accomplished and all of the problems given as imperative are of vital interest to the resin manufacturers as well as to the resin user. It is certain that any advances towards cheap single drying oil fatty acids, or combining forms of similar functionality will greatly benefit the coatings industry of which we are all a part.

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Abstracts

Oils and Fats

Edited by
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FLAVORS IN FOOD FATS. H. E. Robinson and H. C. Black. *Ind. Eng. Chem. 37,* 217-19 (1945). Subject is discussed under title of rancidity, reversion and dietary effects of rancid fats. The section on reversion is of special interest because this is one of the few published descriptions of the phenomenon.

RATION BISCUITS. II. EFFECT OF TYPE AND CONCENTRATION OF SHORTENING ON KEEPING QUALITY. G. A. Grant, J. B. Marshall and W. H. White. *Can. J. Res. 23F,* 123-31 (1945). Ration biscuits prepd. by 2 manufacturers and contg. 8-23% of 1 compd. animal-vegetable and 3 all vegetable shortenings were stored at 43.3° for 36 wk. Keeping quality was assessed by flavour, peroxide oxygen, and pH detns. The type of shortening was found to have a greater effect on keeping quality than the fat concn. or plant practice. Biscuits made with stabilized hydrogenated vegetable shortening were more stable than biscuits made with a compd. animal-vegetable shortening. All biscuits became objectionable to the tasters after storage for 22 wk.

LARGE-SCALE PRODUCTION OF LIVER OILS FROM SOME NEW ZEALAND FISH. M. M. Cunningham and C. Scott. *New Zealand J. Sci. Tech. 26B,* 21-7 (1944). Two methods are described for the production of high- and low-potency liver oil. Fresh, high-potency livers were minced, boiled for 30 min. by steam, and centrifuged at 170-80°F. Fresh, low-potency livers were minded, added to an equal vol. of water and brought to a pH of 1.5-2.0 with 25% HCl. To this slurry was added com. pepsin in amt. equiv. to 0.05% of the fresh liver weight. The mixt. was maintained at a temp. of 110-20°F. and stirred constantly. At the end of 48 hrs., the batch was neutralized with Na_2CO_3, heated to 170-80°F. and centrifuged to remove the oil. (*Chem. Abs.*)

RETENTION OF THIAMINE, RIBOFLAVIN AND NIACIN IN DEEP FAT COOKING. G. J. Everson and A. H. Smith. *Science 101,* 338 (1945). Making allowance for the addn. of water to the dry mix in prepg. the dough and also for the fat absorbed during frying, it was found that the av. loss in thiamine during cooking was 22.9% and in niacin was 20%, whereas there was no measurable loss in riboflavin or in iron. It would appear, therefore, that the cooking in hot fat exerts a more deleterious effect upon this vitamin than does oven baking. The observation on the stability of riboflavin in the present study agrees with the published results of Andrews, Boyd and Terry on the stability of riboflavin during baking. As would be expected, no loss of iron could be demonstrated.

ADSORPTION SEPARATION IN THE FIELD OF FATS. V. THE SEPARATION OF CIS-TRANS ISOMERS. H. P. Kaufmann and W. Wolf. *Fette u. Seifen 50,* 519-21 (1943). Al_2O_3, SiO_2 gel and C were compared as adsorbents in the sepn. of an equi-mol. mixt. of tributyrin and tristearin. Tributyrin was more strongly adsorbed by Al_2O_3 and by SiO_2 gel and could be quantitatively sepd. Al_2O_3 or SiO_2 gel adsorbed mono-, di-, and tristearin in the order mono > di > tri. A mixt. of 1 g. each of the Me esters of fumaric and maleic acids in 35 cc. Et_2O was poured through a column of 25 g. C; 0.3 g. of the maleic acid ester was found in the filtrate. The "percolate" obtained with 35 cc. ice-cold Et_2O contained a mixt. of the 2 esters; 0.7 g. of the fumaric acid ester was obtained from the $CHCl_3$ eluate. A mixt. of 90% oleic, 10% elaidic acid was found in the eluate of the upper part of a SiO_2 gel column through which had been poured a C_6H_6 or petr. ether soln. of a mixt. of equal parts of the 2 acids. When the original mixt. was 80% oleic, 20% elaidic acid, the eluate contained 98% oleic acid; when the original mixt. was 90% oleic, 10% elaidic acid, pure oleic acid was sepd. With a mixt. of equal parts of brassidic and erucic acids in C_6H_6-petr. ether soln. and a C adsorbent, pure erucic acid was found in the filtrate. With a SiO_2 gel adsorbent, 60 to 100% of the erucic acid was found in the upper part of the column. (*Chem. Abs.*)

