

# Production of specific monoclonal antibody against CD3 $\epsilon$ in olive flounder

Jae Wook Jung\*, Young Rim Kim\*, Jung Seok Lee\*, Se Pyeong Lim\*, Si Won Kim\*, Jassy Mary S. Lazarte\*, Jaesung Kim\*,

Tae Sung Jung<sup>§</sup>

*Laboratory of Aquatic Animal Diseases, College of Veterinary Medicine, Gyeongsang National University  
900 Gajwadong, Jinju, Gyeongnam, South Korea, 660-701*

## ABSTRACT

T cell activation is initiated by the binding of antigen to the specific T cell receptor (TCR) that triggers the formation of CD3-signal transduction complex and ends in proliferation and differentiation of antigen-specific T cells. CD3, an essential component of the CD3-TCR complex, has been classified into  $\gamma$ ,  $\delta$ ,  $\epsilon$ , and  $\zeta$  chains. The CD3 $\gamma$ , CD3 $\delta$ , and CD3 $\epsilon$  chains are highly related to cell surface proteins of the immunoglobulin superfamily containing a single extracellular immunoglobulin domain. In mammals, T cells were characterized by detecting one of the CD3 molecules through the use of specific antibody for CD3 $\epsilon$ . This suggests that CD3 molecules can be used as markers in identifying T cells in teleost fish; hence, it is essential to produce CD3-specific antibodies that could serve as T cell markers in fish. Here, we produced a CD3 $\epsilon$ -specific monoclonal antibody. Western blot result showed a distinct band at approximately 15 kDa detecting the CD3 $\epsilon$  antibody while MALDI-TOF analysis, clearly identified the band as olive flounder CD3 $\epsilon$ . Once a monoclonal antibody has been produced, it can be used to detect the presence of a substance specific to it. The results from this study revealed that the CD3 $\epsilon$  monoclonal antibody produced could detect CD3 $\epsilon$  in olive flounder. However, cell markers for T cell differentiation in olive flounder were not fully investigated yet so we hope that this antibody could be useful in elucidating T cell differentiation in teleosts.

## KEYWORDS

T cell activation, CD3 $\epsilon$ , teleost fish, monoclonal antibody, cell marker

\* These authors have contributed equally to this work.

§ Corresponding author. Tel.: +82-55-772-2350; Fax: +82-55-762-6733.

E-mail address: [jungts@gnu.ac.kr](mailto:jungts@gnu.ac.kr)/[jungts@gmail.com](mailto:jungts@gmail.com)