

## SUBJECT MATTER IN BRIEF

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### CLINICAL AND HUMAN NUTRITION papers

#### STUDIES IN MAN

**Selenium balance studies in the elderly.** Metabolic balance studies (5 d) showed healthy (> 70 years) people (*n* 24) to be in positive Se balance. Housebound elderly subjects (*n* 20) suffering from chronic diseases were in Se balance. Plasma, whole blood and erythrocyte Se concentrations were lower in the housebound group, but whole-blood glutathione peroxidase activity was unaffected. 171-180

**Energy, protein, zinc and copper status of the elderly.** Duplicate meal analysis in twenty-one elderly inpatients revealed low intakes of energy, protein, Zn and Cu. Intakes of Zn and Cu were less than half the available recommendation and were associated with low leucocyte levels of Zn and Cu. Recommendations are made for improving nutritional intake in such patients. 181-191

**Zinc metabolism in lactating Amazonian women.** Previous results have suggested that nutritional Zn deficiency occurs in the Amazon basin, but stable-isotope studies suggests that lactating women have the ability to maintain Zn balance by an increase in the proportion of Zn absorbed and a decrease in Zn excretion into the gut. 193-203

**Iron absorption from fortified flat breads.** The suitability of using flat breads as a vehicle for iron fortification in Egypt was assessed by measuring radio-iron absorption in healthy volunteers. The strong inhibitory effect of high-extraction flour used to prepare a traditional flat bread (Baladi) was largely eliminated by adding EDTA to the flour before baking. 205-213

**Soya-bean protein and sterol excretion.** Partial replacement of dietary meat protein with three different soya-bean-protein products was studied in human ileostomates. Bile acid and cholesterol excretion did not differ between test diets. Soya-bean protein, in amounts acceptable in ordinary diets, does not appear to affect sterol excretion in human beings. 215-221

#### OTHER STUDIES RELEVANT TO HUMAN NUTRITION

**Effect of guar gum in the rat small intestine.** In the rat, addition of the viscous polysaccharide guar gum to a meal, slowed the passage of that meal through both the stomach and small intestine. This could account for the previous observation that guar gum lowers postprandial hyperglycaemia. 223-231

**Effects of carbohydrate and fat on lipogenesis.** Diets rich in fructose are frequently found to be hypertriglyceridaemic. To study this, rats were given glucose- or fructose-based diets containing 0 or 150 g maize oil/kg. We conclude that fructose-induced hypertriglyceridaemia is a result of increased hepatic synthesis rather than increased clearance by adipose tissue lipoprotein lipase. 233–241

**Magnesium deficiency in normotensive rats.** Rats were pair fed on a purified diet containing either normal or suboptimal quantities of magnesium. Hypomagnesaemia was accompanied by hypertriglyceridaemia, an increase in plasma cholesterol and a decrease in high-density-lipoprotein-cholesterol. Mg deficiency transiently decreased blood pressure and increased cardiovascular reactivity to noradrenaline. 243–250

**Effect of zinc and folate intake during pregnancy.** Pregnant and lactating rats received two dietary levels of folate and of Zn. Reproduction was satisfactory with only 6  $\mu\text{g}$  Zn/g diet and no added folate; however, 100  $\mu\text{g}$  added folate/g diet caused no detectable depletion of Zn. These results are relevant for micronutrient supplementation of pregnant women. 251–259

**Conjugase and amylase in the folate assay.** Deconjugation of food samples with  $\gamma$ -glutamyl hydrolase (conjugase) from chicken pancreas and pig kidney was optimized and compared. The two sources of conjugase were shown to perform equally well. Treatment with chicken pancreas for 2 h was preferred. Addition of amylase was shown to be advantageous to starch-containing samples. 261–271

**Zinc and essential fatty acids.** Rats fed on a diet moderately depleted of Zn (3.4 v. 36 mg Zn/kg) were shown to have normal food intakes but lower concentrations of arachidonic acid in plasma and liver phospholipids. Rats fed on additional Zn (411 mg/kg) had a higher (mol %) arachidonic acid concentration in plasma phosphatidylserine than that of controls. 273–278

## GENERAL NUTRITION papers

**Niacin metabolism in isolated liver cells.** Isolated rat hepatocytes did not use either nicotinamide or nicotinic acid as precursors of nicotinamide nucleotide coenzymes (NAD and NADP). Incubation with tryptophan resulted in both net *de novo* synthesis of the coenzymes and considerable release of niacin, presumably as a precursor for coenzyme synthesis in extra-hepatic tissues. 279–287

**Trithiomolybdate and systemic copper metabolism.** The intravenous injection of trithiomolybdate (10 and 30 mg/d) into sheep increased the plasma levels of  $^{64}\text{Cu}$  and stable Cu and led to increased faecal, but not urinary, excretion. 289–300

**Nitrate and rumen microbial population.** The toxic effect of nitrite on animal and human health is well established. The present investigation showed that nitrite also has a marked effect on microbial digestion in the rumen and suggested that animal performance could be affected long before clinical symptoms of nitrite toxicity become apparent. 301–313

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**Marginal-zinc intake in pregnancy.** Marginal-Zn intake in the rat during the last week of pregnancy had significant effects on maternal glucose tolerance, pancreatic Zn content and fetal composition. The increased growth observed in fetuses from mothers given the marginal-Zn diet may be related to changes in maternal carbohydrate metabolism. 315–322

**Leucine degradation in sheep.** Skeletal muscle is considered a major site of leucine catabolism. In adult sheep, adipose tissue was the predominant site of leucine deamination while liver and kidney were the primary sites of leucine decarboxylation. Only in newborn lambs was skeletal muscle important in leucine catabolism. 323–333

**Nutrient regulation of gastric emptying.** A variety of ionic and non-ionic constituents of duodenal chyme was found to modulate a mechanism which regulates muscular contractions of the stomach. Observations of stimulation of the entero-gastrone reflex by fat, carbohydrate and mineral constituents suggest that diet formulation may affect the rate of nutrient delivery to the intestine. 335–343