

SUBJECT MATTER IN BRIEF

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CLINICAL AND HUMAN NUTRITION papers

STUDIES RELEVANT TO HUMAN NUTRITION

Non-digestible polysaccharides in the rat. Rats given a range of non-digestible polysaccharides showed changes in intestinal microflora and physiology compared with those given a fibre-free diet. Caecal and colonic enlargement correlated well with wet weight of contents but not with the extent of breakdown of the polysaccharides. 197-207

Effect of alcohol on iron and zinc metabolism. The effect of consuming a range of alcoholic beverages on Fe and Zn status was examined in rats. Ethanol alone and some alcoholic beverages increased liver Fe levels, and reduced the loss of ⁶⁵Zn-labelled body Zn. 209-215

Dietary fish oils and skeletal muscle. Diets supplemented with fish oils produced large changes in rat skeletal-muscle fatty acid composition, including reductions in arachidonic acid content. This did not affect muscle growth and exacerbated the efflux of intracellular enzymes following a damaging stress; both processes had previously been claimed to depend on arachidonic acid metabolism. 217-224

Fermentation of wheat bran and gum arabic. Gum arabic and wheat bran were given to rats receiving a fibre-free elemental diet. Their metabolism in the caecum was studied in relation to duration of feeding. Only gum arabic increased caecal metabolism and bacterial mass whilst the major effect of wheat bran was to increase faecal output. 225-232

GENERAL NUTRITION papers

Retinol in liver cells. The role of various liver cells in rats of different ages, sex and vitamin-A-status was studied. In most instances perisinusoidal stellate cells stored more than 90% of liver retinol. Only in rats with a low retinol status did the percentage of retinol in parenchymal cells increase. 233-239

Analysis of dietary proteins in rumen fluid. The breakdown of seed-meal proteins in rumen fluid was monitored by sodium dodecylsulphate-poly-

acrylamide gel electrophoresis. Loss of total protein from solid meal held in synthetic-fibre bags in rumen fluid does not give an accurate index of the resistance of individual protein components of that meal to degradation. 241–247

Glucose metabolism in pregnant sheep. Long-term cold exposure of the shorn pregnant ewe results in a significant increase in whole-body glucose entry and oxidation rates compared with unshorn controls. This effect was associated with a decrease in plasma insulin concentration and an increase in insulin sensitivity in the shorn animal. 249–263

Diurnal patterns of metabolism in cows. Jugular blood analysis suggests that milk-fat depression in cows fed on low-roughage diets is increased by the postprandial increase in propionate and insulin and suppression of growth hormone. In cows fed frequently, milk-fat depression is reduced because the rate of fermentation and hormone concentrations are more constant. 265–274

Effects of condensed tannins on digestive enzymes. Tannins in the leaves of four plants were extracted and fractionated into three or four molecular sizes. The inhibitory effects of fractionated tannins on trypsin, amylase and lipase in vitro increased with the increase in degree of polymerization. However, tannins had little lipase-inhibitor activity in the intestine of rats. 275–285

Tannins and enzyme activities of the rumen. Many microbial enzyme activities in the bovine rumen were inhibited by tannin-rich oak leaves. Changes observed in various activities in the washed residue and in the strained residues of oak leaves incubated in the rumen in porous nylon bags were apparently due to the presence of the tannins. 287–296

Utilization of grass-silage-based diets by beef cattle. Effects of diets of early-cut silage or late-cut silage with barley on growing steers were examined. Early-cut silage alone supported high energy and protein gains but efficiency of utilization of metabolizable energy and crude protein was lower than that for late-cut silage with barley. 297–306

Utilization of grass-silage-based diets by beef cattle. Effects of diets of early-cut silage or late-cut silage plus barley on nutrient supply and utilization in growing cattle were investigated. Differences between calorimetric and slaughter estimates of energy retention are discussed and the need for improved characterization of metabolizable energy in order to predict response is established. 307–319

Protein nutrition and urinary peptides. Studies in rats suggest that the rate of urinary excretion of acid-soluble peptide-form (ASP-form) amino acids and the ratio, total urinary nitrogen:ASP-form amino acid can be employed as indices of the status of protein nutrition. 321–337

Subject matter in brief

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Fishmeal supplementation in silage-fed cattle. In young cattle offered silage supplemented with fishmeal the efficiency of microbial protein synthesis was significantly increased. The findings suggest that this was probably due to the provision of a more continuous supply of nitrogenous substrates for microbial growth, but could also be due to increased microbial peptide incorporation. 339–353

Anabolic effects of clenbuterol. Clenbuterol (a β_2 -selective adrenergic agonist) is known to alter body composition by increasing protein deposition and decreasing fat deposition. In the rat, this 'repartitioning' effect does not appear to act via the release of adrenal or gonadal hormones, nor require permissive levels of these hormones. 355–360

Iron absorption in copper-deficient rats. Fe uptake from the luminal perfusate of isolated rat intestine was unaffected by Cu deficiency while transfer to the vascular perfusate was reduced. Addition of apotransferrin to the vascular perfusate overcame this effect. Inclusion of caeruloplasmin in the vascular perfusate was without effect in either Cu-deficient or control preparations. 361–373

Estimating milk intake by lambs. On five occasions during lactation, milk intake by lambs was estimated from their turnover of injected deuterium oxide and their accumulation of tritiated water injected into their dams. Milk intakes were consistent with earlier reports and declined throughout lactation, but total water turnovers increased, indicating pasture consumption by older lambs. 375–387

Desaturase activities and protein malnutrition. Protein deficiency impairs fat metabolism in the liver. Activities of microsomal fatty acid desaturases in the livers of growing rats decreased with time with a low-protein diet but recovered when a balanced diet was given. Changes in composition of liver fatty acids did not always parallel the enzyme changes. 389–402