-maleic condensates. Lacquers from the 1st of these bases dried at room temp. in 24 hrs.; those from the 2nd, in 72 hrs. The water resistance of lacquers from resins obtained from monoglycerides and alkyds can be increased by treating them with rosin. *(Chem. Abs.)*

PATENTS

VITAMIN PREPARATION AND METHOD OF MAKING SAME. H. F. Taylor (The Atlantic Coast Fisheries Company). *U. S. 2,348,503.*

COMPOSITION OF MATTER AND PREPARATION AND PROCESS OF PRODUCING THE SAME. Ilona Taussky. *U. S. 2,350,082.* The new shortening contains at least one emulsifier selected from the group consisting of unhardened jojoba nut alc., elaidinated jojoba nut alc. and hydrogenated jojoba nut alc.

RECOVERY OF TOCOPHEROL. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,269.* The oils are subjected to vacuum deodorization with an inert gas; a lighter-than-water mixt. removed from the oil contains the tocopherols, which are subsequently further concd.

PURIFICATION OF SLUDGES, SCUMS AND THE LIKE TO PREPARE RELATIVELY PURIFIED TOCOPHEROL. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,270.* The scum derived from deodorization of oils is sapond. and the tocopherols are extd. with solvents.

PRODUCTION OF TOCOPHEROL OR VITAMIN E. J. G. Baxter (Distillation Products, Inc.). *U. S. 2,349,271.* Tocopherol in deodorization scum is converted to an amine ester and extd.

TOCOPHEROL PREPARATION. K. C. D. Hickman and N. H. Kuhrt (Distillation Products, Inc.). *U. S. 2,349,272.* In a process for purifying the tocopherol contained in a lighter-than-water scum condensed from the steam utilized for the vacuum-steam deodorization treatment of a vegetable or animal oil, a step comprises subjecting the scum to the action of a purifying and concg. agent while in the presence of Zn dust and an acid.

PROCESS FOR PREPARING TOCOPHEROLS AND NEW TOCOPHEROL DERIVATIVES. J. G. Baxter and C. D. Robeson (Distillation Products, Inc.). *U. S. 2,349,273.* The fat acid esters are prepd. to render the tocopherols more stable.

ANTIOXIDANT. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,274.* Special tocopherol concentrates are used.

SEPARATION OF TOCOPHEROL FROM SCUM WITH SOLVENTS. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,275.*

PREPARATION OF TOCOPHEROL PRODUCTS. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,276.*

PREPARATION OF STABILIZED EDIBLE SUBSTANCES. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,277.*

PREPARATION OF TOCOPHEROL-CONTAINING MATERIALS AND PRODUCTS. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,278.*

TOCOPHEROL CONCENTRATES. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,349,590, 2,349,789.* The product is the deodorizing scum collected on vacuum deodorization of oils.

PROCESS AND APPARATUS FOR TREATING FATTY MATERIAL. H. O. Renner (J. R. Short Milling Co.). *U. S. 2,349,377-8.* The fats are treated with halogen, the halogen is removed and the fat is treated with enzyme material. The process is said to prevent development of undesirable odors and flavors.

PROCESS OF TREATING SOYBEAN OIL. H. D. Royce (Southern Cotton Oil Co.). *U. S. 2,349,381.* The method of stabilizing soybean oil against flavor reversion comprises the step of heating the oil at a temp. between 240° and 300°, out of contact with the air and in the presence of finely divided particles of metal selected from the group consisting of Zn, Mg and Sn for a period of between 10 and 130 min.

VEGETABLE OIL. W. W. Ginn (Vejin, Inc.). *U. S. 2,349,546.* The method of making a varnish comprises cooking sardine oil in the presence of approx. ⅛ of 1% to 2½% of castor oil at a temp. of approx. 575° F. until the oil has attained the desired body.

PROCESS OF FORMING ALCOHOLS. A. S. Richardson and J. E. Taylor (Procter and Gamble Co.). *U. S. 2,340,687.* The process of forming fatty alcs. comprises subjecting to reaction with H_2 at a temp. between 240° and 400° at a H_2 pressure above 2,000 lbs. per sq. in. a mixt. of soaps of fatty acids corresponding to said alcs., said mixt. consisting of soaps of Cd and Cu.

PROCESS FOR THE SEPARATION OF ACIDS CONTAINED IN TALL OIL. F. H. Gayer and C. E. Fawkes (Continental Research Corp.). *U. S. 2,348,970.* A process of sepg. fatty acids from resin acids contained in tall oil comprises converting the fatty acids into their alkyl esters, removing excess alc. remaining from said esterification, substantially completely neutralizing the resin acids with an aq. alkali in a diln. to provide a resin acid concn. of from about 30 to about 50% of the resin soap soln. present in the mixt. and extg. the

fatty acid esters from the resulting mixt. with a hydrocarbon solvent.

TREATMENT OF TEXTILE MATERIALS. G. Widmer and W. Fisch (Ciba Products Corp.). *U. S. 2,350,139.* A textile finishing compn. suitable for use in the impregnation of textile material in the imparting of a crease-proof finish thereto, consists essentially of trimethylammonium sulphate of monostearyl-paraphenylenediamine and of a melamine-formaldehyde condensation product, said condensation product being heat hardenable at a temp. between room temp. and about 100° whereby it is insolubilized.

Abstracts

Soaps

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THE SOAPWORKS LABORATORY — ROUTINE TESTS, ANALYSIS, RESEARCH. J. H. Wigner. *Soap, Perfumery, and Cosmetics* 17, 248-50, 52-3 (1944). The history and growth of soap laboratories are given.