CONJUGATED UNSATURATED COMPOUNDS IN THE CHEMISTRY OF FATS. I. THE DETECTION OF CONJUGATED UNSATURATED FAT ACIDS BY MEANS OF THE TETRANITROMETHANE REACTION. H. P. Kaufmann and P. Kirsch. *Fette u. Seifen 50,* 314-16 (1943). Fats and fat acids contg. double bonds give intense red colors with $C(NO_2)_4$; nonconjugated unsatd. compds. give yellow colors. The intensity of the red color is much greater with 3 than with 2 conjugated double bonds. Tung oil, oiticica oil, parinarium and trichosanthes oil give a reddish yellow color in a diln. of 1:1000. The test can be carried out by adding 0.2 cc. $C(NO_2)_4$ to 0.5 g. oil or fat acid in 0.5 g. $CHCl_3$, and further dilg. with $CHCl_3$ if the color is too dark. (*Chem. Abs.*)

TESTS FOR PURITY OF OLIVE OIL. J. S. Gerona. *Mon. farm. 50,* 363-5 (1944). Wash the oil with a quantity of NaOH in EtOH, calcd. from the detd. acidity of the oil, filter and decolorize with animal charcoal or fuller's earth and filter again. Pour over the oil in a test tube a layer of trichloroacetic acid liquefied with 8% H_2O. A fine gray film developing at the surface of contact within 1 hr. indicates a refined olive oil. A gray-bluish or green film indicates nat-

ural pure oil. A reddish or violet tone proves falsification with wine residue oil. If the oil is emulsified with H_3PO_4 of a sp. gr. 1.73 by shaking for a variable length of time (4, 30, 180 min.) a white or slightly red color indicates pure olive oil. A clearing up, leaving the reagent transparent and colorless, corresponds to refined oil. A red color proves falsification. (*Chem. Abs.*)

IMPROVING THE PROPERTIES OF DRYING OILS. I. G. Farbenind. A.-G. *Belg. 446,151.* Esters contg. OH groups, obtained from polyalcs. and unsatd. fatty acids are made to react with monocarboxylic acids with mono- or di-isocyanates, or with compds. reacting like these isocyanates. (*Chem. Abs.*)

FAT FORMATION IN TORULOPSIS LIPOFERA. A. Kleinzeller. *Biochem. J. 38,* 480-92 (1945). The content of fat material in the dry yeast varied between 18.6 to 43%, the unsaponifiable fraction forming 6.8 to 8.8%. In the presence of glucose the R. Q. of the yeast is higher than 1.0. The fat content increases linearly with time and is proportional to the glucose used. The conversion coefficient, *i.e.,* the percentage of C of glucose used converted into C of fat, varied between 11 and 33%. In the absence of substrate the R. Q. is lower than 1.0 and fat is utilized. The carbohydrate breakdown and fat formation in *T. lipofera* are aerobic processes. Under anaerobic conditions no glucose is used. The conditions of fat formation from glucose were studied. The fat formation is highest at pH 5.5-6.0; the optimal temp. is 20-25°; increasing concns. of NH_4Cl and urea inhibit the conversion of carbohydrate into fat.

