

Patterns of ^{14}C -Incorporation into Fatty Acids by platelets from normal Subjects and Patient in Hyperlipidemia

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In a previous study, we reported ^{14}C incorporation by whole blood from some diseases. The present study demonstrates that platelets from hyperlipidemias incorporate less radioactivity into fatty acids than platelets from controls do and show different pattern of incorporation of ^{14}C into fatty acids when compared to controls.

Procedure: The platelets rich plasma was incubated with five microcuries of $1\text{-}^{14}\text{C}$ acetate for four hours at 37°C . Synthesized acids from $1\text{-}^{14}\text{C}$ acetate were separated by gaschromatography and radioactivity was determined in a liquid scintillation counter (Shimadzu LSG II).

Results: 1) Platelets from hyperlipidemias incorporated 27,438 dpm/ 10^9 platelets in 10 aged arteriosclerotics (group 2) and 16,864 dpm/ 10^9 platelets in 5 adult obese subjects (group 5), while platelets from 4 controls incorporated 43,972 dpm/ 10^9 platelets.

2) Patterns of ^{14}C incorporation into fatty acid are as follow; percentage of ^{14}C incorporation into myristic and palmitic acids was 43.00% in group 2 and 41.5% in group 5, as compared to 60.33% in controls. On the other hand, platelets from hyperlipidemias incorporated 10.77% (group 2) and 10.63% (group 5) of ^{14}C into stearic and oleic acids, while platelets from controls did 6.47%. And, also,

significant increase in percentage of ^{14}C recovered in 20 carbons' and more longer chains' fatty acids of hyperlipidemias comparing with that of controls.

These data demonstrate that fatty acids synthesis by platelets from hyperlipidemias are suppressed, particularly on the cytoplasmic or malonyl Co A pathway (Wakil's), that is equal to the result about fatty acids synthesis of whole blood reported the last meeting by us.

In order to clarify the suppression of fatty acids synthesis in hyperlipidemias, we studied ^{14}C incorporation into fatty acids by platelets, whole blood and liver tissue from lanolin induced hyperlipidemias in rabbits.

The preliminary result demonstrated that ^{14}C incorporations increased in lanolin induced hyperlipidemia compared with control and, moreover, percentage of ^{14}C incorporation into myristic and palmitic acids increased significantly in lanolin induced hyperlipidemia, unexpectedly.

This inconsistent result are not simply explainable. However, if permissible, we may consider that platelets in lanolin induced hyperlipidemia were obligable to increase fatty acids synthesis submitted to homeostasis in contrast to platelets in essential or familiar hyperlipidemia.

Studies on the Intestinal Absorption of the Active Form of Vitamin B_6 in Rats by Use of $\text{PIN-}^{32}\text{P}$ and $^3\text{H-PINP}$

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The intestinal absorption of $\text{PIN-}^{32}\text{P}$, $\text{PAL-}^{32}\text{P}$ and $^3\text{H-PINP}$ in albino rats were studied. The absorption rates of these were calculated from the radioactivities of ^{32}P and ^3H in

gastrointestinal lumen at 30, 60, 120, 180 and 240 minutes after the oral administration of 2 mg of $\text{PIN-}^{32}\text{P}$ or $\text{PAL-}^{32}\text{P}$, or 1 mg of $^3\text{H-PINP}$. The estimation of the radioactivities of

^{32}P was made by well-type scintillation counter and of ^3H was by fluid scintillation counter.

The following results were obtained:

1. The radioactivities of ^{32}P in stomach were about 15% of oral dosis at 30 minutes, 10% at 60 minutes and very low at 120 minutes after the administration.

2. The radioactivities of ^{32}P in the upper half of small intestine were about 30% at 30 minutes, 20-25% at 60 minutes, 15% at 120 minutes and 10% at 180 minutes after administration, and these in the lower half were about 15% at 30 minutes, 15-20% at 60 minutes 15% at 120 minutes and 5-8% at 180 minutes. The radioactivity in caecum appeared at 120 minutes after administration and gradually increased.

3. The absorption rates of ^{32}P were about 40% at 30 minutes, 45-50% at 60 minutes, 50-60% at 120 minutes and 75-80% at 180

minutes after the administration. That of ^3H at 120 minutes was almost same as ^{32}P . ^{32}P and ^3H were more rapidly absorbed in the younger rats.

4. The radioactivities of ^{32}P in liver were about 15% at 120 minutes after the administration and gradually increased to 17-21% at 180 minutes. That of ^3H at 120 minutes was about 1/3 of ^{32}P in radioactivity. This difference between ^{32}P and ^3H seemed to show the phosphate linkage of active vitamin B_6 would be dissociated at least on entering into the liver.

5. Pyridoxine in portal blood at 120 minutes after the administration of ^3H -PINP almost active form.

These results suggest that a part of active vitamin B_6 might be probably absorbed from the rat intestine. This opinion, however, must be confirmed by further experiments in future of course.

Turnover of Protein and Free Amino Acid of Serum and Tissues (Myocardium and Skeletal Muscle) in Dogs with Experimentally Produced Aortic Insufficiency

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The turnover rate of protein and free amino acid of myocardium and skeletal muscle was studied in the control dogs and in those with experimentally produced aortic insufficiency. In addition, a large dose of Vitamin B_{12} was given some of dogs with aortic insufficiency to study the effect of Vitamin B_{12} on the turnover of myocardial protein and free amino acid in the overloaded heart. Also, the turnover rate of serum protein and free amino acid, which may have an effect on the metabolism of myocardial protein, was studied.

Experiments were performed on 24 adult mongrel dogs of both sexes. The dogs were divided into three groups: (1) Control group, (2) AI group (dogs with experimentally produced aortic insufficiency), (3) AI+VB $_{12}$ group (in this group, 500 γ of Vitamin B_{12} were given by intramuscular injection daily

after the operation during the experimental periods).

DL-leucine-1- C^{14} was used in all experimental dogs; 40 $\mu\text{Ci/kg}$ body weight of DL-leucine-1- C^{14} were injected intravenously. Blood samples were collected at 10, 30, 60, 120, 180 and 240 minutes and intervals of 4 days after injection of leucine- C^{14} . In order to obtain the myocardium and skeletal muscle, the dogs were sacrificed at 1st, 5th, 20th and 30th days after injection of leucine- C^{14} .

The extraction of protein and free amino acid of serum and muscle was performed by method of Shmidt-Tanhauser. The radioactivity of protein and free amino acid was determined, using a liquid scintillation counter, in a dioxan scintillator.

The radioactivity of left ventricular protein in AI and AI+VB $_{12}$ groups declined more