

POST-ILEAL ABSORPTION OF BIOTIN IN THE PIG

J.S. KOPINSKI* and JANE LEIBHOLZ*

The main site of absorption of synthetic biotin in the pig has been shown to be the first quarter of the small intestine (Kopinski et al. 1983). In that study it was also observed that there was considerable synthesis of biotin in the caecum and large intestine, however, with the technique used it was not possible to determine if any absorption occurred in that portion of the intestinal tract. The present experiment was designed to quantify and compare the absorption of biotin in the post-ileal tract and small intestine.

Two 25-30 kg Large White x Landrace pigs were fitted with a T cannula in the terminal ileum through which a tube was passed into the caecum and a blood catheter was introduced into the anterior vena cava via the cephalic vein. A biotin-deficient cornflour-casein diet (Kopinski et al. 1982) was fed twice daily. ^{14}C -biotin was given orally or infused into the caecum through the caecal tube, backflow was prevented for 6 h by occluding the terminal ileum at the cannula site with an inflated bladder catheter. Urine and plasma samples were assayed for radioactivity.

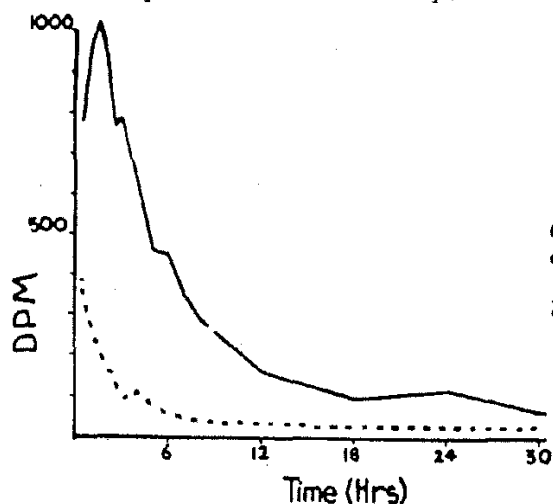


Fig. 1. Plasma ^{14}C biotin after 1.0 mg caecal dose o----o or 0.5 mg oral dose ●—● of ^{14}C biotin.

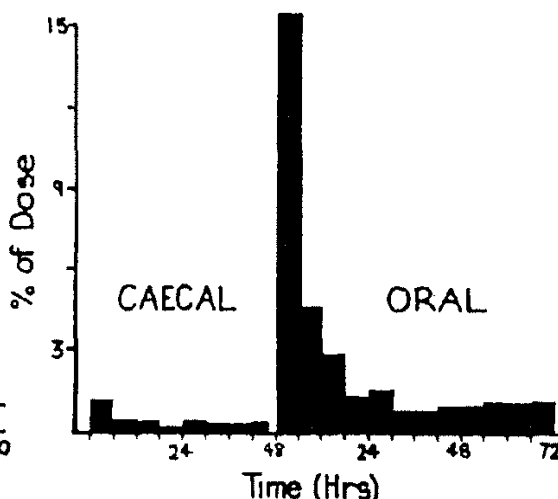


Fig. 2. Urine ^{14}C biotin % recovery after ^{14}C biotin caecal or oral dose

There was post-ileal absorption of synthetic biotin as shown in elevated plasma level and urinary excretion of ^{14}C biotin. In the urine, following caecal dosing, 3.9% of the total dose was recovered, whereas following an oral dose, 35% of the total dose was recovered during the period of the experiment. Post-ileal absorption was 10-15% of that from the small intestine following oral ingestion. This is in agreement with the work of Sorrell et al. (1971) in humans with mid-transverse colostomies, where there was less vitamin absorption from direct instillation into the large intestine compared to oral administration of vitamins.

KOPINSKI, J.S., BRYDEN, W.L. and LEIBHOLZ, JANE (1982). Proc. Nutr. Soc. Aust. 7: 151.

KOPINSKI, J.S., BRYDEN, W.L. and LEIBHOLZ, JANE (1983) Proc. Nutr. Soc. Aust. 8: 205.

SORRELL, M.F., FRANK, O., THOMSON, A.D., AQUINO, H. and BAKER, H. (1971). Nutr. Rep. Int. 3: 143.

* Dept of Animal Husbandry, University of Sydney, Camden, New South Wales 2570