ABSTRACTS

R. A. REINERS, Editor. ABSTRACTORS: N. E. Bednarcyk, J. E. Covey, J. G. Endres, J. Iavicoli, S. Kawamura, D. A. Leo, F. A. Kummerow, E. G. Perkins, and R. W. Walker

• Fats and Oils

ACYLOINIC CONDENSATION IN ALIPHATIC MONOESTERS. I. SECONDARY PRODUCTS IDENTIFICATION. M. Martín Somas and R. Martínez Utrilla (Inst. de Productos Lacteos y Derivados Grasos). *Grasas Aceites (Seville, Spain)* **5**, 290–6 (1970). The reaction of methyl myristate, methyl palmitate and methyl stearate with sodium under the acyloin condensation conditions has been studied. The main side products have been isolated and characterized. The mechanism of the condensation is discussed on the basis of the proposed structures.

DETERMINATION OF SOLVENT RESIDUES IN EXTRACTED OILS. M. Nosti Vega, F. Gutiérrez Rosales and R. Gutiérrez Gonsález-Quijano (Inst. de la Grasa y sus Derivados, Dept. Chem. and Microbiol., Seville, Spain). *Grasas Aceites (Seville, Spain)* **5**, 276–81 (1970). A simple, rapid and fully automated method for the determination of hexane in extracted oils is proposed in this paper. The method makes use of a hydrogen flame ionization detector in a Perkin-Elmer Multifract 40. In developing the procedure conditions of chromatography, the influence of temperature of the bath, sample size and calibration were evaluated. Commercial samples of extracted soya and cottonseed oils were analyzed and reported. The work emphasizes the desirability of strict control during the manufacturing process in order to get low solvent content oils and to avoid risks and unnecessary losses.

ANALYSIS OF MONO-, DI-, AND TRIGLYCERIDES MIXTURES BY GAS CHROMATOGRAPHY AT PROGRAMMED TEMPERATURE. D. Prada, C. F. Carracedo, L. Montenegro and A. Prieto (La Toja, S.A., La Coruña, Spain). *Grasas Aceites (Seville, Spain)* **5**, 261–69 (1970). The separation of mono, di, and triglycerides and fatty acids was studied by programmed temperature gas chromatography. The difficulties of analyzing samples without previous treatment is described. These difficulties are eliminated by forming the trimethylsilyl derivates to block hydroxyl groups which are the origin of the difficulties found when using direct injection techniques. Practical applications are described.

CHEMICAL COMPOSITION OF ANONA SQUAMOSA, HYOSCYAMUS NIGER AND HIBISCUS SABDARIFFA SEED OILS. Z. E. Shoeb (National Research Centre, U.A.R.). *Grasas Aceites (Seville, Spain)* **5**, 270–1 (1970). The proximate analysis of *A. squanosa, H. niger* and *H. sabdariffa* seeds and the characteristic of their oils were determined. Gas-liquid chromatography was utilized for the elucidation of fatty acid composition. A conclusion of this study is that the seed oils of *H. niger* and *H. sabdariffa* may used as a source of linoleic acid and that the seed oil of *A. squanosa* is a good source of oleic acid.

CHANGES IN WHEAT LIPIDS DURING SEED MATURATION. I. PHYSICAL AND CHEMICAL CHANGES IN THE KERNEL. Sandra K. Skarsaune, V. L. Youngs and K. A. Gilles (Dept. of Cereal Chem. & Technol., North Dakota State Univ., Fargo, N.D.). *Cereal Chem.* **47**, 522–32 (1970). As the moisture content of two varieties of durum wheat decreased from 70 to 12% (30 days preripe to maturity), increase in kernel weight and size were measured. During this time, the ash content of both the whole wheat and its respective flour decreased linearly whereas the protein content increased erratically. When protein and ash contents were calculated on a per-kernel basis both showed a consistent increase as the wheat ripened. The total fat content, determined by acid hydrolysis, reached a maximum when the moisture content of the grain was near 65%, after which it declined steadily. The average lipid content of the four varieties, expressed in mg. fat per kernel, increased threefold during maturation. Successive lipid extractions by petroleum ether and water-saturated *n*-butanol (WSB) were performed on samples of ground whole wheat, flour, and bran from all varieties at each stage of maturity. The proportion of sugars and free amino acids, which were extracted by WSB, decreased with maturity. Infrared analysis of the lipid extract indicated changes in the lipids with maturity.

