The effects of postoperative metabolic support on lipolytic rates in patients undergoing elective abdominal surgery. By J. BROOM[1], I. E. BRACKENRIDGE[2], E. SIMPSON[1], J. D. B. MILLER[1] and I. MORISON[3], [1]*Surgical Metabolic Unit, Department of Surgery;* [2]*Department of Therapeutics and Clinical Pharmacology* and [3]*Department of Pharmacy, Aberdeen Royal Infirmary, Foresterhill, Aberdeen AB9 2ZD*

The metabolic response to trauma is associated with mobilization of energy substrates including fat or fat-derived substrates. This lipolytic response is inhibited by the administration of dextrose-containing solutions (Blackburn *et al.* 1973; Swaminatham *et al.* 1980). Recently, in vivo lipolysis rates have been determined by extrapolation from the measurement of glycerol turnover rates in vivo using stepwise glycerol infusions (Carpentier *et al.* 1979; Broom *et al.* 1985).

Glycerol turnover rates were determined in two groups of patients ($n4$) undergoing elective abdominal surgery. Group 1 received 2 litres dextrose (25 g/l) – saline (9 g sodium chloride/l) postoperatively, whilst group 2 received the same volume of intravenous fluid but containing 1 litre isotonic amino acids (Perifusin) and no dextrose. Glycerol turnover rates were determined preoperatively and 24 and 72 h postoperation; plasma glucose and insulin concentrations were determined throughout.

In group 1, in all cases except one, the glycerol turnover was increased at 24 h but had fallen below preoperation values by 72 h. In group 2 the 24 h glycerol turnover was again increased but at 72 h had further increased over the preoperation values. The 72 h glycerol turnover rates in groups 1 and 2 were statistically significantly different ($P<0.05$), each patient being used as his own control. Plasma glucose concentration increased from fasting levels of 5·1 (SD 0·5) and 5·3 (SD 0·2) mmol/l in groups 1 and 2 respectively to 10·6 (SD 2·0) and 6·7 (SD 0·5) 24 h postoperation; at 72 h the levels had fallen in the Perifusin group (group 2) to fasting concentrations (5·4 (SD 0·5)) but remained elevated in the dextrose group (group 1) (7·8 (SD 0·5)). Plasma insulin concentrations were higher when plasma glucose concentrations were increased.

Thus, during a 3 d period of study, there were obvious differences in lipolytic rates between the two groups, with group 2 apparently switching to more of a fat-based fuel economy and lower circulating concentrations of glucose and insulin. This in vivo kinetic analysis of fat metabolism substantiates the claims that non-dextrose-containing regimens support endogenous fat breakdown post-operatively.

This work was supported by a grant from Merck Pharmaceuticals.

Blackburn, G. L., Flatt, J. P., Clowes, G. H. A. & O'Donnell, T. E. (1973). *American Journal of Surgery* **125**, 447–454.

Broom, J., Scalfi, L., Pearson, D. W. M., Khir, A. S., Miller, J. D. B., Ross, I. S. & James, W. P. T. (1985). *Clinical Nutrition Supplement* (In the Press).

Carpentier, Y. A., Askanzi, J., Elwyn D. H., Jeevanandam, M., Gump, F. E., Hayman, A. I., Burr, R. & Kinney, J. (1979). *Journal of Trauma* **19**, 649–654.

Swaminatham, R., Hill, G. H., Bradley, J. A. & Morgan, D. B. (1980). *Postgraduate Medical Journal* **56**, 652.