
In-111-oxine has been documented as a blood cell label by Thakur et al. We evaluated In-111-oxine labeled neutrophils in the field of neutrophil kinetics and its migration patterns. In-111-oxine was extracted using a modification of Thakur's original method (J. Lab. Clin. Med., 89: 217, 1977). Neutrophils were separated by Ficoll-isopaque double layer techniques. Neutrophils separated from a normal rat were labeled with In-111-oxine and infused in the turpentine induced inflammation rats. In-111-labeled neutrophils were accumulated into infected area (3.9 ± 0.5% in infected area: 1.4 ± 0.4% in normal). Neutrophils were disappeared in a single exponential fashion with a half life of 120 ± 8 min. Neutrophil kinetic studies were performed in patients with chronic myelocytic leukemia and polycythemia. In-111-labeled neutrophils were trapped into pulmonary vasculature and released into the plasma to localize to spleen and liver, which suggests lungs, liver and spleen as the site of marginal neutrophil pool. The lifespan of immature cells in out was almost the same as that of mature cells, which more markedly prolonged than the normal lifespan. From these findings, In-111-oxine might be valuable for the neutrophil kinetics and organ distribution study.

SCINTIGRAPHIC VISUALIZATION OF ABSCESSES BY RI LABELLED LEUCOCYTES. M. Miihiro, M. Iio, Tokyo Metropolitan Geriatric Hospital, Tokyo.

Success in scintigraphic visualization of abscesses by RI labeled leucocytes depends upon the viability of the cells and also upon the stability of the RI labels. We performed basic studies on these points. Tc-99m and In-111 were chosen as labeling isotopes. And 8-hydroxyquinoline (oxine) was used as the chelating compound which intermediates between the radio isotopes and the cells.

In-111 labeled leucocytes were found to be stable in vivo and the labels were resistant to being washed out into the plasma when incubated with excess amount of plasma protein in vitro. In-111 labeled leucocytes injected intravenously accumulated into the abscess and gave a clear scintigraphic image. On the other hand, Tc-99m labeled cells were unstable and about 30% of the labels were released out into the plasma after intravenous administration. The free Tc-99m labels being excreted into the intestine, made the scintigraphic images unclear, although the leucocytes tagged with Tc-99m accumulated into the abscesses.

In conclusion, scintigraphic visualization by In-111-oxine-leucocytes could be performed successfully, since the stability of the labels is satisfactory and the cells could be maintained viable. However, some of our unsuccessful studies revealed that the labeling procedure could produce impaired leucocytes.

IN VITRO STUDIES ON PLATELET LABELING WITH IN-III-OXINE AND IT'S APPLICATION FOR IN VIVO KINETICS IN RAT. T. Yui, T. Uchida, M. Matsuda, T. Motomi, T. Akizuki, M. Saito and S. Kariyone. The First Department of Internal Medicine, Radioisotope Laboratory, Fukushima Medical College. Fukushima.

In vitro studies on platelet labeling with In-III-oxine were performed using human platelets by Takur's method. The platelet suspensions were prepared by three different methods, namely button ACD-saline method (BS method), buttonless ACD-saline method (BLAS method) and button plasma method (BP method). The labeling efficiencies of 30 minutes labeling at room temperature were 74% in BS method, 72% in BLAS method and 30% in BP method. In rat, platelet kinetic studies in vivo were performed using In-III oxine and Cr-51. Platelet survivals in all methods were similar (about 3 days). However, initial recoveries of the labeled platelets were low (15%) in BS method, in contrast, reasonable (50%) in other methods. Organ distribution of the labeled platelets in initial stage were studied. The accumulation of the radioactivity in the liver was high (60%) in only BS method and reasonable (40%) in other methods. By scintillation camera, it was observed that the labeled platelets accumulated in inflamatory lesions induced by turpentine. Our results indicate that BLAS method and BP method are suitable for platelet labeling with In-III-oxine for kinetic studies.