710092

02:1315 CLINICAL APPLICATION OF RADIOISOTOPES IN DIAGNOSIS AND TREATMENT. Lathrop, K. A. (Argonne Cancer Research Hospital, Chicago, Ill.). Contract AT(11-1)69.

rrent research is directed toward production of clinically ıilable radionuclides and new chemical forms of presently ..ul radionuclides; toward their use in new applications in diagnosis and therapy and toward their supply to the clinical laboratory as useable preparations of pharmaceutical quality.

Several radionuclides of indium are being investigated as placenta localizing agents. An intensive study of human metabolism of selenium-75 in one individual has been started in an effort to provide more reliable data. Animal distribution data for Cs, K, Rb, and Tl^+ are being reviewed in an attempt to determine which is most promising as an agent for myocardial imaging.

Continuing clinical projects are the correlation of histological findings with radiation dose to the hypophysis from the ^{90}Sr-^{90}Y needle, and the assessment of chemotherapy using ^{131}Cs uptake by the tumor as the criterion of effectiveness.

Studies on pregnant mice have shown that ^{113m}In unlike ^{99m}Tc agents used for placenta imaging is virtually not transferred to the fetus. Its physical half-life, however, is too short to allow imaging at the time of maximum placental concentration. With ^{111}In and ^{67}Ga, transfer to the fetus becomes significant at about 10 hours and therefore probably eliminates these radionuclides for placenta imaging.

Preliminary analysis of human blood data shows that pretreatment with $NaClO_4$ before i.v. injection of $Na^{99m}TcO_4$ doubles the t ½ for the third component of the blood and plasma disappearance curves, representing about ⅓ of the injected ^{99m}Tc.

An enzymatic method has been derived for synthesis of aspartic acid labeled with radioactive carbon that takes only 90 minutes and gives a 6% yield.

1972

1067346

DOE/HQ