SOAP PLANT SURVEY. II. PLODDERS. *Perfumery and Essential Oil Record 35,* No. 4, 112-3 (1944). A discussion is given of the technical aspects of soap plodding machines and directions for use. Temperature and pressure must be given adequate attention and the requirements for both are listed.

WETTING PROPERTIES OF SOAPS. Dr. Sadgopal. *Soap, Perfumery, and Cosmetics 17,* 258-9 (1944). Wetting action commences with soaps of fatty acids, both saturated and unsaturated, from C_{12} to C_{20}. In the case of saturated fatty acids, maximum wetting effect is noticed in the case of myristates, and in unsaturated fatty acids, oleates are better wetting agents than the corresponding linoleates. Potassium soaps are better agents than corresponding sodium soaps. Soaps from hardened fats possess comparatively poor wetting activities. Wetting action is high at high temperatures.

WASHING EXPERIMENTS WITH A SOAP MADE FROM A SYNTHETIC FAT ACID. H. Opitz. *Deut. Textilwirt 8,* No. 14, 12-18 (1941). Fabrics of staple rayon, cotton, staple rayon and cotton (20:80), linen and semi-linen were washed with an ordinary soap, contg. 79-80% fat acid and 8.8% total alkali, and with "Wittaner flakes," contg. 70% fat acid and 10% total alkali. After 25, 50 and 100 washings, the goods were subjected to mech. tests and were compared microscopically. The synthetic soap was found to be as good a washing agent as the soap made from natural fats. *(Chem. Abs.)*

THE PREPARATION AND TESTING OF SPIRITUS SAPONATUS. Imre Nemedy. *Ber. ungar. pharm. Ges. 18,* 253-9 (1942). The value of soap depends not only on its fat acid content but especially on the ability to produce foam. To test this ability, Na and K soaps or the alc. soaps were prepd. from different fatty oils, and 5 cc. of each of these prepns. was shaken for 0.5 min. in a closed glass tube; the height of the column of foam, its quality and the length of time until it disappeared, were observed. It appeared that, for the prepn. of alc. soaps, those Na soaps were the most suitable which were made from coconut, olive or castor oil. *(Chem. Abs.)*

EXAMINATION OF CLAY FILLERS FOR SOAP. R. Trauluft. *Fette u. Seifen 50,* 220-7 (1943). Particle-size analysis by a lab. method of settling, using a Stokes-law relationship, is described. Photomicrographs of 4 classes of European clays are shown and the usefulness of these types is discussed. The best clays have at least 50% of fines with an av. dia. less than 0.002 mm. They contain not more than 2% of particles with an av. dia. = 0.020 mm. or greater. *(Chem. Abs.)*

SOFT SOAP AND TURPENTINE LINIMENTS. Arthur Firth. *Pharm. J. 152,* 19 (1942). A permanent liniment can be prepd. only by considerable agitation from time to time after mixing. The amt. of soft soap and NH_4Cl may be reduced to ⅓. Soft soaps that have fatty acids with congealing points of approx. 31° will give more stable prepns. *(Chem. Abs.)*

MEDICAL SOAPS. Hans J. Henk. *Deut. Parfum-Ztg. 27,* 120 (1941). S. tar, ichthyol, camphor, menthol, thymol, naphthalene, sodium o-(hydroxymercuri) phenoxide, (Providol), balsam of Peru, styrax and peroxide are suitable for medicinal addns. to soap. For liquid disinfecting soaps, formaldehyde, Lysol or cresol may be used while for hand soaps EtOH or iso-Pr. alc. is suitable. Instructions are given for their tech. manuf. For a cutaneous emollient, triethanolamine can be used advantageously. *(Chem. Abs.)*

SOAP AS PACKAGING RAW MATERIAL. Georgia Leffingwell. *Fiber Containers 28,* No. 12, 118, 120 (1943). A review is given of the application of soap as a cleaning and emulsifying agent, for formulating paper sizes, as a plasticizing agent in wet-strength papers, as an emulsifier in wax coatings, for waterproofing, etc. Nineteen references. *(Chem. Abs.)*

PATENTS

DRAWING LUBRICANT. Samuel Spring. *U. S. 2,329,731.* Soaps which contain a high proportion of alkali metal oleate are used in drawing metals. The metal to be drawn is immersed, sprayed or otherwise placed in contact for some time with a weak soap solution. The strength of the soap solution should vary from 0.1% to 0.2%.

SOAP. Deutsche Hydrierwerke A. G. *Ger. 716,510.* High-molecular, unsaturated aliphatic, aliphatic- alicyclic or fatty aromatic hydrocarbons are oxidized to yield nonacid O-containing products. The nonoxidized fractions are removed and the remaining part is converted into alkali soap. *(Chem. Abs.)*

SOAP CONTAINING WATER-SOLUBLE ALKYL CELLULOSE. Kalle & Co. A. G. *Ger. 718,837.* At some point of its production but before it solidifies, water-soluble hydroxyalkyl cellulose or its derivatives are added to the soap. *(Chem. Abs.)*

LIQUID SOAPS HAVING AN IMPROVED ODOR. Carl Stiepel. *Ger. 716,837.* Such soaps are made of train oil heated for many hours together with sulfuric acid at 200-80° in the absence of water. *(Chem. Abs.)*

SOAP CONTAINING SULFUR. Andreas von Antropoff. *Ger. 689,273.* A polysulfide solution is admixed with a liquid soap. *(Chem. Abs.)*