found to follow multiexponential kinetics; 50% of the dose was eliminated within 20 h and 90% by 130 h, the majority of the tracer being concentrated in the neck region at the latter time.

The highest amount of radioactivity was found in the bladder at 10 h, with a lesser peak at about 35 hours. Uptake of iodide by the stomach reached a peak at 15 h and then declined with a $T_{1/2}$ of 14 hours. The thyroid gland showed a gradual uptake of iodide reaching a maximum of 4% of the dose by 10 h followed by a slow elimination over the remainder of the study.

At the end of 200 h 6 of the 7 rabbits were killed, the thyroid glands removed and the radioactivity due to ^{131}I was measured. These measurements suggested that the levels of radioactivity found in the neck region were largely due to uptake of ^{131}I by the thyroid gland. The maximum uptake of iodide by the rabbit thyroid was found to be lower than the literature value of thyroid ^{131}I-uptake in man (Berman, Braverman, Burke, De Groot, McCormack, Oddie, Rohrer, Wellman & Smith, 1975).

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A technique for measuring first pass extraction in the rat perfused liver

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A technique for studying the hepatic first pass extraction of compounds of physiological and pharmacological interest is described. The liver is perfused *in situ* using the technique of Hems, Ross, Berry & Krebs (1966). Following cannulation, the liver is perfused in a closed-circuit, constant pressure system for an initial 30 min stabilisation period, and also between each experimental run.

The experimental runs are performed in the following way. A solution is prepared which contains 0.5 μCi of the radioactively labelled [^{3}H] or [^{14}C] test substance and 0.5 μCi of the labelled [^{14}C] or [^{3}H] intravascular or extracellular reference substance in 1 ml of perfusate. The perfusion system is then switched to open-circuit and the radioactive mixture is infused into the perfusion line, close to the portal vein cannula, at a rate of 0.4 ml/min for 40 seconds. At the same time the hepatic venous effluent is collected in sample vials at 1.5 s intervals (using an automatic sample changer (Hook & Tucker, A40)) for up to 60 seconds. Aliquots of the infusion mixture and each venous effluent sample are then deproteinised in perchloric acid (8% w/v) and prepared for liquid scintillation counting as described by Hooper & Short (1977). The hepatic extraction of the test substance under consideration is then calculated from a knowledge of the d/min of the test and reference substance in the infusion mixture and in the hepatic venous effluent (Hooper & Short, 1977). The results of a typical experiment are presented in Figure 1 where the ratio test d/min/reference d/min in the infusate and the samples are then used to calculate the extraction.

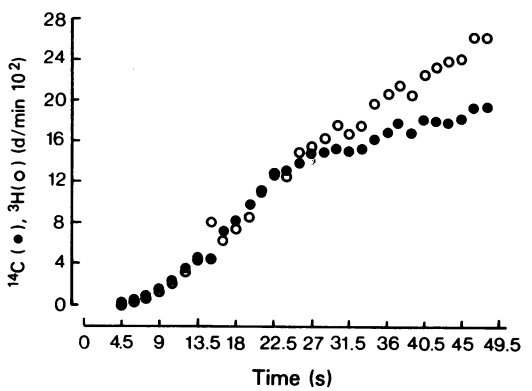

Figure 1 Showing levels of radioactivity of reference ([^{14}C]-L-Glucose) and test ([^{3}H]-D-Glucose) substances in hepatic venous samples during a 40 s infusion. (Infusion mixture [^{3}H]: [^{14}C] d/min ratio = 1.70).

We are grateful to Ahmadu Bello University Zaria, Nigeria for the grant (Study Fellowship) to one of us (J.O.I.) in support of this work.

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