BEHAVIOR OF THE SERUM LIPASE IN FAT-LOADING AND NUTRITION EXPERIMENTS WITH SYNTHETIC AND SOME NATURAL FOOD FATS. G. Kabelitz. *Biochem. Z. 316,* 409-13 (1944). No effect was noted on the serum lipase activity in both human and dog expts. with natural or synthetic (even with odd-no. fatty acids) fats, except when fats were administered in unusually large amts. (*Chem. Abs.*)

THE RELATIONSHIP OF PHOSPHOLIPID TO THE ADSORPTION OF UNHYDROLYZED FAT FROM THE INTESTINE. J. J. Elkes and A. C. Frazer. *J. Physiol. 102,* 24-5P (1943). If rats are fed olive oil and killed 3 hrs. later, emulsified fat can be obtained from the intestine and from the blood, and a sample of rat plasma can be prepd. If the intestinal emulsion was treated with rat plasma, flocculation immediately occurred, but with lecithinase no change was seen in 12 hrs. A soap-stabilized emulsion introduced into the intestine gave exactly similar results. The chylomicrons, on the other hand, were sep. discrete particles which showed no signs of flocculation. Lecithinase caused complete breaking of this blood-fat emulsion. The interfacial film of the intestinal emulsion is suggested to be acid-soap while that of the chylomicron is suggested to be in part at least phospholipid. (*Chem. Abs.*)

THE RELATIONSHIP OF LIPOLYSIS TO EMULSIFICATION OF TRIGLYCERIDE IN THE SMALL INTESTINE. A. C. Frazer and H. G. Sammons. *J. Physiol. 103,* 5-6P (1944). Expts. *in vitro* show that a combination of monoglyceride/fatty acid/bile salt provides an emulsifying system which is effective over the whole physiol. pH range in the small intestine. There is a relationship between lipolysis and emulsification. If the finely emulsified olive oil is collected from the small intestine of the rat, the particle can be shown to be negatively charged and resistant to acid at pH 4.0. If oleic acid is administered, it is not finely emulsified in the small intestine. Na oleate-stabilized emulsions of paraffin oil cream and break if left in the intestine for a few hrs. If olive oil and lipase soln. buffered to pH 6.5 are incubated at 37° lipolysis ensues. If this soln. is shaken at hourly intervals, emulsification does not occur. If 0.5% of bile salts is added emulsification occurs spontaneously. This also occurs when the fatty acid and bile salts are combined with monoglyceride, but not when fatty acid and bile salts are together alone at this pH. (*Chem. Abs.*)

THE MECHANISM OF EMULSIFICATION OF TRIGLYCERIDE IN THE SMALL INTESTINE. J. J. Elkes, A. S. Frazer, J. H. Schulman and H. C. Stewart. *Ibid.* 6-7P. The criteria considered necessary for the assessment of satisfactory emulsifying system are effective action over a pH range 6.0 to 8.5, spontaneous emulsification without violent agitation, particle size of less than 0.5 μ diam., and stability for at least 3 hrs. The only system found to satisfy these conditions was monoglyceride/fatty acid/bile salt. It is suggested that the fatty acid supplies the necessary charge on the monoglyceride-stabilized particle at the more alk. end of the pH range, while the fatty acid/bile salt complex provides the charge when the ionization of the fatty acid is depressed in more acid media. (*Chem. Abs.*)

THE EFFECT OF INGESTED CHOLINE ON THE TURNOVER OF PLASMA PHOSPHOLIPIDS. H. D. Friedlander, I. L. Chaikoff and C. Entenman. *J. Biol. Chem. 158,* 231-38 (1945). The effect of choline on the renewal of plasma phospholipid P was studied in dogs fed a high fat, low protein diet. Radioactive P was used as the labeling agent. A single feeding of 300 mg. of cholin chloride per kilo of wt. accelerated phospholipid turnover in plasma. Choline increased the rate of change in the specific activity of phospholipid P of plasma during the early intervals after the administration of radioactive P. The max. values found for the specific activity of plasma phospholipid P were higher in dogs fed choline than in dogs fed no choline.

