Studies on the Metabolism of Acetone Bodies in Alloxan Diabetic Rabbits

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Previous studies from our laboratory revealed that acetone bodies eliminated into bile and the concentration of acetone bodies in bile is approximately 1.4 times higher than that in serum.

The present study was designed to clarify the fate of acetone bodies excreted into bile and the metabolism of acetone bodies with notmal and alloxan diabetic rabbits.

1. Ethyl-acetoacetate-3-^{14}C injected into the duodenum of both normal and alloxan diabetic bile fistula rabbits was absorbed from the intestine and excreted into bile. Most of ^{14}C in biliary acetone bodies of both animals were rapidly excreted within first 6 hours. Thus the evidence of the enterohepatic circulation of ^{14}C-Acetone bodies was demonstrated.

2. Acetate-1-^{14}C was administered intravenously to normal and alloxan diabetic fistula rabbits. The total ^{14}C recovered as ^{14}C-Acetone bodies in bile was 2 times greater in alloxan diabetic than in normal 24 hours after injection. Blood and bile levels of acetone bodies and radioactive acetone bodies in diabetics were much greater than in normal. The specific activities in serum and bile of normal rabbit decreased rapidly in the first 6 hours, while those of diabetics decreased slowly over 24 hours. This result indicates that the conversion of ^{14}C-Acetate to ^{14}C-Acetone bodies will be delayed markedly in diabetics.

3. Radioactive acetone bodies were kept much greater in muscle than in other tissues of alloxan diabetics 24 hours after injection of ^{14}C-Acetate. These findings indicate that acetone bodies are significantly accumulated in the muscle of alloxan diabetic rabbit.

Studies of Fatty Acid Metabolism with Incorporation of ^{14}C into Lipids of Human Whole Blood and Bone Marrow (Report 1) Normal Subjects and Patients with Aplastic Anemia

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Numerous studies of fatty acids metabolism with animals and plants. Awai and Hennes have described RI incorporation into lipids of human blood, particularly from normal Americans and patients with diabetes mellitus.

We have incubated whole blood and bone marrow from Japanese normal subjects and five patients with aplastic anemia one non-treated and four under treatment. We have followed the procedure of Awai and Adams; five ml. of whole blood and two ml. of bone marrow plus three ml. of his own blood plasma was obtained and five μc of 1-^{14}C-Acetate sodium was added to it. After four hours of shaking incubation at 37°C, lipids were extracted according to the method of Folch et al. Saponification by Bjorntorp, and methyl esterification were performed in this order.

The methyl esters were then separated by gas liquid chromatography, using a 2250 mm. 20 percent diethylen glycol succinate column. The fatty acid methyl esters in each peak were trapped by the specially prepared defatted siliconized cotten plug and the radioactivity of each fatty acid was measured by the liquid scincillation spectrometer (Shimadzu L S G-3 type).

Wakil et al. had found that fatty acid