II. CHANGES IN LIPID COMPOSITION. *Ibid.*, 533–44. Quantitative thin-layer chromatography of the extracted lipids of maturing HRS and durum wheats showed that esterification increased as maturation progressed. Triglyceride content increased uniformly, whereas the monoglycerides decreased and the diglycerides remained essentially constant. The sterol esters, which were absent in extracts from durum varieties, increased steadily in the HRS wheat lipids. Free sterols and free fatty acids decreased in the lipids of all varieties. While the same fatty acids were detected in immature and mature wheats, their proportions changed during ripening. Linoleic acid increased steadily, whereas linolenic and oleic acids decreased. Palmitic and stearic acids showed essentially no change with maturation. Examination of the water-saturated *n*-butanol extracts of maturing wheat showed that the phospholipids increased during maturation; no consistent changes were detected in the galactolipids.

THE DISTRIBUTION OF LIPIDS IN FRACTIONATED WHEAT FLOUR. V. L. Youngs (North Dakota State Univ., Fargo, N.D.), D. G. Medcalf and K. A. Gilles. *Cereal Chem.* **47**, 640–9 (1970). The free and bound lipids in four major fractions of Selkirk, a hard red spring, and Wells, a durum wheat, were analyzed by thin-layer chromatography. Gluten (high-protein fraction) contained 65% of the total extracted lipid; starch and sludge (low-protein fractions) together contained 32% of the total extracted lipid, and the water-solubles (high-protein fraction) the remaining 3%. Approximately 90% of the lipids was bound. The di- and triglycerides, mono- and diagalactosyl diglycerides, and phosphatidyl choline occurred primarily in the gluten. More free fatty acids were associated with the low-protein fractions, starch and sludge, than with gluten and water-solubles. Wells flour fractions were practically devoid of saturated sterol esters, but contained free sterols. The opposite was true for the Selkirk fractions.

THE STUDY OF PHOSPHOLIPIDS IN THE OIL OF THE HUSK OF ORIZA SATIVA. K. Bahadur (Dept. of Chem., Univ. of Allahabad, Allahabad) and R. L. Srivastava. *J. Indian Chem. Soc.* **47**, 804–6 (1970). In the present work the phospho-

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lipids have been extracted from rice and wheat husk oils. A detailed study of phospholipids from the "Rice-husk oil" is reported.

DETERMINATION OF LIPID CLASSES BY A GAS-CHROMATOGRAPHIC PROCEDURE. W. W. Christie, R. C. Noble and J. H. Moore (Hannah Dairy Res. Inst., Ayr, Scotland). *Analyst* **95**, 940–44 (1970). Gas chromatography of the component fatty acids with added internal standard can be used to determine a wide variety of neutral and polar lipids, after separation by thin-layer chromatography, if precautions are taken to minimize losses. Results can be expressed in terms of the relative amounts of fatty acids contained by the lipids or the actual weights and molar amounts of the lipid classes can be calculated by applying readily derived factors. The procedure is at least as accurate as others in current use and has the additional merit of allowing simultaneous determination of lipid and fatty composition.

ADVANCES IN EUROPE. A. H. Woollen (London, England). *Food Eng.* 42(11), 76–9 (1970). A number of innovations are briefly described, including the continuous production of pastry margarine (Melting point, 106–113F). Previously, pastry margarine could be produced only by a batch process involving a chilling-drum and a kneading unit. Now, the margarine is made continuously by a scraped-surface heat-exchanger that gives the proper cooling and kneading effect. Some of the other areas included in the article are: aseptic processing of semi-solid foods; thawing frozen foods under vacuum to control quality; announcement of a new mushroom-type protein; replacing malt in a fermentation process with enzymes; and use of reverse osmosis for concentrating and separating dairy products.

