EFFECT OF CARBON TETRACHLORIDE ON INCORPORATION OF LINOLEIC-1-^{14}C ACID INTO LIVER LIPIDS IN RATS IN VIVO. D. S. Sgoutas and F. A. Kummerow (Burnsides Res. Lab., Univ. of Ill., Urbana). *Proc. Soc. Exp. Med.* 123, 279–82 (1966). Linoleic-1-^{14}C acid was rapidly incorporated into the liver lipids of both control and carbon tetrachloride treated rats. Twenty minutes after the injection, a pronounced fall in incorporation into phosphatidyl ethanolamine with a concurrent rise in incorporation into cardiolipin and phosphatidyl choline fractions was observed in the degenerating liver. The increased incorporation of radioactivity into cardiolipin and phosphatidyl choline was reflected in an increased content of linoleic acid in these phospholipids but not in phosphatidyl ethanolamine. These results suggested the existence of separate pools of linoleic acid for incorporation into individual phospholipids.

ROLE OF PHOSPHOLIPIDS IN THE ENZYMATIC SYNTHESIS OF THE BACTERIAL CELL ENVELOPE. L. Rothfield, M. Takeshita, M. Pearlman and R. W. Horne (Dept. of Molecular Bio., Albert Einstein College of Med., Yeshiva U., New York City). *Federation Proceedings* 25, 1495–1502 (1966). The cell membranes and cell walls of bacteria and higher organisms contain significant amounts of phospholipid as well as proteins and other macromolecules. The biochemical role of these phospholipids has been obscure, but it is now apparent that phospholipids are intimately involved in enzyme reactions leading to biosynthesis of several of the macromolecular components of the bacterial cell envelope.

SOME FACTORS AFFECTING FREE FATTY ACID DISTRIBUTION IN LIPASE-HYDROLYZED MILK FAT. J. A. Robertson, W. J. Harper and I. A. Gould (Dept. of Dairy Tech., The Ohio Agricultural Expt. Station, Columbus, Ohio). *J. Dairy Sci.* 49, 1395–1400 (1966). A gas chromatographic study of the methyl esters of free fatty acids revealed that the relative concentration of free fatty acids hydrolyzed by milk lipase from milk fat at pH 7.0 and pH 8.6 was affected by milk fat substrate concentration, incubation temperature, and inhibitors. Eighteen methyl esters were separated and 11 were identified. Generally, the unidentified esters were present in higher concentrations in the free fatty acid mixture following lipolysis than in the saponified substrate fat. At both pH 7.0 and 8.6, the substrate concentration was inversely related to the relative concentration of the free short-chain fatty acids (C-6 to C-12). The pH had a slight effect on the relative concentration of free fatty acids resulting from lipase action. Short chain acids were in greater concentrations when the assay was at pH 8.6 than at 7.0, whereas concentrations of several of unknown acids displayed an opposite pH relationship. In comparison to the control, ferric chloride was found to have no effect on the relative concentration of free fatty acid methyl esters at pH 7.0, but caused a marked increase in the relative concentration of both known and unidentified long-chain esters at pH 8.6. Changes in distribution of free fatty acids caused by the presence of cupric chloride and diisopropyl fluorophosphate during lipolysis did not exceed 10% of the control.

IN VITRO STUDIES OF PHOSPHOLIPID SYNTHESIS IN EXPERIMENTAL ATHEROSCLEROSIS. POSSIBLE ROLE OF MYO-INTIMAL CELLS. F. Parker, J. W. Ormsby, N. F. Peterson, G. F. Odland and R. H. Williams (Dept. of Med., Univ. of Washington, School of Med., Seattle, Wash.). *Circulation Res.* 19, 700–10 (1966). Using *in vitro* techniques and labeled linoleic acid and glucose, alterations in phospholipid synthesis in the aorta were correlated with electron microscopic studies at various intervals of time after feeding rabbits cholesterol. After 4 to 8 weeks of feeding, more phospholipid precursors were incorporated into the phospholipids of atherosclerotic blood vessels than of normal vessels. Concomitant with the metabolic alterations, the following ultrastructural changes occur. Smooth muscle cells of the plaque (myointimal cells) evolve into highly vacuolated cells containing a profusion of cytoplasmic organelles. The increase in membranous organelles suggests that the increase in phospholipid synthesis may be the result of a cellular requirement for increased intracytoplasmic structural phospholipid.

BONE MARROW COMPOSITION OF CHOLESTEROL-FED GUINEA PIGS. R. Ostwald, O. Darwish, D. Irwin, and Ruth Okey (Dept. of Nutr. Sciences, Univ. of Calif., Berkeley). *Proc. Soc. Exp. Biol. Med.* 123, 220–4 (1966). The anemia produced in guinea pigs by dietary cholesterol led to a stimulation of erythropoietic activity with a proliferation of marrow cells which displaced the fat globules normally occupying the femoral marrow cavity. The triglyceride content decreased to half of its original level while the relative proportion of PL and cholesterol, on a dry,

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Symposium on Pharmacology of Hormonal Polypeptides, Milan, 1967

An International Symposium entitled "Pharmacology of Hormonal Polypeptides: Metabolic and Molecular Aspects" will be held in Milan, Italy on Sept. 14–16, 1967, under the co-sponsorship of the University of Milan, Institute of Pharmacology and Therapy, Italy, and The State University of New York at Buffalo Department of Biochemical Pharmacology, School of Pharmacy, Buffalo, N. Y., and under the auspices of the International Society of Biochemical Pharmacology.

The Symposium will be divided into the following sessions: 1) Techniques in Peptide Synthesis; 2) Anterior Pituitary and Placenta; 3) Anterior Pituitary and Hypothalamus; 4) Posterior Pituitary Hormones and Factors Affecting Lipid Mobilization; 5) Insulin and Glucagon; 6) Other Hormonal Peptides. It will be composed of invited papers and a limited number of communications.

The deadline for abstracts (250 words) of the free communications is May 31, 1967.

For further information contact the secretarial office of Professors L. Martini and R. Paoletti, Institute of Pharmacology, University of Milan, Via Andrea Del Sarto 21, Milan, Italy.

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fat-free basis remained unchanged. The proportion of linoleic acid in the remaining portion of TG decreased. Fractionation of the PL showed changes in their composition, particularly a decrease of the less polar components. The relationship of these changes in marrow to the changes observed in the peripheral blood requires further study.

STUDIES ON BILE ACIDS. SOME OBSERVATIONS ON THE INTRACELLULAR LOCALIZATION OF MAJOR BILE ACIDS IN RAT LIVER. T. Okishio and P. P. Nair (Biochem. Res. Div., Dept. of Med., Sinai Hospital of Baltimore, Baltimore, Md.). *Biochemistry* **5**, 3662–8 (1966). The subcellular distribution of major bile acids in rat liver has been studied by the application of recently developed gas-liquid partition chromatographic methods. The relative concentrations of several bile acids in rat portal blood and liver homogenate resembled each other very closely except for chenodeoxycholic acid. The concentration of chenodeoxycholic acid in liver is significantly higher than in portal blood. The cytoplasmic compartment accounts for approximately 70% of the bile acids with more than 50% for each individual bile acid studied. The ratio of cholic/deoxycholic in each subcellular fraction revealed the existence of a relatively larger proportion of deoxycholic acid in the mitochondrial and microsomal fractions compared to that in the cytoplasmic fraction (1.7 and 1.3 vs. 5.1). Since the enzymes concerned with hydroxylation (7α-hydroxylase) and conjugation are located in microsomes and partly in the mitochondria, there seems to be a relationship between localization of bile acids in these subcellular particles and their functional role.

