

## THE SITE OF BIOTIN ABSORPTION IN THE CHICKEN

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Since the establishment of the link between the Fatty Liver and Kidney Syndrome and the biotin nutrition of young chickens (Payne et al. 1974), much interest has been created in the metabolism of this vitamin. However, the absorption of biotin from the avian intestine has not been studied, although it is thought that biotin is actively absorbed in other species (Rose 1980).

In the present series of experiments, measurements of biotin concentrations in blood and gut contents from birds sampled under halothane anaesthesia were made using the radiochemical method of Hood (1975). The recovery of radioactivity 15 min after the injection of  $^{14}\text{C}$ -biotin into ligature-isolated gut sections in situ was used to calculate the percentage of the vitamin taken up from each section of the tract. The influence of different diets on biotin absorption was determined by measuring the quantity of biotin disappearing from the small intestine and appearing in the portal vein. Intestinal disappearance was calculated from intestinal biotin flows using acid-insoluble ash as the marker. The quantity of biotin appearing in portal blood was estimated using arterio-venous differences in blood samples taken from the portal vein and heart and assuming a portal blood flow of 15 mL/min/kg bodyweight (Sturkie and Abati 1975).

Approximately 45% of the injected dose disappeared from all segments of the small intestine. A comparison of intestinal biotin flows in birds fed wheat-based and maize-based diets gave estimates of absorption of 5% and more than 100%, respectively. Estimating absorption from intestinal biotin flows and arterio-venous differences gave similar results for maize-based diets. However, probably due to the small amount of biotin absorbed in birds fed wheat-based diets it was not possible to detect the amount using arterio-venous differences. The passage of digesta from the ileum to caecum resulted in a large increase in biotin concentration and it was not possible to determine the degree of absorption from this organ.

The studies demonstrated that biotin is absorbed throughout the small intestine and that the pattern of absorption is influenced by diet. When crystalline biotin or diets of high biotin availability, such as maize, were fed, biotin was rapidly absorbed by the duodenum. In contrast, when diets (wheat-based) of low biotin availability were fed, the distal segments of the small intestine contributed a relatively greater amount to biotin absorption.

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