The alterations in enzyme activities are interpreted as regulatory effects exerted by dietary cholesterol-cholic acid supplementation.

EFFECT OF ESSENTIAL FATTY ACIDS ON THE FATTY ACID SYNTHESIS IN EPIDIDYMAL FAT CELLS OF THE RAT. Julie T. Du and F.A. Kruger (Dept. of Physiological Chem., College of Med., Ohio State Univ., Columbus, Oh. 43210). *J. Nutr.* 102, 1033–8 (1972). The effect of dietary essential fatty acids (EFA) on lipogenesis in epididymal fat cells from glucose was investigated in an in vitro system. Adipocytes from rats fed a fat-free diet compared to those on a 5% corn oil diet incorporated eight to ten times more radioactivity from uniformly labeled glucose into fatty acids and also twofold more radioactivity into carbon dioxide. The rate of ^{14}C-glycerol synthesis in adipocytes was the same in the two groups of rats. Only diets containing linoleate in the form of linoleate or corn oil markedly suppressed hyperlipogenic activity, and diets containing methyl oleate or hydrogenated coconut oil had little effect. These results indicate that dietary linoleate plays a regulatory role in fatty acid synthesis using glucose as the substrate.

A COMPARISON OF THE TOXICITY OF ERGOCALCIFEROL AND CHOLECALCIFEROL IN RHESUS MONKEYS (MACACA MULATTA). R.D. Hunt, F.G. Garcia and R.J. Walsh (New England Regional Primate Res. Center, Harvard Med. Schl., Southborough, Mass. 01772). *J. Nutr.* 102, 975–86 (1972). Daily oral doses of 50,000, 100,000 and 200,000 IU of ergocalciferol and cholecalciferol in rhesus monkeys (*Macaca mulatta*) demonstrated that cholecalciferol was significantly more toxic than ergocalciferol in this species. All animals given cholecalciferol developed hypercalcemia, died and had extensive soft tissue mineralization. Hypercalcemia occurred in ergocalciferol-supplemented monkeys, but the animals survived and comparable soft tissue mineralization was not evident after sacrifice. A unique feature of the lesion of cholecalciferol toxicity was the deposition of crystals resembling urates with an associated granulomatous reaction. A relationship to relative vitamin A deficiency was suggested.

PREPARATION AND PROPERTIES OF NEXUSES AND LIPID-ENRICHED VESICLES FROM MOUSE LIVER PLASMA MEMBRANES. W.H. Evans and J.W. Gurd (Natl. Inst. for Med. Res., Mill Hill, London NW7 1AA, U.K.). *Biochem. J.* 128, 691–700 (1972). Extraction of mouse liver plasma membranes with 4% (w/v) N-laurylsarcosinate-tris buffer, pH 7.8, solubilized 80–90% of the protein and 60% of the 5′-nucleotidase activity. The membrane residue remaining after extraction was resolved on sucrose gradients into two fractions; a vesicular membrane fraction and a fraction characterized by the presence of large numbers of nexuses in an amorphous background. The vesicular fraction had a phospholipid/protein weight ratio of 7:1, it contained most of the plasma-membrane glycolipids, and polyacrylamide-gel electrophoresis indicated the presence of only five to eight proteins, including two or three glycoproteins. The 5′-nucleotidase and leucine naphthylamidase specific activities were 23- and 6-fold higher respectively than in the plasma membranes.

^{13}C AND ^{1}H NUCLEAR MAGNETIC RESONANCE RELAXATION MEASUREMENTS OF THE LIPIDS OF SARCOPLASMIC RETICULUM MEMBRANES. J.D. Robinson, N.J.M. Birdsall, A.G. Lee and J.C. Metcalfe (Med. Res. Council, Molecular Pharmacology Unit, Med. Schl., Hills Road, Cambridge). *Biochemistry* 11, 2903–9 (1972). ^{13}C nuclear magnetic resonance spectra of sarcoplasmic reticular membranes yield several well-defined resonances from the membrane lipids, identified as the terminal methyl, $(CH_2)_n$, and olefinic carbons of the fatty acid chains and the N^+Me_3 of the choline head group of lecithins. The spectra correspond in intensity to 60–90% of the membrane lipids which is substantially more than is observed in the sharp components of the ^{1}H spectrum. An independent estimate of the extent of the bilayer in the membranes from measurement of the binding of the spin-label 2,2,6,6-tetramethylpiperidine-1-oxyl is consistent with the ^{13}C intensity and relaxation data.

KINETIC STUDIES ON SUBSTRATE-ENZYME INTERACTION IN THE ADRENAL CHOLESTEROL SIDE-CHAIN CLEAVAGE SYSTEM. S. Burstein, Jane Dinh, Nana Co, M. Gut, H. Schleyer, D.Y. Cooper and O. Rosenthal (Div. of Steroid Chem., Inst. for Muscle Disease, New York, N.Y. 10021). *Biochemistry* 11, 2883–91 (1972). A study was made of the kinetics of the oxidative metabolism of (20S)-20-hydroxycholesterol, (22R)-22-hydroxycholesterol and (20R,22R)-20,22-dihydroxycholesterol with adrenocortical heme protein P-450 preparations under various incubation conditions at relatively low substrate concentrations. When the substrate was added last to the complete system, first-order kinetics (within the experimental error) were observed until approximately 10% of the substrate was left; at longer times a decrease in the rate was seen.

INSULIN INSENSITIVITY OF LARGE FAT CELLS. J.N. Livingston, P. Cuatrecasas and D.H. Lockwood (Depts. of Med. and Pharmacology and Exptl. Therapeutics, Johns Hopkins Univ. Schl. of Med., Baltimore, Md. 21205). *Science* 177, 626–8 (1972). Large insulin-insensitive adipocytes from adult rats have normal binding capacities and affinities for insulin. Diminished insulin-like responses to spermine and reduced rates of glucose oxidation are also evident in these cells. The results indicate that the defect responsible for this insulin-resistant state exists in a step subsequent to insulin binding, possibly in transmission of the insulin-receptor "signal" since insensitivity occurs under conditions where glucose transport and oxidative processes are not apparently impaired.

CHOLESTEROL SOLUBILITY IN LECITHIN-BILE SALT SYSTEMS. D. Mufson, Krisna Meksuwan, J.E. Zarembo and L.J. Ravin (Smith Kline and French Labs., Philadelphia, Pa. 19101). *Science* 177, 701 (1972). The method of sample preparation can markedly influence the rate of dissolution and attainment of supersaturated states of cholesterol. The equilibrium solubility of cholesterol, studied as a function of its physical state in a model bile system, is almost half that of previously accepted values. Slow attainment of the equilibrium state may have acted to bias previous studies. Extrapolation of our data to the clinical situation reveals that many persons considered normal by present standards actually possess bile that is supersaturated with respect to cholesterol and are thus potential gallstone formers.

RING HYDROXYLATION OF DI-T-BUTYLHYDROXYTOLUENE BY RAT LIVER MICROSOMAL PREPARATIONS. Y. Shaw and C. Chen (Dept. of Biochem., Northwestern Univ. Med. and Dental Schls., Chicago, Ill. 60611). *Biochem. J.* 128, 1285–91 (1972). 3,5-Di-t-butyl-hydroxytoluene (compound I) was converted into 4-hydroperoxy-4-methyl-2,6-di-t-butylcyclohexa-2,5-dienone (compound II), 4-hydroxy-4-methyl-2,6-di-t-butylcyclohexa-2,5-dienone (compound III) and 2,6-di-t-butyl-4-hydroxymethylphenol (compound IV) by rat liver microsomal preparations in the presence of NADPH and air. The oxidation of com-