

2ND INTERNATIONAL CONFERENCE ON
APPLIED MICROBIOLOGY AND BENEFICIAL MICROBES
OCTOBER 23-25, 2017 OSAKA, JAPAN

Molecular biological analysis of 3D8 VL, a nucleic acid hydrolyzing recombinant antibody derivative

Yongjun Lee, Seungchan Cho, Dongjun Kim, Eui-Joon Ki, Kangsan Roh, Sang-Ho Cho, Sungrae Cho, Hee-Seong Byun, Haneul Seo, He Jiang, Hocheol Shin and Sukchan Lee

Sungkyunkwan University, Republic of Korea

3D8 single chain variable fragment (scFv) is recombinant antibody. 3D8 scFv consists of variable heavy chain domains (VH) and variable light chain domains (VL) that linked by flexible peptide linker. 3D8 scFv was isolated from autoimmune-prone MRL-lpr/lpr mouse. It has DNase and RNase activities without significant sequence specificity. It internalizes by caveolae-mediated endocytosis and is accumulated in the cytosol. In previous studies, WT 3D8 scFv showed the antiviral effects against pseudorabies virus (PRV) and herpes simplex virus type-1 (HSV-1). Like WT 3D8 scFv, 3D8 VL could hydrolyzes DNA and RNA substrates and it also penetrates into cytoplasm. In this study, I have compared the DNA and RNA hydrolyzing activity between 3D8 VL and WT 3D8 scFv. I measured the stability of 3D8 VL in a variety of pH ranges and temperatures by using FRET (Fluorescence resonance energy transfer) assay. I also confirmed the cell penetration activity into cytoplasm through the cell membrane and I demonstrated that 3D8 VL has no cytotoxic effect against host cell shown by WT 3D8 scFv (*in vitro*). 3D8 VL protein was detected in several organs (liver, lung and brain) and blood, when I injected the protein to mouse through intra-peritoneal injection. Using *in vivo* imaging, I have confirmed that 3D8 scFv and VL could be absorbed into blood and then circulated to whole body and finally they reached to several organs. The results indicate that 3D8 VL has similar biochemical and biological properties with WT 3D8 scFv. Taken together, 3D8 VL can be replace WT 3D8 scFv for a potent antiviral protein.

Biography

Yongjun Lee has received his Master's degree from Sungkyunkwan University. His research interest is about antiviral protein (3D8 scFv protein) using *E. coli* expression systems and the proteins transport through blood brain barriers.

88yjl11@naver.com

Notes: