ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR and RUTH LINDAHL

Continuous extraction of sunflower-seed meal by the spray method. I. Gavrilenko. *Masloboïno Zhirovoe Delo* 14, No. 1, 17-19 (1938).—The optimum conditions for the extn. of sunflower-seed meal with com. C_6H_6 in the exptl. Il'in app. by the belt-and-spray method are discussed. (*Chem. Abs.*)

The effect of gossypol on the unaccountable loss of oil in the production. V. Ryadovoi. *Masloboino Zhirovoe Delo* 13, No. 6, 25-6 (1937). The discrepancy of about 1% between the contents of oil in the seed meals as detd. by the extn. with Et_2O and petr. ether and the production yields of oil was traced to the difference between the contents of gossypol in the solvents (0.6-0.77%) and in the processed oil (0.007%). Since the press cakes contain no gossypol, it is evident that during the roasting process the gossypol in seed meal becomes insol. by combining with the albuminous products. To obtain related values the crushed seeds before testing should be dried at 100-5° for 2 hrs. (*Chem. Abs.*)

The constants of genuine cod liver oil. I. The unsaponifiable matter content. C. C. Harris. *J. Soc. Chem. Ind.* 57, 508-9 (1938). The unsapon. matter was detd. on 257 samples of cod liver oil. The limits were 0.5 and 1.5%; the average was 1.08%.

The component fatty acids of some New Zealand fish oils. F. B. Shorland and T. P. Hilditch. *Biochem. J.* 32, 792-6 (1938). The compns. of the liver oils of red cod, "English" hake, groper and the head oil of the latter have been detd. With the exception of the groper liver oils they conform generally to the typical North Sea fish oils. Groper liver oils, especially the sample taken during spring, are characterized by abnormally high proportions of palmitic and hexadecenois acids together with diminished proportions of C_{20}- and of C_{22}-unsatd. acids. The spring and early and late winter groper liver oils contained resp. a trace, 2.0 and 118.8% of phosphatide calc. as lecithin. The phosphatide fatty acids showed the typical increase in the proportions of C_{20}- and of C_{22}-unsatd. acids as compared with those of the corresponding glyceride.

The oils of fresh-water fish. J. Hadácek. *Casopis Ceskoslov. Lékárnictva* 18, 21-9 (1938). The acid no. of the mixt. of liquid acids of carp oil was found to be 187.1 and that of perch oil 91.8. Their mol. wts. were 299.8 and 292.6. The av. mol. wt. of the triglycerides of the carp oil was 875.01 and its sapon. no. 192.3. The av. mol. wt. of diglycerides was 614.03 and its sapon. no. 182.7. The corresponding nos. for the oil of perch were: for triglycerides 878.31 and 191.6 and for diglycerides 616 and 182.1. From the oil of carp the following satd. acids were sepd.: small amts. of myristic acid, palmitic acid and a mixt. of acids where stearic acid was predominant. From the unsatd. acids linolic and oleic acids were identified and the presence of linolenic acid is probable. From the oil of perch palmitic and stearic acids were isolated. (*Chem. Abs.*)

Stability of cake batters. E. Grewe. *Ind. Eng. Chem.* 30, 719-22 (1938).—An emulsion foam is formed when the ingredients of cake are agitated together. The "curdling" or breaking down of the emulsion is one of the major problems in cake making. Sodium bicarbonate and acid potassium tartrate, the component parts of baking powder, were added to fat, sugar and egg mixtures. Changes in hydrogen-ion concn. were effected within a range of pH 8.3 and 4.5 by adding varying amts. of these 2 chemicals. The stability of the emulsion foam was tested by means of a settling test, viscosity, and sp. gr. The hydrogen-ion concn. of the emulsion without the addn. of either chemical was pH 7.3. Hydrogenated fat, butter and butter oil were used as the fats in the experiments. The emulsions contg. hydrogenated fat tended to decrease in stability with decrease in hydrogen-ion concn. expressed as pH. When butter and butter oil were used as the fats, the least stable emulsion was obtained at a hydrogen-ion concn. of about 6.3 expressed as pH.

