SUBJECT MATTER IN BRIEF

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CLINICAL AND HUMAN NUTRITION papers

Studies in Man

Dietary phytate and its meal distribution pattern. Phytate is known to reduce zinc availability but to differing extents depending on other dietary factors, notably calcium. A survey showed that variations in such factors were considerably greater between meals than between daily intakes, indicating that calculations of available Zn based on the latter may lead to false conclusions. 337–346

Intra-individual variability in energy expenditure. Whole-body calorimetry measurements, made over 12 d in four men, have shown that within-subject variability in energy expenditure over 24 h, in basal metabolic rate, overnight and in exercise is small. It forms a small part of reported variability between subjects in measurements normalized to lean body mass. 347–356

Energy intake and expenditure of Nigerian men. The daily activity and the energy intake and expenditure of male Nigerian students was investigated over 1 week. Both intake and expenditure varied widely, and some surprisingly low levels of physical activity were recorded. 357–367

Diets of pregnant and post-pregnant women. Energy, protein, fat and fibre intakes of London and Edinburgh women were measured during and after pregnancy. Londoners had higher energy and nutrient intakes. Percentage energy from fat was about 40. Energy and fibre intakes were below recommendations. One-quarter of the women breast-fed: 15% of these were dieting. 369–381

Other Studies Relevant to Human Nutrition

Effect of wheat bran on cadmium accumulation. The additional Cd ingested when bran replaced some wheat flour in the crisp bread given to rats did not significantly affect the small accumulation of Cd in tissues. Uptake of ^{109}Cd added to the test meals indicated that very little of the Cd in bran is absorbed. 383–391

Antigenicity of soya-bean-based infant formulas. Considerable differences in the antigenicity of several soya-bean-based infant formulas were demonstrated using both in vivo and in vitro techniques. These findings may be important when interpreting results from studies of the development of allergy in infants given soya-bean-based formulas. 393–403

Dietary fibre and lipid status of rats. Purified cellulose had no effect on serum lipids of rats. Pectin and wheat bran always decreased the cholesterol contents of very-low-density lipoproteins but to differing extents depending on the fat and cholesterol contents of the diets. 405–413

Malnutrition, pregnancy and the endocrine pancreas. It is important to understand the effect of maternal malnutrition on the subsequent performance of the offspring. Evidence is adduced that protein–energy malnutrition after weaning was better tolerated in rats born from undernourished rather than normal dams. When the former received a normal diet they showed insulin resistance. 415–425

GENERAL NUTRITION papers

Effect of fasting on pancreatic enzymes in rats. If rats are fed on normal diets, fasting for 24 h has little effect on enzyme levels in the pancreas. However if they are fed on diets containing trypsin inhibitor, fasting results in a two- to sevenfold increase in enzyme levels. Such animals should probably be studied without fasting. 427–436

Effect of insulin on protein metabolism of lambs. Leucine flux and rates of protein synthesis and degradation were estimated in fed and fasted lambs. Insulin infusion had little effect on these measurements in fed lambs. In fasted lambs its first and main effect was to reduce the rate of protein degradation, with protein synthesis being reduced later. 437–452

Net energy value of glucose and starch in trout. Using paired and modified paired feeding techniques with carcass energy determinations, net energy values of starch (2·17 kJ/g) and glucose (3·99 kJ/g) were determined. The utilizable energy derived from carbohydrate sources by rainbow trout was apparently much lower than would be predicted by conventional digestible energy or metabolizable energy values. 453–461

Rumen in vitro protein degradation rates. Rumen degradation often determines the value of food proteins to ruminants. An in vitro system is described which incorporates microbial inhibitors into the rumen inoculum to give quantitative recovery of metabolites from protein breakdown. This method yields satisfactory estimates of rate and extent of rumen degradation of several proteins. 463–475

Trenbolone acetate and energy metabolism. Reducing the maintenance energy requirements of cattle would be beneficial during periods of undernutrition. The effect of trenbolone acetate on energy metabolism and feed intake was examined. Fasting metabolic rate was lower in treated steers. 477–483

Tissue folates in vitamin B_{12} deficiency. Nitrous oxide-induced vitamin B_{12} deficiency in fruit bats led to large reductions in liver total folates, methyl folates and *Pediococcus cerevisiae*-active folates. In brain, only *P. cerevisiae*-active folates were reduced. Results suggest that N_2O-induced neurological impairment in this species is not related to depletion of cerebral folates. 485–491

Sugar fatty acid esters and rumen activity. Sugar fatty acid esters, synthesized from sucrose and long-chain fatty acids, are used as a food additive for human consumption. Their potential value as a ruminant feed additive was shown when they were added to rumen fluid in vitro. They altered the fermentation towards more propionate and less methane. 493–502

Egg-shell quality and drinking water. Supplementing the drinking water of laying hens with sodium chloride to a maximum concentration of 600 mg/l decreased egg-shell quality and increased the incidence of egg-shell damage. Shell defects remained high after birds were put back on to normal water or rested from lay. 503–509

ω6 and ω3 fatty acids in cerebelllar development. Results from feeding 1-d-old cockerels on a linoleic or α-linolenic acid diet suggest that balance between $\omega 6/\omega 3$ essential fatty acids is an aetiological factor in chick nutritional encephalomalacia. This disease specifically affects the cerebellum; its peak incidence was coincident with a cerebellar developmental spurt and acquisition of polyunsaturated fatty acids. 511–520

Histidine requirements of kittens. Histidine deficiency in kittens resulted in a decrease in growth rate, haemoglobin concentration of blood and production of cataracts. The minimal dietary requirements for prevention of cataracts (3·0 g histidine/kg diet) was nearly 50 % greater than that required to maximize growth and nitrogen balance. 521–532

Protein metabolism in the lactating rat. During lactation, as in pregnancy, protein is spared by the suppression of amino acid oxidation and urea synthesis, even when the diet is adequate in protein. This physiological adjustment which facilitates milk-protein synthesis, is probably induced by a hormone secreted during lactation. 533–538

Heinz bodies in copper- and selenium-deficient lambs. The first association between Heinz-body formation (giving evidence of haemolytic anaemia) and Cu deficiency in any species, and the second such association with respect to Se deficiency, are reported. Associations are linked to the antioxidant functions of superoxide dismutase (for Cu) and glutathione peroxidase (for Se) in lamb erythrocytes. 539–548