subjected to t.l.c. The radioactivity of appropriate areas of the chromatoplate was determined by liquid-scintillation counting. About 70% of radioactivity in the plasma was recovered as a metabolite less polar than prostaglandin E_1 .

In subsequent experiments metabolism was determined by incubating 100–300 ng of prostaglandin E_1 , containing tracer $[5,6-^3H]$ prostaglandin E_1 , with heparinized plasma at 37°C for 15–30 s. The reaction was stopped with ice-cold ethanol, and the prostaglandins were extracted, separated and their radioactivities counted as above. With these higher concentrations of prostaglandin E_1 it was usual to observe 25–50% conversion into the less-polar metabolite under the conditions described. The rate of conversion was linear with time up to 30 s and increased with increasing substrate concentration.

There was little activity at 0°C and inactivation occurred at 100°C. The optimum pH was between 7 and 8. Storage of plasma at 4°C for up to 13 days resulted in increased activity. On further storage a decline in activity occurred. Activity was increased by EDTA (2 mM) and, to a smaller extent, by fluoride (2 mM). Iodoacetate (2 mM) caused a small inhibition, but *p*-chloromercuribenzoate (2 mM), 2,2'-bipyridyl (2 mM) and cyanide (2 mM) were without effect. Aspirin (<1 mM) produced a significant inhibition of activity, but the other anti-inflammatory agents indomethacin and prednisolone had no effect. Preliminary kinetic studies suggested some characteristics of a regulated enzyme. The activity of the enzyme in different plasmas was variable. Erythrocytes appeared to give some protection against the metabolism of prostaglandin E_1 by plasma.

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The Turnover of Glycerol and Free Fatty Acid in Blood of Genetically Obese Mice

By ERICA DADE and D. A. HEMS (*Department of Biochemistry and Metabolic Reactions Research Unit, Imperial College of Science and Technology, London SW7 2AY, U.K.*)

As part of an investigation of triglyceride metabolism in genetically obese mice, we have measured the turnover of glycerol and free fatty acid in blood.

Female obese mice aged 3–5 months, homozygous for the *ob* gene (see Abraham & Beloff-Chain, 1971) and lean controls, were anaesthetized with Avertin,

during measurements of turnover by continuous intravenous infusion of $U-^{14}C$ -labelled glycerol or free fatty acid (see, e.g., Armstrong *et al.*, 1961; Winkler *et al.*, 1970). Glycerol was determined by the method of Pinter *et al.* (1967), and free fatty acid by the method of Lauwerys (1969). The ^{14}C -labelled metabolites were isolated by t.l.c. for liquid-scintillation counting.

The concentration of glycerol in blood of well-fed mice, sampled after ether anaesthesia, was 0.16 ± 0.03 (3) $\mu\text{mol/ml}$ of whole blood in lean mice (mean $\pm$ S.E.M.), and 0.36 ± 0.06 (3) $\mu\text{mol/ml}$ in *ob/ob* mice. The corresponding values in 24 h-starved mice were 0.40 ± 0.09 (3) and 0.44 ± 0.08 (3) $\mu\text{mol/ml}$. The rate of turnover of glycerol in blood (plus extravascular space) was 0.48 ± 0.08 (6) $\mu\text{mol/min}$ per mouse in well-fed lean mice and 1.13 ± 0.12 (7) $\mu\text{mol/min}$ per mouse in *ob/ob* mice.

The blood glycerol tolerance curve, after intravenous 0.3 M-glycerol, was not abnormal in *ob/ob* mice. If $[U-^{14}C]$ glycerol was employed in these experiments, the incorporation of ^{14}C into liver lipids and glycogen (per g of tissue) and blood glucose, after 5 or 10 min, was not abnormal in *ob/ob* mice.

Thus the increased turnover and high blood concentrations of circulating glycerol, in obese mice, are largely a result of increased extrahepatic 'lipolysis'.

The turnover rate of circulating free fatty acid, measured by infusion of $[U-^{14}C]$ palmitate, was 2.5–6.0 $\mu\text{mol/min}$ per mouse in lean mice and 4–9 $\mu\text{mol/min}$ per mouse in *ob/ob* mice. Blood free fatty acid concentrations were high (0.6–1.1 $\mu\text{equiv./ml}$ of serum) in these experiments, perhaps as a result of 'stress'. Following a single intravenous trace dose of $[U-^{14}C]$ palmitate, the disappearance of radioactivity from blood was faster in *ob/ob* mice.

These results suggest that the process of tissue triglyceride breakdown is not impaired in obese mice (see also Abraham *et al.*, 1971). Rather, the turnover of glycerol and free fatty acid in blood is increased, in association with their greater liver and adipose-tissue mass, and blood volume.

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