CRYSTALLIZES FATS FOR UNIFORM BLENDING. *Food Eng.* 42(11), 80–2 (1970). A simple, continuous German process is detailed for converting liquid fats to fine powders. The powdered fat is then blended uniformly with a variety of dry mix carriers. A number of new-product applications are cited.

SIMPLIFIES PROPORTIONING. J. R. Russo (Assoc. Ed., Food Eng., Philadelphia, Pa., 19139). *Food Eng.* 42(12), 87 (1970). A West Coast margarine producer controls ratio of oil and milk simultaneously with a two-headed pump. This eliminates the need for a mixing tank.

CONTINUOUS SOLVENT EXTRACTION AND DEHYDRATION SYSTEM FOR FAT AND WATER CONTAINING TISSUES. G. B. Karnofsky (Blaw-Knox Co.). *U.S. 3,535,354.* A new solvent extraction and dehydration system for animal and vegetable tissues containing water and fats (oils and oil soluble substances) by treatment of such tissue with a suitable solvent immiscible with and capable of forming a heterogeneous azeotrope with the water in said tissue and a miscella with the fat and the separate removal of the azeotrope and miscella with the employment of solvent in vapor form as a heating medium.

ADSORPTION OF FULVIC ACID (FA) ON BENZENE/WATER INTERFACE. C. Datta (Colloid Res. Lab., Dept. of Pure Chem., Univ. College of Sci., Calcutta-9, India). *J. Indian Chem. Soc.* **47**, 867–70 (1970). It has been found that fulvic acid (FA) extracted from soil can be used to stabilize oil droplets dispersed in water. Previous work has been done on unionized solutes such as butyric, lauric, palmitic and stearic acids at oil/water interface, but little has been reported on the adsorption of FA. The present investigation was carried out to determine the adsorbed amount of FA per ml of benzene dispersed and the data obtained have been applied to test the applicability of different adsorption isotherms proposed for the adsorption of unionized solutes at the oil/water interface.

KINETIC METHOD FOR DETERMINING THE DEGREE OF MOLECULAR SELECTIVITY DURING HYDROGENATION OF FATS. B. N. Tjutjunnikov *et al.* (Polytechnic Inst. Kharkov). *Izv. Vysshikh Uchebn. Zavedenii, Pishchevaya Tekhnol.* **1971**, 164–7. In order to determine the degree of molecular selectivity (DMS), it is necessary to determine the ratio of the rates of hydrogenation of the GU_3 and GU_2S glycerides into GU_2S and GUS_2 glycerides, respectively. The rates of hydrogenation of these groups of glycerides should be proportional to their concentrations in the oil and to the rate constants of the processes. Then the DMS can be expressed as follows: $DMS = V_A/V_B = K_1A/K_2B = K_1/K_2 \times A/B = K_{1,2} \times A/B$, where V_A, V_B are the rates of hydrogenation of GU_3 and GU_2S to GU_2S and GUS_2, respectively; K_1, K_2 are the hydrogenation rate constants of GU_3 and GU_2S, respectively; and A, B are the concentrations of GU_3 and GU_2S. Thus the DMS determination reduces to determining A and B in the starting oil and in the hydrogenated oil, as well as $K_{1,2} = K_1/K_2$. Examples of sunflower seed oil hydrogenated with nickel formate and with palladium are given. In the former case, the DMS went from 4.2 at 114.5 I.V. to 2.3 at 74.6 I.V. and 1.7 at 65.0 I.V. In the latter case, the DMS decreased from 3.3 at 118.5 I.V. to 2.0 at 75.1 I.V. (Rev. Franc. Corps Gras)

CONTINUOUS PRODUCTION OF LECITHIN FROM CRUDE SUNFLOWER SEED OIL. I. Marincevski *et al. Maslo-Sapunema Prom., Byul.* **7**(1), 37–42 (1971). The article contains a description of a continuous installation for the production of sunflower seed lecithin. The process comprises the following steps: hydration of the oils, separation of the gums, and vacuum drying of the gums. The lecithin thus obtained contains 0.8–1.8% water, 32–40.5% oil, and 58.2–65.1% phosphatides. The color index is 8.5. (Rev. Franc. Corps Gras)

