S 9-13

Comparison of IgG LYM-1 and scFv LYM-1 Antibody in Immunoreactivity and Radioimmunoscintigraphy

J. H. JUNG[1], T. H. CHOI[1], K. S. WOO[1], W. S. CHUNG[1], C. W. CHOI[1] and S. M. LIM*

Department of Nuclear Medicine, KIRAMS, Seoul, Korea. [1]Laboratory of Nuclear Medicine, Korea Institute of Radiological and Medical Sciences, Seoul 139-706, Korea (KIRAMS).

**Corresponding author: jaehoboa@paran.com*

The phage display antibody (Ab) library technology has been found to be a useful method to isolate antigen-specific Ab fragments. Recombinant scFv lym-1 was produced using pET vector system for large scale production. Recombinant single chain Fv (scFv) antibodies offer many advantages over mouse monoclonal antibodies such as faster clearance from blood improved tumor localization, reduced human anti-mouse antibody (HAMA) response, and the availability to manipulate the scFv through genetic approaches. Our study described to evaluate the binding affinity of scFv lym-1 compared with IgG lym-1. ScFv lym-1 gene, inserted pET-22b (+) vector, was expressed in *E.coli* BL-21 strain. ScFv lym-1 antibody, extracted from periplasm, was purified with His-Taq column. Raji cell was injected in to the C57BR/cdJ SCID mice. Gamma camera scans were taken at 1, 8, 24, and 48 hr time point. Flow cytometry of IgG and scFv lym-1 antibodies was points of similarity between two antibodies. Immunoreactivity and affinity constant of IgG lym-1 were 54% and 1.83×10^{9} M^{-1}, respectively, and those of scFv lym-1 were 53.7% and 1.46×10^{9} M^{-1}, respectively. Tumor image of I-131 scFv lym-1 was appeared at initial time (1 hr). Positive tumor image was obtain within 12 hr. ScFv lym-1 showed fast blood clearance and tumor targeting than IgG lym-1 antibody. These results suggest that scFv lym-1 antibody could be useful tumor imaging agent