Production of specific monoclonal antibody against CD3ε in olive flounder

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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 γ, δ, ε, and ζ chains. The CD3γ, CD3δ, and CD3ε 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 CD3ε. 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 CD3ε-specific monoclonal antibody. Western blot result showed a distinct band at approximately 15 kDa detecting the CD3ε antibody while MALDI-TOF analysis, clearly identified the band as olive flounder CD3ε. 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 CD3ε monoclonal antibody produced could detect CD3ε 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, CD3ε, teleost fish, monoclonal antibody, cell marker

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