TRACE ANALYSIS ON CAPILLARY COLUMNS. SELECTED PRACTICAL APPLICATIONS: INSECTICIDES IN RAW BUTTER EXTRACT; AROMA HEAD SPACE FROM LIQUORS; AUTO EXHAUST GAS. K. Grob and G. Grob (Dept. of Organic Chem., Univ. of Zurich, Switzerland). *J. Chromat. Sci.* **8**, 635–9 (1970). Trace analysis on capillary columns becomes feasible provided appropriate injection techniques without stream splitting are used. To demonstrate potentialities and limitations of the methods, practical applications were investigated, the conditions of which were as dissimilar as possible. As indicated in the title, one area studied was the estimation of insecticides in dairy products by direct analysis of the petroleum ether extract, without previous purification by column chromatography. Two to four microliters of extract were injected without splitting on a short inlet capillary fitted in a separate injection bloc. The inlet capillary was connected to the capillary column mounted in the column oven with electron capture detector. Little analytical data is given but the minimum detectable dieldrin concentration was in the order of 1 nanogram per milliliter. It is believed that, with certain modifications, the system should be able to detect substantially lower concentrations.

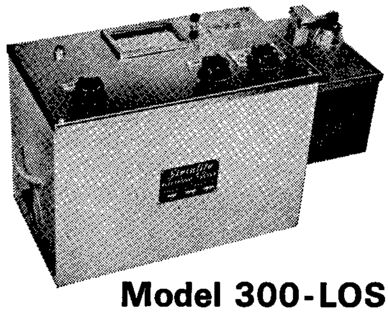
AN IMPROVED MOLECULAR SIEVING PROCEDURE FOR THE DETERMINATION OF TOTAL NORMAL PARAFFINS IN MICROCRYSTALLINE WAX. T. A. Washall, S. Blittman and R. S. Mascieri (Arco. Chem. Co., Res. Div., Philadelphia, Pa. 19101). *J. Chromat. Sci.* **8**, 663–7 (1970). An improved molecular sieving technique has been developed for the determination of the total normal paraffin content of microcrystalline waxes. The absorption of normal paraffins is carried out at 180C from a decalin solution without refluxing. Experimental results obtained during the development of the new technique indicated that absorption of normal paraffins from microcrystalline waxes containing aromatics was incomplete when conventional sieving techniques were employed. The apparent "aromatic inhibiting" effect observed appears to be specific to the highly substituted monoaromatics found in microcrystalline waxes. Principal advantages of the new technique are: (1) the procedure is applicable to both paraffin and microcrystalline waxes, (2) no prior removal of aromatics from microcrystalline waxes is necessary and (3) complete absorption of normal paraffins is attained in less time than that required with the conventional technique.

FAT DETERMINATION—A NEW PHYSICAL METHOD. C. D. Bittenbender (Schluderberg-Kurdle Co., Inc., Baltimore, Md.). *J. Food Sci.* **35**, 460–3 (1970). A fat determination method based on precise hydrometric measurement of the relative density of a solution of the fat contained in a sample dissolved in a constant volume of heptane is presented. The apparatus and method are described in detail and comparative results by this method and by the A.O.A.C. method are presented. The effect of various factors on results is established. The application of another solvent, less hazardous than heptane, is also described.

CONSTITUENTS OF OLIBANUM OIL: SESQUITERPENE HYDROCARBONS. R. L. Yates and J. A. Wenninger (Div. of Colors & Cosmetics, FDA, Washington, D.C. 20204). *J. Assn. Off. Anal. Chems.* 53, 941–8 (1970). The sesquiterpene hydrocarbons of a commercial sample of olibanum oil (widely used in cosmetics) were isolated and purified by a combination of techniques, including column chromatography, silver nitrate adduction, distillation and preparative GLC. Most components were identified by their IR spectra. In some cases NMR spectra were used for identification. A total of 27 sesquiterpene hydrocarbons were identified and 2 others were tentatively identified by this method.