Conjugated hydrogenation of sunflower oil with hexyl alcohol. G. A. Ivanova. J. Applied Chem. (U. S. S. R.) 11, 61-4 (in German 64) (1938).—A soln. of 44 g. of hexyl alc. in 150 g. of sunflower oil was hydrogenated in the presence of catalysts at 260° for 15 min. With a mixt. of Ni 4.83, Fe 2.80, kieselguhr 20.20 and sunflower oil 72.17%, and a max. pressure of 18 atm., the product had acid no. 4.4 cc., I no. 84.1 and contained oleic acid 62.5, isoöleic acid 16.0, linoleic acid 9.9 and satd. acids 11.6%. CO and a very little CO_2 were observed and explained as the formation of CO is attributed to the reaction $Me(CH_2)_4CHO = Me(CH_2)_3Me + CO$. The $Me(CH_2)_4CHO$ is formed by dehydrogenation of $Me(CH_2)_4CH_2OH$. A mixt. of Ni 11.5, Cu 12.9 and sunflower oil 75.6% (prepd. by reducing Ni and Cu formate in sunflower oil with H at 240-60°), at a max. pressure of 27 atm., gave a product of acid no. 2.9 and I no. 78.3, contg. oleic acid 59.5, isoöleic acid 24.6, linoleic acid 3.7 and satd. acids 12.2%. The formation of CO was observed. The original sunflower oil contained oleic acid 29.2, linoleic acid 62.9 and satd. acids 7.9%. The presence of Cu in the catalyst activated the Ni catalyst. Five references. (*Chem. Abs.*)

The causes of the fires and explosions during the discharge of hydrogenated fat mixtures into the settling tank. V. M. Smirnov. *Masloboïno Zhirovoe Delo* 13, No. 6, 15-16 (1937).—It is considered that the frequent fires and explosions of the fat mixts. at the discharge temp. of 250-70° could not be caused by the spontaneous ignition of the H and air mixt. present in the settling tank, because this reaction takes place at considerably higher temps. (530-606°). The spontaneous ignition (flash fire) of the fat mixt. at this low temp. and the catalytic action of fine Fe and Ni occluded in the oil are considered as improbable. It is postulated that the fires and explosions are caused by the spontaneous ignition of the highly inflammable volatile decompn. products of the hydrogenation on contact with the circulation H and air in the tank. Moreover, the at. H, formed by a partial dehydrogenation of the oil, combines with the decompn. products of the N and P compds. to form highly inflammable gaseous compds., such as PH_3, which are spontaneously ignited, setting fire to the mixt. of air and H in the tank and causing the explosion of the fat mix. This explains the more frequent fires and explosions of the hardened oils obtained from the batches or kinds of oil (rapeseed and linseed oils) very rich in the contents of phosphatides. The proposed measures for the prevention of

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fires are: the exclusion of air from the settling tanks, the reduction of the P contents in oils by refining and the use of low temps. in the hydrogenation and the discharge of the fat mixts. (*Chem. Abs.*)

PATENTS

Purification of oil. R. P. Dunmire. U. S. 2,116,344. Oil, which may also contain absorbent material, is sprayed into a vacuum chamber, removed and filtered.

Refining and bleaching oils and fats. E. Kellens. Ger. 657,888 Cl. 23a 3. The melted oil is treated with MnO_2 or other metal oxide. Next it is treated with sulfuric acid, heated to 90° C. and followed by bleaching with bleaching earth. The oil is then neutralized.

Fish liver oils. G. Jonsson. Brit. 475,893. The fish livers are passed through a series of autoclaves. The transference from one autoclave to the next is by means of steam pressure. The charge is pressed after leaving the last autoclave.

Fettspaltung. Henkel & Cie. Ger. 657,938 Cl. 23d Gr. 1. The fat is split by passing water and fat, counter-currently, at 185 to 315° C. under sufficiently high pressures. The glycerin is obtained in the water portion.