THE INHIBITION OF STEROL BIOSYNTHESIS IN RAT LIVER HOMOGENATES BY BILE. J. W. Ogilvie and B. H. Kaplan (Dept. of Physiol. Chem., The Johns Hopkins Univ. School of Med., Baltimore, Md.). *J. Biol. Chem.* **241**, 4722–30 (1966). The incorporation *in vitro* of acetate-1-^{14}C into digitonin-precipitable sterols in rat liver homogenates is markedly inhibited by small amounts of rat bile. The incorporation *in vitro* of mevalonate-2-^{14}C into digitonin-precipitable sterols in the same enzyme system is much less sensitive to bile, suggesting that the major site of action of bile in suppressing sterol biosynthesis from acetate is at a pre-mevalonate step in the biosynthetic pathway. Fasting, which is known to suppress the rate of hepatic cholesterol biosynthesis from acetate in the rat, results in a 2-fold increase in the inhibitory activity of bile. A major part of the inhibitory activity appears to be associated with the protein fraction of bile. This inhibitory protein fraction of bile has been partially purified and characterized. An approximate molecular weight of 19,000 has been determined for the inhibitory protein from the results of gel filtration and sucrose density gradient centrifugation experiments.

INFLUENCE OF MEAL COMPOSITION ON SERUM AMINO NITROGEN, GLUCOSE AND NONESTERIFIED FATTY ACIDS. R. G. Nadeau and E. S. Yearick (Instrument Products Div., E. I. du Pont de Nemours and Co., Wilmington, Delaware). *Am. J. Clin. Nutr.* **19**, 329–34 (1966). Six isocaloric test meals providing two levels of protein and different fat:carbohydrate ratios were administered to 10 healthy young men. The amino nitrogen, glucose and nonesterified fatty acid levels in venous blood serum were determined at fasting and at intervals up to 7 hours following the ingestion of the test meals. The high protein meals produced a significantly greater increase in amino nitrogen concentration than did the moderate protein meals. Serum glucose concentrations, which declined at 1.5 hours after all meals, were in inverse relation to the amount of protein ingested. Both the amino nitrogen and the glucose responses to the high protein meals were minimized when the meals contained high fat or high carbohydrate calories. A significant negative correlation (−0.84) between serum amino nitrogen and serum glucose concentrations was found at all sampling periods. In general, nonesterified fatty acid levels decreased before exhibiting a rise following the ingestion of all meals. The nonesterified fatty acid values were directly related to the fat:carbohydrate ratios of the meals. A depressant effect of protein on serum nonesterified fatty acids was evident.

THE INFLUENCE OF 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE ON THE INCORPORATION OF STEARATE-1-^{14}C AND OLEATE-1-^{14}C INTO MICROSOMAL PHOSPHATIDYL CHOLINE AND PHOSPHATIDYL ETHANOLAMINE. R. J. Morin (Dept. of Pathol., Los Angeles County Harbor Gen. Hosp., Torrance, Calif.). *Cancer Res.* **26**, 2186–2189 (1966). Several groups of rats were fed either a fat-free or cholesterol containing diet with or without 3′methyl-4-dimethyl-aminoazobenzene (3′-Me-DAB) for 6 weeks, after which they were given 1 dose of either stearate-1-^{14}C or oleate-1-^{14}C and killed at 1-, 2-, 4- and 24-hr intervals. Microsomal phosphatidyl choline and phosphatidyl ethanolamine were isolated by thin-layer chromatography and their radioactivities and fatty acid composition determined by liquid scintillation spectrometry and gas chromatography. Administration of 3′-Me-DAB to rats on the fat-free diet caused an increase in the proportion of oleic acid and a decrease in stearic acid in phosphatidyl choline. Cholesterol in the diet together with the azo dye produced an accentuation of the fatty acid alterations. With 3′-Me-DAB, there was an increased incorporation of radioactive stearate at the early time intervals, and in increased 24-hr retention of radioactive oleate, suggesting a possible increased turnover of stearate-containing phospholipids induced by the azo dye, leaving more oleate-containing phospholipids remaining in the microsomes. The combination of cholesterol with 3′-Me-DAB produced a decreased synthesis of stearate-containing phospholipids and a lesser decrease in synthesis of oleate containing phospholipids, which may explain the alteration in the proportions of these 2 fatty acids in rats fed this diet.

