On ^{15}N-Glycine incorporation In-vivo to the Various Kinds of Organs of Mice

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To get any information about the turn-over of protein or amino-acid metabolism under the stressful condition, the ^{15}N incorporation in-vivo to the various kinds of organs was estimated in mice with burns.

As the control experiment, 1 ml of 10% solution of ^{15}N-glycine (26 atom % excess) was injected intraperitoneally in DDY-strain male mice (20 g of body weight). ^{15}N concentration in the protein fraction, extracted from the tissues, was measured with Mass-spectrometer RM1-2 type. The ^{15}N incorporation in-vivo was estimated in various kinds of tissues such as liver, pancreas, kidney, intestinal mucosa and skeletal muscle during the same course from 8 to 72 hours after the injection. The data, obtained at 8 hours after the injection, showed that ^{15}N incorporation was the highest in the intestinal mucosa, followed by the orders of pancreas, liver and kidney, and that it was definitely low in skeletal muscles. In the protein fraction of the intestinal mucosa and pancreas, revealing the initially active incorporation of ^{15}N, the concentration was much more rapidly decreased associated with the time course after the injection compared with the decrease in livers. On the other hand, ^{15}N incorporation to the protein fraction of skeletal muscles was gradually increased associated with the time course after the injection of ^{15}N.

Then, the ^{15}N incorporation in-vivo was estimated in mice with the burn. ^{15}N-glycine was given intraperitoneally with the similar fashion as the control group, individually at 1 hour, 6 and 14 days after the burn, and the incorporation in-vico was measured, also, individually at 8, 24 and 72 hours after the injection in various kinds of organs. In livers, ^{15}N incorporation to the protein fraction was increased immediately after the burn, and the increase was more markedly found in the group with the injection of ^{15}N-glycine on the post-burn 6th day. It was returned to the control value 14 days after the burn. ^{15}N incorporation to the protein fraction of intestinal mucosa or kidney was not increased up to 72 hours after the burn. In the pancreas, the definite increase of ^{15}N incorporation was revealed both in two groups that ^{15}N-glycine was given on the post-burn 6th and 14th day. On the other hand, ^{15}N incorporation to skeletal muscles was decreased after the burn, and returned to the control value in the group with the injection of ^{15}N on the postburn 14th day. The pattern concerning the changes of ^{15}N concentration in each organ associated with the time course, was essentially similar as the control even after the burn.

These data could support the results of the authors' previous experiment, revealing that the accelerated turn-over of nucleic acid metabolism, estimated from the ^{32}P incorporation, was shown not in skeltetal muscles, but in livers of mice with the burn.

Clinical Application of in Vitro Labeling Technique with Tritiated Thymidine and Cytidine

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We have already reported in vitro labeling technique with microautoradiography using tritiated thymidine and cytidine in order to reveal the nucleic acid synthesis of human malignant tumors.

We have also studied the effect of radiation on those tumors.

Several kinds of tissue culture media have