NOTE ON THE EXTRACTION OF ^{14}C-DDT RESIDUES FROM SOYBEANS. R. G. Nash and M. L. Beall, Jr. (Crops Res. Div., Agr. Res. Service, U.S. Dept. of Agr., Beltsville, Md. 20705). *J. Assn. Off. Anal. Chems.* 53, 1058–9 (1970). Residues of ^{14}C-DDT were not completely removed from fresh or wetted dried soybean plants when hexane-acetone-methanol was used for Soxhlet extraction. The nonextractable ^{14}C presumably was contained in degraded residues of DDT.

FATTY ACID COMPOSITION OF COD LIVER OIL DETERMINED BY UREA FRACTIONATION AND MODIFIED PROGRAMMED TEMPERATURE GAS CHROMATOGRAPHY. J. L. Iverson (Div. of Food Chem. & Technol., FDA, Washington, D.C. 20204). *J. Assn. Off. Anal. Chem.* 53, 1074–9 (1970). Esters of fatty acids in marine oils, with similar GLC retention times, are concentrated in separate fractions by this proposed urea fractionation procedure. Esters which are present at the ppm level and are normally hidden under major peaks can then be detected.



ANNOUNCEMENT

1971-1972

SMALLEY CHECK SAMPLE PROGRAM

The Smalley Committee annually offers a number of Check Samples Series in various analytical categories. Interested analysts should write to Smalley Committee, AOCS, 508 S. Sixth St., Champaign, Ill. 61820, prior to July 15, 1971 for order forms and complete information, which will be distributed before each series begins.

The following Check Sample Series (the number of samples being shown in parenthesis) are offered:

Cottonseed (10)
Soybeans (10)
Peanuts (7)
Safflower Seed (7)
Oilseed Meals (15)
Edible Fats (5)
Drying Oils (6)
Tallow & Grease (5)
Cottonseed Oil (4)
Soybean Oil (4)
Copra (4)
N.I.O.P. Fats & Oils (5)

Gas Chromatography (fatty acid composition) (6)
Cellulose Yield (cotton linters) (10)

Additional series will be offered should sufficient interest be indicated. Please advise the Smalley Committee of series you feel would be of value.

R. T. Doughtie, Jr., Chairman
Smalley Committee

By modified programmed temperature gas chromatographic techniques, it is possible to detect trace amounts of the short and long chain fatty acids. Accurate identifications are assured by the correlation of fatty acid structures with the preferential order in which they form complexes and retention times before and after hydrogenation. Cod liver oil was found to contain 130 fatty acids. Most of the esters present in trace amounts are predominately C_{20} to C_{34} acids which had not been previously reported.

RAPID INSTRUMENTAL FAT DETERMINATION. A. J. Malanoski and E. L. Greenfield (Consumer Protection Programs, Consumer & Mkt. Serv., USDA, Beltsville, Md. 20705). *J. Assn. Off. Anal. Chem.* 53, 1080–1 (1970). The Digital Fat Controller was evaluated for use in plant control and as a screening tool. The determination of fat by the Digital Fat Controller utilizes specific gravity with automatic computation and a "nixie" tube readout. No sample preparation is required and an analysis can be completed in 30–60 seconds. Fifty-six samples were analyzed by both the automated method and the official AOAC method.

DETERMINATION OF SMALL QUANTITIES OF BUTYRIC ACID IN FATTY FOODS: APPLICATION TO DETERMINATION OF FATTY MATERIAL OF BUTTER. A. Karleskind, G. Valmalle and J. P. Wolff (Laboratories Wolff, 182, Faubourg Saint-Denis, Paris X, France). *J. Assn. Off. Anal. Chem.* 53, 1082–4 (1970). A gas chromatographic method is described for the determination of small quantities of butyric acid in fatty foods. After saponification of the fat in the sample and acid decomposition of the soaps formed, the fatty acids are steam distilled and butyric acid and other volatile acids are collected in dilute NaOH solution. The sodium salts formed are dried and then transformed directly into methyl esters. Methyl butyrate is determined by gas chromatography with an internal standard (methyl valerate).

