Abstracts

Oils and Fats

Edited by
M. M. PISKUR and SARAH HICKS

THE CHEMICAL, PHYSICAL, AND CULINARY PROPERTIES OF PEANUT OIL. N. G. Grim and N. S. Eheart. *J. Am. Dietetic Assoc. 19,* 618-20 (1943). A comparison of potato chips, shoe-string, and French-fried potatoes fried in peanut oil and in cottonseed oil, in 7 cases out of 23, showed significantly higher av. palatability scores for the products fried in peanut oil than those fried in cottonseed oil. In no case did the use of cottonseed oil result in a product significantly more palatable than that obtained with peanut oil. Peanut oil showed a higher av. free acidity than cottonseed oil during consecutive fryings of potato products but only in the case of shoe-string potatoes was the smoking point of this oil significantly lower than that of cottonseed oil. Potatoes fried in peanut oil tended to absorb less fat than those cooked in cottonseed oil. The peanut oil showed greater resistance to rancidity than those of cottonseed oil.

A NEW BIOCHEMICAL FAT SYNTHESIS. H. Damm. *Chem. Ztg. 67,* 47-9 (1943). Fusarium grows relatively quickly in submersed cultures even in purely synthetic media. It can utilize all com. N compds. and is able to ferment pentoses without prolonged adaptation. It is relatively nonsensitive toward acids and infections and forms large amts. of fat. The compd. furnishes about 15 g. of fat, contg. a red carotenoid pigment. Proteins and cell-wall constituents are formed in equal amts, with lower sugar concns. in the fermentation. The mode of working as described in Ital. Pat. 381,764 (Henkel & Cie.) is recommended. The conditions for growing and treating Fusarium are reviewed. *(Chem. Abs.)*

HYDROPHILIC LIPOIDS. A. M. Egorova and B. Ya. Golant. Trudy Vsesoyuz. Nauch.-Issledovatel. *Inst. Konditerskoi Prom 1941,* 105-14. A modified Harris-Epstein method for prepg. polyglycerol and hydrophilic lipoids. Any com. fat, with glycerol, yields such lipoids. Their viscosity reduction coeff. at 0.5% concn. averages 2.4 and is fully retained in storage (5 months). The product from a hydrogenated oil (m. 42°), at 0.5% concn., did not lower the m.p. of chocolate. Viscosity-reduction data are presented for chocolate products treated with lipoids from cottonseed oil. Some expts. were also made with hydrophillic lipoids blended with oxidized cocoa butter, which has only slight viscosity-reducing power. *(Chem. Abs.)*

SOLVENTS IN EXTRACTION OF TUNG OIL. A. F. Freeman, F. C. Pack, and R. S. McKinney. *Ind. Eng. Chem. 35,* 1156-9 (1943).

PRODUCTION OF CIRRHOSIS IN THE LIVER OF THE NORMAL DOG BY PROLONGED FEEDING OF A HIGH FAT DIET. I. L. Chaikoff, K. B. Conner, C. L. Eichorn, and C. Entenman. *Am. J. Path. 19,* 9 (1943). The authors in summarizing state that hepatic lesions varied from early, slight, or diffuse fibrosis to nodular cirrhosis with adenomatous regeneration produced in normal dogs by the long continued administration of high fat diets. This, coupled with their previous investigations, point to continued fatty infiltration as an important causative factor in the production of liver cirrhosis. *(Am. J. Digestive Dis.)*

RELATION OF THE PROTEIN, FAT, AND ENERGY OF THE RATION TO THE COMPOSITION OF CHICKENS. G. S. Fraps. *Poultry Sci. 22,* 421-4 (1943). Substitution of cottonseed oil for part of the corn meal in a standard ration produced chicks with a much higher fat content and a lower live wt. than those grown on the standard ration alone. Substitution of casein, cottonseed meal, or other protein feed for corn meal produced chickens with a lower fat content than those produced by the corn meal ration. Substitution of feeds with a lower productive energy, such as oat hulls, for the corn meal also produced chickens with a lower fat content. The fat content of all the chickens ranged from 1.4 to 16.7 per cent. If the fat content needed to produce chickens of good quality were known, it would be possible to produce such chickens by proper adjustment of the rations.

