given intravenously in amount of 200 micro curies to determine the extracellular fluid volume of the liver (with Manery's method) and to measure the appearance time of ^{24}Na into thoracic lymph. Extracellular fluid volume of liver (20.8% in normal) was 24.4% in the first, 40.0% in the second and 33.8% in the third group. Appearance time of ^{24}Na into thoracic lymph was more short in third group than in normal. Using the Phillips and can Slike copper sudfate method, the specific gravity of liver slices averaged in about 1090 in normal, but lowered about 1080 in first group and 1070 in the second and the third group.

Although hepatic blood flow is almost normal in group of liver fibrosis induced by CCl_4, the facts of increased thoracic lymph rate and extracellular fluid volume of the liver, of rapid appearance of ^{24}Na into the thoracic lymph and lowered specific gravity of liver slice indicate increase of permeability at the sinusoidal wall resulting from disturbance of postsinusoidal outflow.

Studies of Phagocytosis and Digestion in RES by ^{131}I-AA

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Particulate matter is removed from the circulation by the RES, comprising the Kupffer cells of the liver, cells which are lining the sinuses of the spleen, of the lymph nodes, and of the bone marrow, and endothelial cells of various other organs. To examine the function of RES, aggregated human albumin of small size labeled with radioiodine (^{131}I-AA) was used. ^{131}I-AA is rapidly metabolized after the removal from the circulation chiefly by the Kupffer cells of the liver and radioiodine isolated from AA reappears in peripheral blood.

The subjects without immunological, hematological and hepatic disorders were selected among the patients troubled with a gastrointestinal series. After the intravenous administration of 30 μCi of ^{131}I-AA with or without carrier-AA, gamma ray activities over the liver, over the left femoral area and in blood samples were measured.

(1) Fractional plasma clearance rate k_1 (hour^{-1}), the peak time of surface counting over the liver and the rate of breakdown of ^{131}I-AA in the Kupffer cells of the liver k_2 (hour^{-1}) are 1.940 ± 0.441, 14.5 min. and 0.109 ± 0.021 respectively, when carrier-AA was not added.

On the condition of loading with carrier-AA (3 mg/kg), 1.597 ± 0.069 of k_1, 18.0 min. of the peak time and 0.044 ± 0.009 of k_2 were gained.

(2) While the change of fractional plasma clearance was due to the hepatic blood flow and did not closely correlate with the dose of acrrier-AA, the rate of breakdown of ^{131}I-AA in RES had better correlation within certain levels of the dose of carrier-AA in the same subject.

(3) Therefore, to examine the function of RES, observation of breakdown of ^{131}I-AA is thought to be more useful rather than its plasma clearance.

(4) Decrease of surface counting over the liver after the removal from the circulation can be analyzed quantitatively at the definite considerable dose of carrier-AA.