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RADIOIODINATED PEANUT AGGLUTININ:A POTENTIAL NEW TUMOR SEEKING AGENT (PART 1).

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Peanut agglutinin (PNA),one of plant lectins,binds preferentially to the immunodominant group of Thomsen-Friedenreich (T) antigen,which is in reactive form on some human adenocarcinomas.

The lectin was labeled with I-125 by chloramine-T method and Iodogen method. The biological activity of PNA was determined by a preserved hemagglutination titer with a photometer.

Biodistribution study was performed. 2×10^6 Lewis lung cancer cells are inoculated subcutaneoasly to C57 BL/6 mice. The group of mice were sacrificed at 12,24,48,and 72 hours after caudal IV injection of I-125 PNA.

1. The biological activity of PNA after radiolabeling was decreased to 50.7% by chloramine-T method. On the other hand, 87.9% the activity was preserved by Iodogen method. These results suggest that Iodogen method is preferable labeling procedure because of its little damage to the biological activity of PNA.
2. I-125 PNA labeled by Iodogen was more rapidly cleared from the liver,spleen, bone,muscle,and blood than that by chloramine-T.
3. Radioiodinated PNA showed a rapid clearance from blood,and good tumor localization. Tumor to Muscle ratio:3.8 (at 48h.)
   Tumor to blood ratio :2.0 (at 72h.)

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The Thomsen-Fiedenreich (T) antigen,β-D-galactosyl-(1→3)-α-N-acetyl-D-galactosamine, is exposed in reactive form on adenocarcinomas of human breast,gastrointestinal and respiratory tract. On the contrary,the antigen is in the crypric form masked by N-acetryl neuramic acid in healthy tissues. Peanut lectin (PNA) has a strong binding affinity for the T antigen. We investigated the potential of radioiodinated PNA as a tumor localizing agent in animal model system.

The lectin was labeled with I-131 by Iodogen (1,3,4,6-Tetrachloro-3α,6α-diphenylglycouril) method to yield a specific activity of 1 mCi/mg PNA. There was no significant difference of biological activity of PNA between before and after labeling.

Lewis lung cancer,B-16 melanotic melanoma, Yoshida sarcoma,Hepatoma AH 109A,and Ehrlich ascites tumor were used as animal tumor models. An abscess induced by Turpentine oil was used as a benign model.

These animals recieved a caudal IV injection of 100μCi of I-131 PNA. Serial scintigraphic images were obtained at 6,24,48, and 72 hours following the I-131 PNA injections.

The tumor tissue was clearly visualized as a function of time. Because of the low back ground activity subtraction technique was unnecessary.