BIOSYNTHESIS OF LIPIDS BY KINETOPLASTID FLAGELLATES. H. Meyer and G. G. Holz, Jr. (Dept. of Microbiology, State Univ. of New York, Upstate Medical Center, Syracuse, New York). *J. Biol. Chem.* **241**, 500–5007 (1966). *Crithidia fasciculata, Crithidia oncopelti, Crithidia lucilae, Crithidia* sp. from *Arilus crisatus, Crithidia acanthocephali, Blastocrithidia culcis, Leishmania tarentolae,* and *Leptomonas leptoglossi* were grown under axenic conditions in chemically defined media, and their fatty acids were determined. Palmitic, stearic, and a C_{19} cyclopropane acid were the major saturated fatty acids. Oleic, linoleic, and γ-linoleic were the major unsaturated fatty acids. α-Linolenic acid could not be detected in any of these organisms. Monounsaturated fatty acids were synthesized by direct oxidative desaturation of the corresponding saturated acids, and polyunsaturated fatty acids were synthesized by progressive desaturation and chain elongation of the monoenoic acids. The major lipids of *C. fasciculata* and *C. oncopelti*—triglycerides, sterol esters, phosphatidycholine, phosphatidylinositol, and phosphatidylethanolamine—were identical. Phosphatidylethanolamine contained the bulk of the cyclopropane acid found in *C. fasciculata.* Ergosterol was the major sterol of *Crithidia, Blastocrithidia,* and *Leishmania* species. Methionine served as a source of methyl groups for the biosynthesis of both ergosterol and the cyclopropane acid.

RELATIONSHIP BETWEEN FOOD CONSUMPTION AND MORTALITY FROM ATHEROSCLEROTIC HEART DISEASE IN EUROPE. A. Lopez-S, W. A. Krehl, R. E. Hodges and Eleanor Good (Univ. of Iowa, College of Med., Univ. Hospitals, Iowa City, Iowa). *Am. J. Clin. Nutr.* **19**, 361–9 (1966). It would be interesting to observe the mortality due to AHD over the next decades in countries in which the intake of fat and sugar is high to learn whether today's predictions are confirmed by tormorrow's findings. Even though epidemiologic and statistical studies, such as the present one, do not provide a clear answer concerning the origin and development of AHD in individual subjects or population groups, they do offer clues for more detailed investigations and, particularly, longitudinal studies which may give more clear-cut answers.

SYNOVIAL FLUID FATTY ACID COMPOSITION IN PATIENTS WITH RHEUMATOID ARTHRITIS, GOUT AND DEGENERATIVE JOINT DISEASE. I. C. Kim and A. S. Cohen (Robert Dawson Evans Dept. of Clinical Res., Univ. Hosp., Mass.). *Proc. Soc. Exp. Biol. Med.* **123**, 77–80 (1966). Total fatty acid analyses of synovial fluids from patients with rheumatoid arthritis, gout, and degenerative joint disease and matching sera were carried out by gas chromatography. The relative fatty acid composition of synovial fluid was similar to that in serum. Palmitic, oleic and linoleic acids constituted the major components and myristic, palmitoleic, stearic and arachidonic acids were the minor components. The synovial fluid fatty acid concentration was roughly one-half to one-third of that of the matching serum. However, correlation between the synovial fluid fatty acid concentration and its white cell count was poor and total fatty acid analyses were not helpful in differentiating an inflammatory synovial fluid from a noninflammatory fluid.