In Vitro Properties and radioimmunoscintigraphy of I-125 and I-131 Labeled Whole IgG Lym-1 Antibody

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1. Introduction

Radiolabeled IgG lym-1 antibody has a possibility to be used in radioimmunoscintigraphy of cancer. We investigated the in vitro properties and biodistribution of IgG lym-1 antibody labeled with I-125 and I-131.

2. Methods and Results

To perform cell binding assay with Raji cell, radioimmunoscintigraphy IgG lym-1 labeled with I-125 by Iodo gen coated tube, and I-131 by Iodo bead. After labeling procedure, I-125 IgG lym-1 was purified with desalting column. The radiochemical purity of labeld products was evaluated by TLC-SG with acetone.

Table 1. Comparison of labeling of Rituximab with I-125 and I-131

Radioisotope	Radiolabeling Yield (%)	Impurities (%)
I-125	64.2	35.8
I-131	< 99	> 1

Labeling yield of I-125-IgG lym-1 antibody and I-131 IgG lym-1 antibody were 64.2 %, 99 %, respectively. (Table 1).

Radioiodinated antibodies were mwasured for immunoreactivity using Lindmo method and radioimmunoscintigraphy was obtain with using gamma camera.

Immunoreactivity and Scatchard of I-125 IgG lym-1 was determined with HLA-DR antigen expressed Raji cell line. Immunoreactivity indicated that IgG lym-1 showed a potential binding activity against the Raji lymphoma cell (Fig. 1,2.).

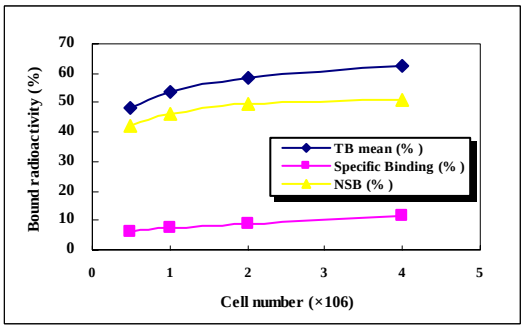

Fig. 1. Immunoreactivity of I-125 IgG lym-1 was confirmed with HLA-DR antigen expressed Raji cell line.

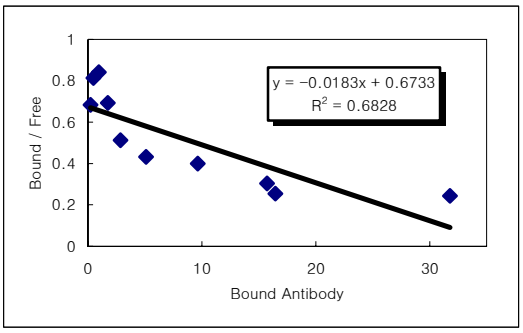

Fig. 2. Scatchard analysis of I-125 IgG lym-1 was confirmed with HLA-DR antigen expressed Raji cell line.

Immunoreactivity of I-125-IgG lym-1 antibody was 54 % and Ka value of I-125-IgG lym-1 antibody was 0.0183.

Raji cell was injected in to the C57BR/cdJ SCID mice. Cells were grown routinely in RPMI1640 supplemented with 10 % fetal bovine serum, antimicrotics, antibiotics and sodium bicarbonate. At 5-6 weeks of age, they received s.c. injection in a right thigh. with 2.5 x 10^6 Raji cell grown in tissue culture. When tumors were approximately 0.4 - 0.5 g in size (day 25-28, in the experiments reported here), mice received i.v. injection with I-131 radiolabeled antibody. For the tumor growth antibodies, tumor size was estimated as length x width x depth. Gamma camera nuclear medicine scans were taken time point at 1, 8, 24, and 48 hr. For obtain large size image was used 3 mm pinhole colimeter. Distence of mice and pinhole was 90 mm, and obtain count 500,000.

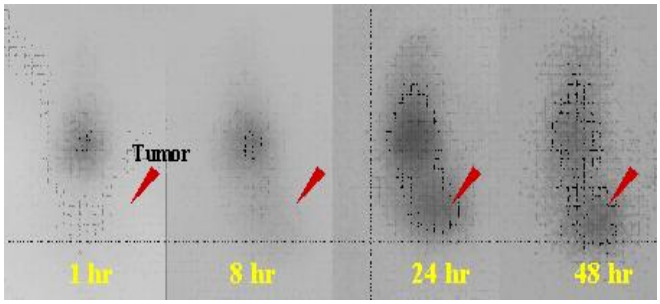

Fig. 3. Planar image of C57BR/cdJ SCID mice at 1, 8, 24 and 48 hr after imaging dose of 200 uci I-131-IgG lym-1 antibody.

3. Conclusions

IgG lym-1 DNA was obtained from pCANTAB 5E. Radiolabeling yield of IgG lym-1 with I-125 was 64.2 %, and I-131 more than 99 %. Immunoreactivity of I-125 IgG lym-1 was about 54 %, and scatchard analysis Ka value was 0.0183. Tumor uptake of I-131 IgG lym-1 was not detected at initial time (1 hr), but from 8 hr post injection was showed. Optimum time point of maximum tumor image was at 24 hr, and time point of initial clearance at 48 hr.

4. References

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