METHODS OF DETERMINING EXTENT OF STINKBUG DAMAGE IN SOYBEANS. II. FLOTATION METHOD. J. R. Hart (Mkt. Quality Res. Div., ARS, USDA, Beltsville, Md. 20705). *Cereal Chem.* 47, 369–72 (1970). Decrease in soybean density resulting from stinkbug punctures causes a greater number of soybeans in a stinkbug-damaged sample to float on a saturated NaCl solution. The percent of soybeans in a sample containing stinkbug damage that will float on a saturated salt solution is determined. The percent of undamaged beans, picked by hand from a separate portion of the same sample, that will float is also determined. The differences between these two percentages for different samples have been found to be proportional to the extent of stinkbug damage present. On the basis of these measurements, a linear scale of values representing relative amounts of damage can be prepared.

III. RELATION OF STINKBUG DAMAGE TO QUALITY IN SOYBEANS. *Ibid.*, 545–8. Changes in oil content, percent of free fatty acids and protein content, resulting from stinkbug damage, were determined for 27 samples of soybeans. Determinations were first made on undamaged soybeans picked by hand from a sample, and the results were compared with the same determinations made on an unpicked portion of the sample. Results indicate that stinkbug damage causes lower oil content, higher percent of free fatty acids, and, in most samples, higher protein content. Longer storage time appeared to produce no further quality deterioration in stinkbug-damaged beans.

TRACE HYDROGENATION OF BUTTEROIL AT LOW TEMPERATURES. A. K. Vasishtha, J. G. Leeder, and S. S. Chang (Dept. of Food Sci., Rutgers Univ., New Brunswick, N.J.). *J. Food Sci.* 35, 395–7 (1970). Butteroil was selectively trace hydrogenated using palladium catalyst at low temperatures, some temperatures being below the melting point of butteroil. The hydrogenated product had a remarkable flavor stability with only slight increase in trans-isomers and melting point. The hydrogenated butteroil also retained most of its desirable flavor and color.

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• *Names in the News . . .*

L.N. APPLE has been elected executive vice president of Pacific Vegetable Oil Corporation. Mr. Apple has been with the company since February 1969 as Vice President, Finance. He also served as treasurer until last year.

GILBERT STORK, Professor of Chemistry at Columbia University, New York City, has been awarded the 1971 SOCMA (Synthetic Organic Chemical Manufacturers Association) Medal for Creative Research in Organic Chemistry. Dr. Stork is well known for his work in developing new and efficient methods for alkylating ketones and aldehydes, and for his many natural product syntheses and structure elucidations. Born in Brussels, Belgium, Dr. Stork received his Ph.D. at the University of Wisconsin in 1945. He then joined the faculty at Harvard where he taught until moving to Columbia in 1953.

J.B. STOTHERS, professor of chemistry, University of Western Ontario, London, has been named as the 1971 winner of the Merck Sharp & Dohme Lecture Award of the 10,000-member The Chemical Institute of Canada. In his pioneering work on carbon-13 NMR spectroscopy as applied to finding out the detailed structure of organic molecules, Stothers has opened up a new field. His approach is now being followed up by many researchers and this technique is showing great promise in sugar chemistry, in natural product biogenetic studies, and in biochemistry. Stothers has published over 50 scientific papers. A new book he has written on carbon-13 spectroscopy could be the "bible" in its field when published later this year. He also serves on the editorial board of the Journal of Magnetic Resonance.

I.E. PUDDINGTON, director of the Division of Chemistry, National Research Council, Ottawa, has been named winner of the Montreal Medal of the 10,000-member The Chemical Institute of Canada, for his outstanding leadership to the chemical profession. Puddington has published over 40 technical papers and is the inventor or coinventor of 17 patents and 24 patent applications. His basic work in colloids lead to a new approach for separating liquids from solids called spherical agglomeration. He has served the chemical profession both nationally as President of The Chemical Institute of Canada in Canada's Centennial Year, and internationally, as Secretary of the Applied Chemistry Division of the International Union of Pure and Applied Chemistry since 1967.

R.B. SEMPLE was elected chairman of the board of BASF Wyandotte Corporation on April 20, 1971. He had been the company's president since the turn of the year when Wyandotte Chemicals Corporation and BASF Corporation were merged. He joined Wyandotte Chemicals in 1949 as president and chief executive officer. Prior to that he had been director of general development at Monsanto Chemical Company.

