

# Abstracts

## Fats and oils

LACTOBACILLIC AND METHYL-BRANCHED OLEFINIC ACIDS IN BYRSOCARPUS COCCINEUS SEED OIL. G.F. Spencer, K. Payne-Wahl, R.D. Plattner and R. Kleiman (Northern Reg. Res. Center, Federal Res., Sci. and Education Admin., U.S. Dept. of Agr., Peoria, IL) *Lipids* 14, 72-4 (1979). A detailed investigation of the seed oil of *Byrsocarpus coccineus* Schum. and Thonn. had disclosed *cis*-11,12-methyleneoctadecanoic (lactobacillic) (13%) and two branched octadecenoic acids (0.1%). Other fatty acids in the oil are those normally associated with seed lipids except for an unusually high proportion (12%) of *cis*-11-octadecenoic acid. Lactobacillic acid had long been known as a constituent of certain bacterial lipids, but this is the first report of its presence in a seed oil. The branched olefinic acids have not heretofore been found to occur in plants.

## Biochemistry and nutrition

REDUCTION OF SERUM CHOLESTEROL IN TWO PATIENTS WITH HOMOZYGOUS FAMILIAL HYPERCHOLESTEROLEMIA BY DICHLORO-

ACETATE. G.W. Moore, L.L. Swift, D. Rabinowitz, O.B. Croford, J.A. Oates and P.W. Staepoole (Div. of Endocrinology, Vanderbilt Univ., Schl. of Med., Nashville, TN) *Atherosclerosis* 33, 285-93 (1979). Dichloroacetate is known to reduce plasma cholesterol and triglyceride in patients with Fredrickson Types IIb or IV hyperlipoproteinemia. We now report the effects of chronic, oral dichloroacetate administration (as the sodium salt) in two patients with severe homozygous familial hypercholesterolemia. Dichloroacetate markedly reduced serum total and low density lipoprotein cholesterol levels and lowered the low density lipoprotein to high density lipoprotein cholesterol ratio. Investigation of the mechanism of its lipid-lowering effect, however, may provide insight into the pathogenesis and treatment of hypercholesterolemic disorders.

REGULATION OF CHOLESTEROL SYNTHESIS IN SKIN FIBROBLASTS DERIVED FROM OLD PEOPLE. V. Shakespeare and A.D. Postle (School of Biochem. and Physiological Sci., Univ. of Southampton, Southampton SO9 3TU England) *Atherosclerosis* 33, 359-64 (1979). Sterol synthesis from radioactive acetate and the suppression of this synthesis by human low density lipoprotein (LDL) have been investigated in skin fibroblast strains derived from infant donors and from donors over the age of 70 years. The activity of the enzyme hydroxymethylglutaryl-CoA reductase and its repression by LDL has also been investigated in these fibroblast strains and in senescent cells of the foetal lung cell strain MRC-5. No age-related differences could be detected either in repression of [<sup>3</sup>H] acetate incorporation by LDL, or in repression of HMG-CoA reductase activity.

STUDIES ON CHOLESTEROL ESTERASE IN RAT ARTERIAL WALL. M. Shinomiya, N. Matsuoka, K. Shirai, Y. Saito and A. Kumagai (2nd Dept. of Internal Med., School of Med., Chiba Univ., Chiba, Japan) *Atherosclerosis* 33, 343-50 (1979). Cholesterol esterase activity was estimated in homogenates of rat arterial wall using radioactive cholesteryl oleate incorporated into phospholipid vesicles as a substrate. The labeled oleic acid was

Continued on next page.

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separated from the ester by addition of benzene-chloroform-methanol mixture. Under these conditions, two pH optima were found in the lysosomal and microsomal fractions, respectively. No enzyme activity was detected when the substrate vesicles were prepared with phosphatidylethanolamine or sphingomyelin, but the activity was higher when the substrate vesicles were prepared with phosphatidylserine and highest when they were prepared with phosphatidylcholine. The relationship between enzyme regulation and lipid deposition in the arterial wall is discussed.

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DIGESTION AND ABSORPTION OF LIPIDS IN CHICKS FED TRIGLYCERIDES OR FREE FATTY ACIDS: SYNTHESIS OF MONOGLYCERIDES IN THE INTESTINE. D. Sklan (Faculty of Agriculture, Hebrew University, Rehovot, Israel) *Poult. Sci.* 58, 885-9 (1979). Digestion and absorption of lipids were determined in 3-week-old chicks fed diets containing triglycerides, free fatty acids, or free fatty acids with added glycerol. The poorer fat absorption observed on feeding acidulated soapstock instead of triglycerides is partially explained by less efficient micellization when free fatty acids are fed.

