

## SUBJECT MATTER IN BRIEF

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## CLINICAL AND HUMAN NUTRITION papers

## STUDIES IN MAN

- Cardiovascular adrenoceptors in undernutrition.** The isoproterenol sensitivity test, performed on normal-weight and undernourished human volunteers, revealed an enhanced cardiovascular  $\beta$ -adrenoceptor sensitivity in the latter group. However, undernutrition did not appear to alter physiological cardiovascular functioning, when tested by head-up tilt. 5-11
- Diet and lipoprotein lipase activity in obesity.** Adipose tissue lipoprotein lipase (AT-LPL), a key rate-limiting enzyme in triglyceride storage, was evaluated after weight loss in a group of twelve obese women. Diet composition did not affect the changes in AT-LPL activity. Insulin levels correlated with AT-LPL; this relation of AT-LPL to insulin changed with weight loss. 13-21
- Vitamin D status of Canadian Punjabis.** Canadian Punjabis had lower serum 25-hydroxyvitamin D (25-OHD) levels than Canadian Caucasians from the same community and Caucasians from other countries. The log serum 25-OHD levels appeared to be statistically related, although weakly, to the dietary fibre intakes of the Canadian Punjabis and not to their dietary vitamin D intakes. 23-29
- Cowpea foods and nutrient intake in children.** The consumption of cowpea foods and nutrient intakes of children from rural Ibadan were determined. Nutrient requirements were not met and there was evidence of malnutrition. Cowpea foods contributed significantly to the nutrient intake of the subjects, irrespective of whether or not the children reacted to cowpea foods. 31-39
- Effects of fasting in Ramadan.** The study showed that the Ramadan regimen characterized by changes in feeding and activity patterns results in changes in body-weight, subcutaneous fat and food intake. Women lost more weight and body fat than men. 41-48
- Vegetables, beet fibre and zinc absorption.** Effects of high-fibre food components on zinc absorption in man were studied using extrinsic labelling with  $^{65}\text{Zn}$  and measurement of whole-body  $^{65}\text{Zn}$  retention. No effect of potatoes, carrots, turnips, cabbage, green peas or beet pulp fibre on Zn absorption was observed. 49-57

## OTHER STUDIES RELEVANT TO HUMAN NUTRITION

**Need for zinc v. availability in food.** The intestinal absorption of Zn ( $^{65}\text{Zn}$ ) from wheat crisp-bread was increased by 43% when rats were given intraperitoneally a parenteral nutrition solution with no added Zn. The results indicate that the availability of Zn in food is not fixed but variable and dependent on the body's need for Zn. 59–64

**Dietary composition and gastrointestinal growth.** Dietary constituents normally regarded as readily available may not be fully digested in the small intestine, and may influence intestinal characteristics in a similar way to 'dietary fibre'. Studies using rats demonstrated that dietary protein source was important in controlling gastrointestinal growth, and modifying intestinal response to the fibre component. 65–72

## GENERAL NUTRITION papers

**Growth costs on marginal protein diets.** Energy requirements in growing animals are often attributed to fixed costs of maintenance and tissue deposition, but these may vary with dietary composition. Energy expenditure was found to be increased in rats consuming a marginal protein diet to appetite. This reflected increases in the costs of protein and energy deposition. 73–85

**Rumen nitrogen metabolism in ciliate-free sheep.** Under some dietary conditions rumen ciliate protozoa appear to be detrimental to the protein nutrition of the host animal. Measurements of metabolic activities of rumen micro-organisms in faunated and ciliate-free sheep indicated that some microbial peptidase and deaminase activities were significantly higher in rumen fluid from faunated sheep. 87–93

**Intestinal cell division by short-chain fatty acids.** Epithelial proliferation of the intestine of ileally fistulated rats fed on an elemental diet was accelerated in a dose-dependent manner by short-chain fatty acids, ranked, in molar terms, *n*-butyric > propionic > acetic. The effect, probably mediated systemically, could explain some observed actions of dietary fermentable fibre and gut microbes. 95–103

**S-amino acids, glutathione and thyroid hormones.** Rats given diets containing casein or pea protein (at 120 and 180 g/kg) for 24 d showed decreases in liver glutathione and thyroid hormones when fed on the 120 g/kg diet. Cysteine supplementation (1.9 g/kg) prevented these changes only in the rats given the casein diet. 105–111

**Vitamin E kinetics in sheep.** A study of  $\alpha$ -tocopherol availability in sheep showed highest values for intravenous administration of  $\alpha$ -tocopherol followed by intramuscular, oral and intraruminal routes. Plasma profiles of D- $\alpha$ -[ $^3\text{H}$ ]tocopherol were best represented by a three-compartment model for the intravenous route, but one- or two-compartment models were suitable for the other routes. 113–125

**Thiomolybdate synthesis and absorption.** The ruminal synthesis and subsequent absorption of thiomolybdates was demonstrated in sheep. The findings suggest that while inhibition of copper absorption is likely to be due to the tri- and tetrathiomolybdates, post-absorptive effects on Cu metabolism are probably due to di- or trithiomolybdate.

127–138

**Insulin secretion in non-lactating cows.** In cows completely maintained by infusion of liquid diets, intermittent infusions of propionic acid into the rumen raised plasma concentrations of insulin in association with increases in plasma propionic acid. Glucose infusion into the abomasum produced a larger increase in plasma insulin but the increase was small with casein infusion.

139–148

**Fibre digestion and digesta retention time.** The extent of fibre digestion varies amongst different animal species. A close relation was observed between the digestibility of fibre and digesta retention time in the large intestine of rabbits, guinea-pigs and hamsters, which are herbivores, but not in rats.

149–158

**Protein synthesis in the gastrointestinal tract.** Fractional synthesis rates of tissue protein increased from oesophagus to small intestine and then declined towards the rectum in milk-fed lambs. Protein synthesis rates or contributions of the gastrointestinal tissues to whole-body protein synthesis were in agreement with results obtained in rats.

159–169