INCIDENCE OF FATTY LIVER IN TUBERCULOSIS WITH SPECIAL REFERENCE TO TUBERCULOUS ENTERITIS. J. M. Jones and W. M. Peck. *Arch. Internal Med. 74,* 371-4 (1944). In 581 autopsies on tuberculous patients fatty livers were found in 41.9%. Extensive fatty infiltration was often assocd. with extensive tuberculous enteritis. Extreme emaciation appeared to be a const. accompaniment of fatty liver (*Chem. Abs.*)

A COMPARISON OF FATS IN LAYING PULLETS AND YEARLING HENS. G. D. Buckner, W. M. Insko, Jr., and A. H. Henry. *Poultry Sci. 24,* 126-7 (1945). These results show that the I no. and refractive index of the fat deposited in the 3 pts. of the body of the laying hen of a given age were materially the same but were larger in the older hens. These constants were more uniform in the fat of the pullets than in that of the hens. The color of the fat was the same for both ages.

THE INFLUENCE OF DIETHYLSTILBESTROL ON FAT DEPOSITION AND MEAT QUALITY IN CHICKENS. F. W. Lorenz. *Poultry Sci. 24,* 128-34 (1945). Diethylstilbestrol pellets administered to chickens by sub-

cutaneous implantation cause marked increases in the fat content of muscle tissue and in the quantity of depot fat. Cockerels autopsied 2 to 5 weeks after a single implantation all had more fat than the controls, but the fattening effect was increased with increasing duration of treatment. Increases in fat content were obtained in cockerels varying from 7 weeks to 1 year of age at time of autopsy. The meat quality of birds fattened by diethylstilbestrol was improved. This was especially noticeable in older birds; such birds normally have tough, darkened meat, and the treated birds' meat, by contrast, was paler and considerably more tender. The effect of the treatment on depot fat was rapidly reversed after removal of the diethylstilbestrol pellets; muscle fat persisted longer. Diethylstilbestrol administered orally failed to produce fattening even when 20 times the subcutaneous dose was fed. Growth of treated birds was not markedly affected. The small extra gains observed were of the same order of magnitude as the amt. of extra fat deposited.

A STUDY OF OILS USED FOR INTRAMUSCULAR INJECTIONS. A STUDY OF THE PHYSICAL, CHEMICAL AND BIOLOGICAL FACTORS. W. E. Brown, V. M. Wilder and P. Schwartz. *J. Lab. Clin. Med. 29,* 259-64 (1944). Corn, peanut, sesame seed and cottonseed oils were studied for their suitability as carrier material for intramuscular injections. Accumulation of leucocytes, formation of oil cysts and disposition of fibrin were used as criteria for the selection of the ideal oil. Sesame and corn oil were found superior to peanut and cottonseed oil, because they are more suitable both physically and chemically, were more quickly absorbed from the tissues, were less antigenic and less irritating to the tissues. (*Chem. Abs.*)

THE INCORPORATION OF FATS AND FAT ACIDS IN PHENOL-ALDEHYDE RESINS. E. Fonrobert. *Fette u. Seifen 50,* 514-19 (1943). A review of the possible reactions of an unsatd. oil or fat acid with PhOH and CH_2O. (*Chem. Abs.*)

GLYCERINE IN TEXTILE PROCESSES. G. Leffingwell and M. A. Lesser. *Am. Dyestuff Reptr. 34,* 123-4 (1945). The use of glycerin in lubricating, softening and sizing agents, to prevent starches and sizes from becoming too dry and in printing, dyeing and plasticizing processes is discussed.

PATENTS

LIQUID EXPRESSING PRESS. C. B. Upton. *U. S. 2,369,192.* Special bars are designed for a cage oil press to allow passing heat exchange fluid through the bars. The improvements in the design of the bars allow easier escape of oils.

