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Ga-67 LABELED MONOCLONAL ANTIBODIES FOR USE IN RADIOIMMUNOIMAGING : EFFECT OF COUPLING REAGENTS ON IN VITRO PROPERTIES AND BIODISTRIBUTION. M.Koizumi,K.Endo, M. Kunitatsu, H. Sakahara, H. Ohta, Y. Kawamura, T. Watanabe, Y. Ohmomo, Y. Arano, A. Yokoyama, S. Hosoi, T. Nakamura, T. Yamamuro, S. Toyama, T. Nakashima and K. Torizuka. Kyoto University, Kyoto.

Ga-67 labeled MoAb have been prepared by using deferoxamine (DFO) as a bifunctional chelating agent. In the present study, we have used two model systems; hCG--87A (a MoAb against hCG) and osteosarcoma xenograft--OST7 (a MoAb against osteosarcoma). Three coupling reagents, glutaraldehyde, SPDP and EMCS, were employed for the attachment of DFO to antibody. All Ga-67 labeled and radioiodinated MoAb showed similar immunoreactivity in vitro. Because glutaraldehyde was a homocoupling reagent, polymerized Abs were detectable in the radiolabel prepared with glutaraldehyde, and biodistribution study revealed the increased accumulation in liver. The formation of polymerized Ab was not detectable in the case of heterocoupling reagents; SPDP and EMCS. The radiolabel with SPDP, which was introduced disulphide bonds between DFO and Ab, showed in vitro serum instability and rapid clearance from circulation. The radiolabel with EMCS, which was introduced thioether bonds, appeared most feasible for in vivo use due to its low liver-to-blood ratio and in vivo stability.

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ASSESSMENT OF THE DIAGNOSTIC VALUE OF IMMUNOSCINTIGRAPHY WITH LABELLED MONOCLONAL ANTIBODIES (ANTI CEA F(ab')₂ AND 19-9 F(ab')₂). T. Takahashi, D. Tsujino, Y. Kato, T. Nakagawa, T. Suzuki, H. Ohara, K. Someya, K. Itagaki, T. Sakaki and Y. Sasaki. 3rd Department of Internal Medicine and Department of Nuclear Medicine, St. Marianna University School of Medicine and Department of Nuclear Medicine, Gunma University.

We used the anti CEA monoclonal antibody and CA19-9 monoclonal antibody obtained IRIST for in vitro diagnosis of malignancy by radioimmunoscintigraphy. A cocktail of anti CEA F(ab')₂ and 19-9 F(ab')₂ was injected by an I.V. perfusion in 100ml of 0.9% NaCl in 30 minutes. In order to block the uptake of the Thyroid, Perchlorate 1g/day were administered for 14 days starting from 3 days before injection. The subjects are 16 cases who are diagnosed as Lung Ca., Pancreas Ca., Cholangio Ca., Gastric Ca., Colon Ca., Esophageal Ca., Hepatoma, Retroperitoneal tumor (5,4,2,1,1,1,1,1,1). Among them 10 cases had abnormal accumulation of radioscintigraphy in the areas corresponding to the tumor or part of the lesion. (Lung Ca.3, Pancreas Ca.4, Gastric Ca.1, Colon Ca.1, Retroperitoneal tumor 1). In other cases no accumulation of radioactivities could be found. No side effect was observed.

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Clinical evaluation of immunoscintigraphy using iodine-131 labeled anti CEA and anti CA19-9 monoclonal antibody
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The clinical usefulness of iodine-131 labeled anti CEA and anti CA19-9 monoclonal antibody cocktail (IMACIS 1), was evaluated for the detection of malignant tumor by scintigraphy.

Whole body and spot images were taken at 3-5 days after drip infusion of 1.5-3 mCi of IMACIS 1, image data were simultaneously fed into a computer. Lugol solution or sodium perchlorate was administered to block thyroid uptake of iodine-131. Fourteen patients bearing malignant tumors confirmed by histological examination or other imaging techniques were studied, which included 6 of gastric cancer, 3 of pancreatic cancer, 2 of colorectal cancer, 2 of lung cancer and 1 of primary unknown cancer. At least one lesion with abnormal accumulation of IMACIS 1 was shown in 14 cases.

Optimal image processing and/or combined imaging with other organ scintigraphy may prove useful for immunodetection of malignant tumor with IMACIS 1.

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RADIOIMMUNOIMAGING IN MALIGNANT MELANOMA WITH ANTI-97 MOUSE MONOCLONAL ANTIBODY. (The Effect of Anti Mouse Antibodies)
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Six patients with metastatic malignant melanoma were examined radioimmun imaging with anti-97 mouse monoclonal antibody (type 96.5). We measured plasma anti-mouse antibody of these patients by ELISA method. One patient was imaged 2 times with 111-In labeled monoclonal antibody (96.5).

Anti-mouse antibody was detected on 7 days after 96.5 antibody administration and was maintained for over 20 weeks. One patient a second injection of 96.5-antibody was administered for immunoscintigraphy 8 month after the first. This patient had anti-mouse antibody at least over 30 weeks in her plasma. The repeat imaging investigation successfully detected the site of metastatic tumor in the brain but could not detect other tumors which detected the first study. The 111-In labeled antibodies clearance from blood was earlier the 2nd than the first study. The patient had no side effects at the 2nd imaging study.