A DEFICIENCY OF AVAILABLE CHOLINE IN SOYBEAN OIL AND SOYBEAN OIL MEAL. E. P. Berry, C. W. Carrie, R. E. Roberts, and S. M. Hauge. *Poultry Sci. 22,* 442-5 (1943). In the type of rations fed neither solvent nor expeller processed soybean oil meal supplied an adequate amount of available choline for satisfactory growth. Neither solvent nor expeller processed soybean oil, at levels of 4%, supplied sufficient available choline to increase growth over that of a soybean oil meal negative control ration shown to be deficient in choline. Expeller soybean oil meal, without a choline supplement, supported significantly better growth than did solvent soybean oil meal without a choline supplement.

THE ALIMENTARY VALUE OF CERTAIN HYDROGENATED OILS. A. Galamini. *Rev. biol. 28,* 139-63 (1939). Tests with hydrogenated olive and cocoanut oils on growing white rats are described. It was ascertained that such fats have a favorable influence on the development and propagation of the animals, similar to unhydrogenated oils of the same kind and to butter. Feeding hydrogenated fatty substances also affords normal development to the progeny of the animals having received the above-mentioned fodder. *(Chem. Abs.)*

SOME EFFECTS OF DIETS RICH IN THE GLYCERIDES OF SATURATED FATTY ACIDS ON INTESTINAL ELIMINATION. H. L. Wikoff, D. J. F. Caul, and B. H. Marks. *Am. J. Digestive Dis. 10,* 395-9 (1943). The effect of a high fat diet on intestinal elimination depends, at least partially, on the chem. compn. of the fat fed. By feeding dogs pure, simple triglycerides of satd. fat acids we have produced three different intestinal conditions. These include normal elimination after a diet consisting of standard dog food to which as much as 20% trimyristin had been added; constipation after 20% addns. of tripalmitin or tristearin to the standard diet; and laxative effects after the addn. of simple triglycerides of some of the satd. fatty acids of 12 or less carbon atoms (lauric, capric, capryllic, caproic, butyric acid), the amts. added varying from 20 to 2.2%. The cathartic action of the simple triglycerides increases as the no. of carbon atoms in the component satd. acid decreases.

THE EFFECT OF ADRENALECTOMY ON THE ABSORPTION OF THE SHORT CHAIN FATTY ACIDS AND THEIR TRIGLYCERIDES. L. A. Bavetta. *Am. J. Physiol. 140,* 44-6

(1943). There was no significant depression in the absorption of tricaproin, sodium caproate, and tricaprylin in adrenalectomized animals as compared with normals. The first indication of any inhibitory effect resulting from adrenalectomy occurs with caprylic acid and is also evident with capric acid. This indicates that the adrenal glands play an active role in the absorption of the longer chain fatty acids. However, the absorption of lower acids is not dependent on adrenal function. Differences in the absorption rates of the longer chain fatty acids by normal and adrenalectomized animals are probably due to the capacity of normal animals to remove fatty acids from intestines at a much faster rate.

METABOLIC STUDIES IN PATIENTS WITH GASTROINTESTINAL CANCER. IV. FAT METABOLISM, A METHOD OF STUDY. P. E. Rekers, J. C. Abels, and C. P. Rhoads. *J. Clin. Invest. 22,* 243 (1943). Normal persons absorbed 96-97% of the ingested fat; the fat load didn't significantly affect this absorption ability. In the patient with gastric carcinoma 93% of the ingested fat was absorbed; fat load didn't affect this significantly. With the gastrectomy case, only 27% of the fat ingested was absorbed; and, with the fat load only 10% could be absorbed. This shows that on a comparatively low fat diet, there is considerable steatorrhea with a significant increase in loss on fat load. The gastritis individual was between normal values and those for the gastrectomy case, 86% being absorbed and 73% absorbed after the fat load. There was no significant impairment in cirrhosis of the liver. With an atrophic or absent stomach, fat absorption is impaired and accentuated loss is seen after ingestion of the fat load. *(Am. J. Digestive Dis.)*

PREPARATION OF EMULSIONS. B. De H. Miller, P. Phelps, and H. W. Bevarly (The Girdler Corporation). *U. S. 2,330,986.* The process of prepg. margarine comprises forming an oil and moisture emulsion having substantially less moisture than that desired in the final product, subjecting said emulsion to concurrent supercooling and agitation, adding moisture to the supercooled emulsion, subjecting the mixt. of supercooled emulsion and added moisture to further chilling and agitation, and thereafter permitting said mixt. to solidify.

