Radioimmunoscintigraphy of xenografted human thyroid carcinoma

Kiyoshi Koizumi,* Kunihiro Yokoyama,* Naoto Watanabe,* Suzuka Kawabata,* Noriyuki Shuke,* Seigo Kinuya,* Tamio Aburano,* Norihisa Tonami,* Kinichi Hisada,* Nobuo Sato** and Yoriaki Kurata**

*Department of Nuclear Medicine, School of Medicine, Kanazawa University
**Department of Pathophysiology, Cancer Institute, Kanazawa University

We developed monoclonal antibodies against human thyroid cancer-associated antigen by fusing mouse myeloma cells with mouse spleen cells immunized by insoluble fraction of homogenized thyroid papillary carcinoma cells. One monoclonal antibody (KTC-3, IgM) was selected to evaluate basic usefulness for radioimmunoscintigraphy in xenografted human thyroid carcinoma. KTC-3 was labeled with $^{125}$I by Iodogen method of 20 to 1 Iodogen to IgM molar ratio. It was also labeled with $^{111}$In by cyclic DTPA anhydride method of 20 to 1 DTPA to IgM molar ratio. The labeling efficiency and specific activity for $^{125}$I labeling were 16.5% and 0.66 mCi/mg IgM respectively, and those for $^{111}$In labeling were 12.7% and 1.6 mCi/mg IgM. Imaging and biodistribution of labeled KTC-3 were evaluated in nude mice bearing thyroid anaplastic carcinoma (THC-5-JCK). The tumors were well visualized 3 and 5 days after injection of $^{131}$I KTC-3. Tumor uptake of $^{131}$I KTC-3 on day 7 was 0.52±0.27% ID/g and tumor to blood ratio was 1.98±0.76 (n=6). Those of $^{111}$In KTC-3 were 0.88±0.09% ID/g and 5.51±3.36 (n=6). In conclusion, KTC-3 is promising for radioimmunoscintigraphy of thyroid cancer.

Key words: Radioimmunoscintigraphy, Monoclonal antibody, Thyroid cancer