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No. 87

^{99m}Tc-OPSONIN: RADIOPHARMACEUTICAL FOR ABCESS AND TUMOR LOCALIZATION

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The phagocytic clearance ability of the R.E. cells in liver and spleen is regulated by the blood level of a glycoprotein called opsonic protein or opsonin (1). This α-2-globulin kind of protein serves as the hormonal recognition factor in the discrimination of endogenous from exogenous and effete autologous material. From this knowledge it was argued that the concentration of opsonin should increase at the site of tissue injury, abscess formation, and tumor growth. Tagging of opsonin with a suitable gamma emitter provides us with a radiopharmaceutical for abscess and tumor detection.

Rat opsonin was labelled with ^{99m}Tc in a Krebs-Ringer-Phosphate (KRP) buffer solution. The labelling vial contained 5 mg of lyophilised opsonin in 2 ml KRP. 200 µg of Sn as stannous choloride dihydrate in 50 mM of HCl was added followed by 50 mM of NaOH to maintain the pH of the buffer. The sample was incubated for 10 mins. at 0°C. The incubation was continued for another 10 mins. after addition of 0.1 to 2 ml of ^{99m}Tc-sodium pertechnetate from a 'Minitec' ^{99}Mo-^{99}Tc generator. Terminal sterilization of the product was done by filtration through a 0.22 µ 'Milipore' membrane filter. Labelling yields obtained were routinely 90-95%.

Biological distribution of ^{99m}Tc-opsonin was studied in rats from 2 mins. to 24 hrs. The highest organ/blood ratio of the activity was in the kidneys. This ratio is about 28 ± 10 at 4 hrs. and remains at the same level for up to 24 hrs. At 24 hrs., kidneys contained ≈5% of the injected dose corrected for the radioactive decay. Most of this activity is in the renal cortex.

Septic abscesses were created in the thigh muscle of rats by the intra-muscular injection of saline solution of rat feces. Septic abscesses were produced in about /2 hrs. The presence of abscesses was verified surgically as well as by ^{67}Ga-citrate scintiscanning. These abscesses could be clearly visualized on scintiscanning after ^{99m}Tc-opsonin was administered to these rats by tail vein injection. Further experiments on ^{99m}-opsonin are in progress. (GM-21447, CA-16011, and Albany VA Research Funds).

1. T.M. Saba and W.A. Scovill, Surgery Annual 7 (1975).

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