VULCANIZED, FATTY OIL MODIFIED, CRACKED DISTILLATE POLYMER. M. B. Chittick and A. F. Schlandt (The Pure Oil Company). *U. S. 2,330,798.* This invention relates to the preparation of mastics from petroleum polymers by reaction thereof with sulfur in the presence of fatty oils.

MODIFYING CASTOR OIL. A. Schwarcman (Spencer Kellogg and Sons, Inc.). *U. S. 2,330,180.* A method of dehydrating castor oil comprises dissolving in the oil a small proportion of a catalyst comprising a neutral phosphorus chloride and heating the mixt. at such temp. and for such time as to effect a substantial degree of dehydration of the oil and at least until the product has attained miscibility with mineral oil.

STABILIZED VINYL POLYMER. L. J. Stage and M. T. Harvey (Harvel Research Corp.). U. S. *2,330,087.* A thermoplastic compn. of matter comprises a polyvinyl chloride, a plasticizer therefor and a color stabilizer comprising a reaction product of a tertiary alkyl urea and a satd. fatty acid having 12 to 18 C. atoms in the mol.

Abstracts

Soaps

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PROPERTIES OF DETERGENT SOLUTIONS. COMPARISON OF DETERGENT ACTION AND WHITENESS RETENTION OF LAUNDRY SOAP BUILDERS. T. H. Vaughn and A. Vittone, Jr. *Ind. Eng. Chem. 35,* 1094-8 (1943). In washing tests made at 60° C. with artificially soiled muslin the effect of 0.05% of various alkaline builders on the detergency of 0.1% soap solns. is investigated. The results of a previous paper are studied, and it is shown that high detergent action can be obtained with some builders having a low detergent rating by using the proper ratio of soap to builder. In tests of soil at 60° C. the whiteness retention property of the builders is investigated at a soap concn. of 0.1% and a soap builder ratio of 1 to 1. It is shown that the silicates and phosphates differ from other builders in their action on soap with respect to whiteness retention.

X-RAY DIFFACTION OF SODIUM LAURATE, PALMITATE, AND STEARATE AT ROOM TEMPERATURE. J. M. McBain, O. E. A. Bolduan, and S. Ross. *J. Am. Chem. Soc. 65,* 1873-76 (1943). Fiber as well as powder photographs of sodium laurate, palmitate, and stearate have been made. They confirm the unit cell of the beta form of monoclinic soap and give the unit cell for a "hydrated gamma form" of monoclinic soap at room temp. Alpha, beta, and gamma forms differ primarily in long spacings, but likewise to a lesser extent in the lines corresponding to side spacings.

SOAP FORMULA CHANGES. *Soap 19,* No. 11, 25-7, 30 (1943). New soap fat-stretching order FDO-86, issued by WFA . . . requires increased use of rosin and builders, heavy use of edible lard in soaps reported, soapers exempted from new restrictions on container use . . . 10% sales tax on toilet soaps proposed by house.

UNIFORMITY OF pH OF SOAP ADDITIVES. *Am. Perfumer & Essential Oil Rev. 45,* No. 10, 63 (1943). Substitutions of alkalies in soaps may have disastrous effects if the pH is not closely watched. The pH changes sharply with changes in concentration and this must be checked also. A product with too wide a pH range should not be used as this might cause too great a variation in the pH of the final product.

SPECIAL ROSINS FOR SOAP. *Soap, Perfumery, and Cosmetics 16,* 517-9 (1943). Rosin can be used in bar, flake, powder, and liquid soaps. Pale grades of rosin will make light colored soaps. Rosin in soap actually promotes detergency and lathering, and is not to be regarded as a mere filler or extender. Post-war improvements in rosin chemistry—notably hydrogenated rosin—will permit even higher quality soaps, with particular regard to color properties, and rosin