SUBJECT MATTER IN BRIEF

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CLINICAL AND HUMAN NUTRITION papers

Studies in Man

Nutrient composition and glycaemic response. The glycaemic response of healthy young men to potato, bread, rice and green gram was compared with that to laboratory meals of equivalent gross nutrient composition. Natural foods led to higher postprandial glycaemia and insulinaemia than their laboratory equivalents. Gross nutrient composition may be a poor determinant of glycaemic response. 5–12

Placental selenium transport. Selenium is required by the fetus for normal growth and a better understanding of its transport across the placenta is needed. A study using human placental membrane vesicles showed that selenate shares a common transport pathway with sulphate, a potentially important factor in the regulation of selenium metabolism. 13–19

Other Studies Relevant to Human Nutrition

Fibre viscosity and metabolism. Methylcellulose of different viscosities did not alter plasma volatile fatty acids or cholesterol metabolism in rats. Low-viscosity methylcellulose raised blood glucose and liver lipogenesis and lowered liver glycogen, apparently through differences in gastrointestinal transit and nutrient absorption. 21–30

Nutritional quality of sorghum ugali. True protein digestibility and energy digestibility were reduced, while biological value was increased as a consequence of cooking porridge ugali of low- and high-polyphenol sorghum varieties. Formation of resistant starch and endosperm protein, kafirins, were responsible for this effect. The polyphenols reduced digestibility and increased biological value further. 31–47

Saponins and mineral status. It has been suggested that, because of the ability of dietary saponins to lower serum cholesterol, their consumption by man might be usefully increased. However this study, using the rat, indicates that some saponins may adversely influence iron status. 49–55

Nutrition, diabetes and fetal bone development. A high-protein, low-carbohydrate diet was given to pregnant diabetic rats to determine whether developing fetal bones would be modified by this dietary regimen. It appeared to be beneficial and bone development of the growing fetuses was less affected in these animals than in normally fed diabetic dams. 57–62

GENERAL NUTRITION papers

Sham-feeding to assess palatability in sheep. Sham-feeding increases our understanding of the control of intake by separating palatability *per se* from post-ingestive effects, sometimes with unpredicted results (e.g. sodium chloride increased sham intakes even when given at 200 g/kg diet). Using the technique we can economically seek palatable additives with desirable post-ingestive effects. 63–72

Folate deficiency in chicks. Assessment of folate status in chickens is hampered by a lack of information on pathological and metabolic abnormalities caused by a deficiency. In deficient chicks, depressed growth was the only clinical sign but macrocytic megaloblastic anaemia was a prominent haematological abnormality. Pathological changes were also seen in the liver. 73–80

Messenger RNA levels following fasting. Nutritional status has a profound effect on the activity of hepatic enzymes and protein synthesis rates. A study in the rat of messenger RNA levels for seven different plasma proteins by hybridization techniques, using specific cDNA probes, showed that these levels were regulated independently during fasting. 81–86

Effect of lactose on phosphate metabolism. Lactose is known to increase the absorption of divalent cations but its effect on PO_4 metabolism is less well understood. In experiments with rats PO_4 absorption and retention increased in an apparently dose-dependent manner with lactose but not with maltose or sucrose supplements. 87–92

Magnesium absorption from the ovine rumen. The rates of absorption of Mg^{2+} from an ultracentrifugate of rumen contents and from a buffer solution of comparable electrolyte composition were similar as was the inhibitory effect of increased intrarumen potassium concentration. There was no evidence for the presence of a Mg-chelating agent in rumen contents 93–108

Prediction of body composition. Body composition is an important aspect of poultry production and research. Measurement by slaughter and chemical analysis is time-consuming, expensive and not always possible. Prediction of the major body components, protein and fat, was achieved by using tritiated water or deuterium oxide in conjunction with live weight. 109–124

Digestion in sheep with haemonchosis. *Haemonchus contortus* is a parasite which sucks blood from the abomasal mucosa. The effect of the parasite and of blood loss into the abomasum was studied. There were irreversible losses of protein through conversion to ammonia in the gut and inefficient utilization of reabsorbed non-ammonia-nitrogen. 125–139

Ca^{2+}-activated protease and muscle growth. Calcium-activated proteinase (calpain) or its specific inhibitor in muscle (calpastatin) were suggested to be related to muscle protein deposition in growing chickens. However, the absence of significant changes in these factors suggested that they had no direct regulatory role under the conditions of the present experiments. 141–147

Immunological responses in zinc deficiency. Immunological variables studied in guinea-pigs fed on a Zn-deficient diet (1·25 mg Zn/kg) revealed impaired cellular and humoral responses as evidenced by a decrease in skin thickness, cellular reaction, plaque-forming splenic cells and haemagglutinating antibodies. Zn repletion (100 mg Zn/kg) resulted in marked improvement in immunological responses. 149–154

Leucine and protein turnover in sheep. Although radioactive tracers have been used extensively to determine protein turnover in animals, there is only meagre information on stable isotopes. Whole-body protein synthesis and degradation were determined in sheep by infusing [^{15}N]- and [1-^{13}C]leucine and measuring the isotopic enrichment by gas–liquid chromatography–mass spectrometry. 155–164