D.H. AMBROS was elected president of BASF Wyandotte Corporation on April 20, 1971. He had served the company as executive vice president in charge of the Colors and Chemicals Group since the turn of the year when BASF Corporation and Wyandotte Chemicals Corporation were merged. Prior to the merger he had been president of BASF Corporation from mid-1970. In the preceding two years he was president of BASF Systems Inc., Bedford, Mass. He still serves the company as chairman of its board of directors. From 1966 to 1968 Mr. Ambros was vice president of chemical operations for Dow Badische Company in Freeport, Texas. Since joining BASF AG, Uudwigshafen (Rhine), West Germany, in 1958 Mr. Ambros served in France, India and Brazil.

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• *Obituary*

Word has been received of the death of Joseph Lederer ('67) Research Chemist at Witco Chemical Co., Chicago, Ill.

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• Biochemistry and Nutrition

FOOD PATTERNS THAT LOWER BLOOD LIPIDS IN MAN. Helen B. Brown (Cleveland Clinic Found., Cleveland, Ohio). *J. Am. Diet. Assoc.* 58, 303–11 (1971). In this paper, the author discusses the general effects of diet on blood lipid components and the specific effects of different dietary lipids on these same components. The dietary fat components discussed include total fat, saturated, monounsaturated and polyunsaturated fatty acids, cholesterol and hydrogenated oils. These factors interact among themselves and with other dietary factors such as carbohydrate and Vitamin E. Finally, some fat-controlled diets designed to treat specific hyperlipidemic conditions are described.

pH ADJUSTMENT CONTROL OF OXIDATIVE OFF-FLAVORS DURING GRINDING OF RAW LEGUME SEEDS. S. Kon, J. R. Wagner, D. G. Guadagni and R. J. Horvat (USDA Western Utilization R & D Div., ARS, Albany, Calif. 94710). *J. Food Sci.* 35, 343–5 (1970). Grinding dry California Small White beans or Lee soybeans under acid conditions inhibited lipoxidase in the seeds and resulted in bland legume slurries and "milks." Sensory evaluation and gas chromatography were used to determine the effect of processing method on flavor. Off-flavor development was suppressed at pH 3.85 and below; acidification to about pH 2.0 was necessary to obtain maximum protein extraction in the preparation of legume "milk." Acceptably bland products were obtained from the slurries by neutralization after heating.

AUTOXIDATION OF CHOLESTEROL VIA HYDROPEROXIDE INTERMEDIATES. J. E. van Lier and L. L. Smith (Dept. of Biochem., Univ. of Texas Med. Branch, Galveston, Texas 77550). *J. Org. Chem.* 35, 2627–2632 (1970). The autoxidation of cholesterol in air is shown to proceed both via the previously recognized photoinduced singlet oxygen attack on the A/B-ring system to give the well-known sequence of autoxidation products of cholesterol, and also by a biradical oxygen attack resulting in the formation of cholesterol 20α and 25-hydroperoxides and their putative degradation products cholest-5-ene-3β,25-diol, cholest-5-ene-3β, 20α-diolchol-5-en-3β-ol, pregn-5-ene-3β, 20α-diol, pregn-5-en-3β-ol, 3β-hydroxypregn-5-en-20-one, androst-5-ene-3β,17β-diol, androst-5-en-3β-ol, and 3β-hydroxyandrost-5-en-17-one.

• Drying Oils and Paints

GLYCEROL-LIKE CONTAMINATION OF COMMERCIAL BLOOD SAMPLING TUBES. F. R. Chowdhury, H. Rodman and S. J. Bleicher (Div. of Endocrinology and Metabolism, The Jewish Hosp. and Med. Cen. of Brooklyn, Brooklyn, New York 11238). *J. Lipid Res.* 12, 116–19 (1971). Commercial blood sampling tubes have been found to be heavily contaminated with a glycerol-like substance. Thus, use of these tubes may lead to falsely elevated plasma concentrations of glycerol.

