POTENTIAL USE OF ^{177}Lu ON THE DEVELOPMENT OF THERAPEUTIC AGENTS FOR RIA USING MONOCLONAL ANTIBODY, ANTI-CD105 AND MONOCLONAL ANTI-VASCULAR ENDOTHELIAL GROWTH FACTOR RECEPTOR 1 (VEGFR 1)

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The main goal of this study was to optimize the radioimmunoconjugation of monoclonal antivascular endothelial growth factor receptor 1(VEGFR 1) anti-CD105(Endoglin) monoclonal antibody for an angiogenesis targeting and with ^{177}Lu as a potential angiogenic molecular tracer for radioimmunotherapy (RIT). We carried out a radioimmuno conjugation using ^{177}Lu with anti-CD105 (Endoglin) and anti-VEGFR1 for developing a more useful marker to identify proliferating endothelium involved in tumor angiogenesis than panendothelial markers. We optimized the labeling of monoclonal antibody with ^{177}Lu by using cysteine derivative isothiocyanatobenzyl-DTPA(DTPA-NCS) as BFCA. Under the optimal conditions with a slight modifications on the factors such as the reaction time and molar ratio which are known to be very critical in radiolabeling. The labeling yield was greater than 99% each respectively. Immunoactivity of the radioimmunoconjugate was investigated using combinations of radioanalytical and bioanalytical techniques (ITLC-SG,Cyclone phosphorimager, SDS-PAGE and ELISA). For the biological evaluations we carried out a cell binding assay and a biodistribution study using mice bearing Calu 6 lung cancer cell xenografts. The tumor-to-blood ratio was 11.16:1 24h post-injection. For anti-VEGFR1 monoclonal antibody, the biodistribution study showed high specificity in accumulating in tumour tissues where the tumor-to-blood ratio was 3.25:1 24h post-injection.

In conclusion, the anti-CD105 monoclonal antibody for an angiogenesis targeting was effectively radioconjugated with ^{177}Lu. And the biodistribution study showed a high specificity for accumulating in tumour tissues. This radioimmunoconjugate is applicable to detect angiogenesis sites in various diseases and to treat tumors. the anti-VEGFR1 monoclonal antibody for angiogenesis targeting was effectively radioconjugated with ^{177}Lu.

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