PROCESS AND APPARATUS FOR FILTERING MISCELLA AND LIKE MIXTURES THROUGH A FILTERING MEDIUM OF SOLID OIL-BEARING MATERIAL. M. Bonotto (Extractol Process, Ltd.). *U. S. 2,370,138.* This device is a filtering accessory for a vegetable oil continuous solvent extn. system.

PURIFICATION AND DEODORIZATION PROCESS. A. P. Lee and W. G. King, Jr. *U. S. 2,368,669.* This is a continuous deodorization process in which the fat or oil is passed countercurrently to an inert gas through 2 zones of low pressure in which odoriferous material is removed by distn.

TREATING FATTY BODIES. J. D. Fitzpatrick and L. D. Myers (Emery Industries, Inc.). *U. S. 2,369,036.* The method of isolating satd. fat acids from a fat acid mixt. contg. both satd. and unsatd. fat acids comprises disruptively oxidizing the unsatd. fat acids of the mixt. into satd. acids of lower mol. wt. and dibasic acids through scission at the double bonds thereof, by treating the said mixt. with a chromic acid oxidizing reagent and then sepg. the products of oxidation from the unchanged satd. acids present in the original mixt.

SELECTIVE OXIDATION OF UNSATURATED FATTY BODIES. L. D. Myers and C. A. Sprang (Emery Industries, Inc.). *U. S. 2,369,108.* A method of selectively oxidizing di- and tri- unsatd. acids of soybean fat acids which are present therein in admixture with mono unsatd. acids and satd. acids comprises subjecting mixed soybean fat acids to an oxidizing reagent contg. approx. 3 to 7% of chromic acid at 80-100° to effect oxidation of the di- and tri- unsatd. fat acids without substantially attacking the mono unsatd. acids.

BATING COMPOSITION. F. Schmitt (American Hyalsol Corp.). *U. S. 2,369,256.* A bating compn. for treating the skins of sheep and calves and like sensitive skins for the production of top grain leather, which compn. is capable of effectively bating the top grain without appreciably loosening the inner fibers comprises an enzymatic agent composed primarily of whale pancreatin, and a sol. salt of a sulfuric acid ester of a higher mol. fat alc.

SPECIALIZED VULCANIZATION PRODUCT. J. W. Church (Falk & Company). *U. S. 2,369,434.* A tough and coherent ppt. of fatty oils and oil sol. thermoplastic resin, the said ppt. being composed essentially of both vulcanized fat oils and vulcanized oil sol. thermoplastic resin being insol. in evaporative hydrocarbon solvents having a kauri-butanol value no greater than 28.5 and sol. in evaporative hydrocarbon solvents having a kauri-butanol value greater than 50.

PROCESS FOR RENDERING MATERIAL WATER-REPELLENT AND PRODUCTS THEREFROM. W. Kaase and E. Waltmann (Herberlein Patent Corp.). *U. S. 2,370,405.* A process for waterproofing textile or other material comprises impregnating the material with an aliphatic-aromatic isocyanate, which contains a satd. aliphatic radical having at least 10 C atoms in an uninterrupted chain, the isocyanate being joined directly to the aromatic ring and the said chain being septd. from the said ring by a radical contg. oxygen and heating the impregnated material to produce water-repellence therein.

HYDROGENATION OF TALL OIL. R. G. Dressler. *U. S. 2,369,446.* The tall oil in naptha soln. is first bleached with bleaching earth, solvent is removed and it is hydrogenated at 100-250° and 50 lbs. per sq. in. press.

PROCESS OF PREPARING RESINOUS MATERIAL. C. G. Moore (The Glidden Company). *U. S. 2,369,683.* The process consists in heating a mixt. of a monoglyceride product produced from drying and semi-drying oil fatty acids until the product has an acid number of 60-80 with an equimolecular quantity of maleic anhydride to said mono-glyceride product at a temp. of 400-420°F. with agitation and then slowly adding to said mixt. an oil selected from the class consisting of drying and semidrying oils, while maintaining the temp. at about 410°F. throughout the addn. of the oil, the rate of addn. of the oil being slow enough to prevent separation of the product.