COMBINATIONS OF ACRYLIC COPOLYMERS WITH REACTIVE GROUPS AND PARTIALLY EPOXIDISED LINSEED OIL. A. E. Rheineck. *Deutsche Farben-Z.* 23, 537–8 (1969). By the introduction of aldehyde groups into linseed oil by reaction with double bonds, materials are obtained which react with various hydroxyl-group containing resins, *e.g.* styrene/allyl alcohol copolymers. As a substitute for the aldehyde oils, partially epoxidised linseed oil may be used; the oxirane groups react with OH groups in the resin. Acrylic resins, based on hydroxyethyl methacrylate, methyl methacrylate, etc., are also used to react with the partially epoxidised linseed oil to give good film properties. (World Surface Coatings Abs. No. 343)

REACTION OF DRYING AND SEMI-DRYING OILS WITH OXYGEN. K. Hajek. *Chim. Peint.* 33, 220–31 (1970). The oxidative polymerisation of various oils used to modify alkyd resins is considered in terms of fatty acid composition, oxygen uptake and its measurement, the effects of driers (notably Co, Pb and Ca naphthenates in linseed oil) and the action of oxime-type anti-skinning agents. (World Surface Coatings Abs. 343)

ISOMERISED SAFFLOWER OIL—I. G. S. R. Sastry, B. G. K. Murthy and J. S. Aggarwal. *Paint Manuf.* 40 No. 8, 32–4 (1970). The alkali isomerisation of safflower oil with various solvents has shown that ethanol in the presence of sodium hydroxide gives the highest yield of conjugated dienoic acids and is the most economical. Maximum amounts of trans-trans dienoic acids are obtained if the elaidinisation of the isomerised safflower fatty acids is carried out in the presence of S powder at 110–130C for 3 hr. in an inert atmosphere. (World Surface Coatings Abs. No. 344)

CHANGES IN FATTY ACID COMPOSITION DURING THE PREPARATION OF ALKYD RESINS. F. H. de la Court, N. J. P. van Cassel and J. A. M. van der Valk. *Farbe u. Lack* 76, 751–3 (1970). The changes of the fatty acid composition as influenced by the temperature of preparation were investigated in several alkyd resins prepared with linseed or soybean fatty acids. The resins modified with linseed fatty acids underwent a drastic change in the contents of dimeric and polymeric fatty acids if the preparation temperature was increased from 230 to 280C. In the resins prepared with soybean fatty acids this content increased at 230C by about 10%; above this temperature (up to 280C) there was no further increase. (World Surface Coatings Abs. No. 344)

• Detergents

SOLID BIPROPELLANT COMPOSITION CONTAINING A WETTING MIXTURE OF POLYOXYETHYLATED SORBITAN MONOLAURATE AND LECITHIN. L. J. Bornstein (USA, represented by Sec. of the Army). *U.S. 3,535,174.* A novel mixture of wetting agents for use in bipropellant compositions to improve the processability thereof, the mixture containing equal parts, by weight, of polyoxyethylated sorbitan monolaurate and lecithin.

STUDIES ON ZETA POTENTIAL OF PARTICLES OF (I) SODIUM OLEATE, (II) OLEIC ACID AND THEIR MIXTURES DISPERSED IN WATER. Bhagwan Swaroop (Dept. of Chem., Luchnow Univ., Luchnow). *J. Indian Chem. Soc.* 47, 799–803 (1970). In this paper, zeta potential of two component systems H_2O + Na oleate, H_2O + oleic acid as well as of a three component system, H_2O + Na oleate + oleic acid has been studied with an ultramicroscope fitted with a special type of electrophoretic cell. It has been found that in both the two component systems, the zeta potential decreases gradually and then increases with the increase of sodium oleate solution or oleic acid solution but when the three components are mixed together, two peaks are found. An attempt has been made to explain the results.

DETERMINATION OF LECITHINS IN COMMERCIAL PRODUCTS. Z. Drabent *et al. Przemysl Spozywczy* 24(12), 519–21 (1970). The amount of pure lecithin in commercial products can be estimated from analysis of choline by use of Reinecke's salt. Two products analyzed contained only 15.9 and 19% lecithin. The modified method of fractional extraction is not very precise. It consists of separating the acetone insolubles into lecithin- and cephalin-like fractions. (Rev. Franc. Corps Gras)

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