VARIED EFFECTS OF DIETARY SUCROSE AND CHOLESTEROL ON SERUM LIPIDS, LIPOPROTEINS AND APOLIPOPROTEINS IN RHESUS MONKEYS. S.R. Srinivasan, B.A. Clevidence, P.S. Pargaonkar, B. Radhakrishnamurthy and G.S. Berenson (Dept. of Med., LSU Med. Center, New Orleans, LA) *Atherosclerosis* 33, 301-14 (1979). Serum lipid, lipoproteins apolipoproteins and plasma insulin and glucose were studied in rhesus monkeys (*Macaca mulatta*) fed high sucrose diets (69%, w/w), with and without added cholesterol. When compared to basal diet, a high sucrose diet with no added cholesterol fed for 6 weeks increased serum total cholesterol and triglycerides by factors of 1.2 and 2.8, respectively. Cholesterol supplementation of sucrose diets increased the serum total cholesterol levels by a factor of 2.2 and decreased the serum triglycerides by 0.47. These observations indicate varied responses of serum lipoproteins and apoproteins to dietary sucrose with and without cholesterol supplementation.

AN EVALUATION OF STRATEGIES TO CONTROL VITAMIN A DEFICIENCY IN THE PHILIPPINES. F. Solon, T.L. Fernandez, M.C. Latham and B.M. Popkin (Div. of Nutr. Sci., Savage Hall, Cornell Univ., Ithaca, NY) *Am. J. Clin. Nutr.* 32, 1445-53 (1979). Xerophthalmia has been found to be an important cause of blindness in the Philippines. The research now presented consists of an evaluation of the relative effectiveness of three different intervention strategies to control vitamin A deficiency in Cebu. These interventions were 1) a public health and horticulture intervention, 2) the provision of 200,000 IU of vitamin A to children every 6 months (the "capsule intervention"), and 3) the fortification of monosodium glutamate with vitamin A. The monosodium glutamate fortification was the only intervention that resulted both in a significant reduction in clinical signs of xerophthalmia and in a significant rise in serum vitamin A levels.

SOME EFFECTS OF DEOXYCHOLATE ADMINISTRATION ON THE METABOLISM OF CHOLESTEROL IN MAN. H.E. Gallo-Torres, O.N. Miller, and J.G. Hamilton (Dept. of Med., Tulane Schl. of Med., New Orleans, LA) *Am. J. Clin. Nutr.* 32, 1363-75 (1979). Hypercholesterolemic subjects in a metabolic ward were kept under uniform dietary conditions until constant levels of serum cholesterol were observed. Oral dosage with deoxycholate (1.5 to 3 g daily for a period of 4 to 10 weeks) resulted in a marked reduction of serum cholesterol concentration. Decreased synthesis of cholesterol during deoxycholate administration was demonstrated in a study with <sup>14</sup>C-mevalonate. It is concluded that deoxycholic acid can have an important role in the regulation of cholesterol metabolism in humans.

VITAMIN A TRANSPORTING PLASMA PROTEINS AND FEMALE SEX HORMONES. A. Vahlquist, A. Johnsson and K.G. Nygren (Dept. of Dermatology, Univ. of Uppsala, Uppsala, S-750 14, Seden) *Am. J. Clin. Nutr.* 32, 1433-8 (1979). Retinol-binding protein, prealbumin, and sex steroid plasma levels have been estimated daily in four women during the course of a normal menstrual cycle and in three women during treatment with combined oral contraceptives. The retinol-binding protein level showed a bielyclic variation during the menstrual cycle, whereas for prealbumin no consistent pattern of variation was observed. Oral contraceptive therapy induced a significant increase of retinol-binding protein which was correlated with the increase of vitamin A.

THE EFFECT OF CHOLESTYRAMINE ON LIPOPROTEIN LIPIDS IN PATIENTS WITH PRIMARY TYPE IIA HYPERLIPOPROTEINEMIA. P. Weisweiler, G. Neureuther and P. Schwandt (2nd Med. Clin., Klinikum Grosshadern, Univ. of Munich, Marchioninstrasse 15, 8000 Munich 70, West Germany) *Atherosclerosis* 33, 295-300 (1979). The effect of 3 months' treatment with cholestyramine on lipoprotein lipids was investigated in 12 patients. VLDL, LDL and HDL were separated by preparative ultracentrifugation. There was a significant decrease of serum cholesterol and phospholipids and an increase of serum triglycerides. All the VLDL-lipids increased by nearly 30%. The LDL-lipids decreased with a tendency for normalisation of their atypical lipid composition. The LDL/HDL-lipid ratios were decreased but not normalised. □