Refining and stabilizing fats, oils and waxes. Vaman R. Kokatnur and Oliver S. Plantinga (to Autoygen, Inc.). Brit. 477,282, Dec. 22, 1937. The fats are treated with an org. peroxide in presence of a precipitant of mucilaginous matter, e. g., dil. H_2SO_4, HNO_3, H_3PO_4, $Al_2(SO_4)_3$ or other neutral solid, fuller's earth or other adsorbent, at a temp. below that required to decompose the peroxide when heated alone, an excess of peroxide being used so that the purified oil contains a substantial amt. thereof. Blowing with superheated steam *in vacuo* may follow to hasten decolorization. When free fatty acid is also to be removed, the precipitant is preferably an alkali metal hydroxide or carbonate or a weak acid that forms a soap that is insol. in the oil, e. g., H_3BO_3, H_3PO_4. (*Chem. Abs.*)

Refining fatty oils and fats. E. M. James (to Sharples Specialty Co.). U. S. 2,115,668. Soybean oil is refined by mixing it with Na_3PO_4 in an amt. approx. 50% in excess of that necessary to neutralize the free fat acids contained in the oil, heating the mixt. to 60-70° F., increasing the temp. to 110-140° F. and thereafter centrifuging the mixt. to separate the aq. phase from the treated oil.

Oil compositions. W. H. Butler (to Bakelite Corp.). U. S. 2,120,124. Mixts. of blown oil and certain resins are treated by a special process to yield rubber-like masses.

Stabilization of oleo oil. H. S. Mitchell (to Industrial Patents Corp.). U. S. 2,113,216. Oils are stabilized by incorporating into them a quantity of hydrogenated refined soybean oil and lecithin.

Protection of vitaminous oils. F. W. Nitardy (to E. R. Squibb & Sons). U. S. 2,115,040. Hydroquinone, which is miscible with the oils and in which the hydroquinone is more soluble than in the oils.

Process of recovery of oil from spent bleaching clay. E. M. Slocum. U. S. 2,117,223. A soln. of water soluble salts of Fe, Mn, Cr, or Al is added to the spent bleaching clay; the mixt. is permitted to stand to allow the spent clay to settle and the oil or fat to float to the surface of the soln.; the oil or fat is then separated.

ABSTRACTS

Soaps

Edited by M. L. SHEELY

Influence of the nature of the fat acid on the hemolytic power of soaps. R. Cavier. *Bull. soc. chim. biol.* 19, 1663-75 (1937).—The hemolytic activity of different Na soaps varies somewhat with the species of erythrocyte used. Na 12-hydroxystearate was most active at pH 7.4, all other soaps had a greater hemolytic power at pH 5.8-6.2 than at pH above 7. Na myristate was more active than Na laurate, palmitate or stearate. The soaps of unsatd. fat acids are more active than those of the corresponding satd. acids and the activity increases in proportion to the no. of double bonds in the mol. The satd. and unsatd. acids contg. one or more hydroxyl groups show practically the same activity as the corresponding acids without hydroxyl groups. (*Chem. Abs.*)

Comparative study of the lathering property of shaving soaps. I. N. N. Godbole and P. D. Srivastava. *Indian Soap J.* 4, 179-84 (1938).—The lather values of 11 shaving soaps were detd. by the methods of Stiepel and of Lederer. The results are tabulated but no conclusions are drawn as some work in this connection is still in progress. (*Chem. Abs.*)

Fatty acid molecular weights. P. N. Das Gupta. *Indian Soap J.* 4, 197-9 (1938).—A consideration of the relation of the molecular weight of the fatty acids in soap to the various factors which affect detergent power, leads to a recommendation for maximum detergency of a soap containing 15-15.5% of coconut oil, made by the grained process. Molecular weight also has a marked effect on pH as shown in the following table:

	pH at a concentration of	
Sodium Salts of	0.5 gram per liter and 15° C.	1.0 gram per liter and 15° C.
Lauric acid	9.0	9.6
Myristic acid	9.0	9.5
Palmitic acid	10.2	10.4
Stearic acid	10.4	...
Oleic acid	9.8	9.8
Ricinoleic acid	9.2	10.0

(*Soap*)