

Development of Immunoassay Using Monoclonal Antibody and Recombinant Antibody for Natural Products

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Abstract

Introduction: Artemisinin (AM), which is a sesquiterpene lactone, is a well-known anti-malarial compound isolated from *Artemisia annua*. We had prepared a monoclonal antibody (mAb 1C1) showing specificity for AM and artesunate (AS), and we developed an indirect competitive enzyme-linked immunosorbent assay (icELISA) using this novel mAb. Moreover, a recombinant antibody derived from mAb 1C1 was prepared to overcome insufficient mAb production by hybridoma culture. **Method:** The recombinant antibodies, which were derived from a monoclonal antibody against AM and AS (mAb 1C1) prepared by us, were expressed by *Escherichia coli* cells, and their reactivity and specificity were characterized. **Results:** As a result, the specificity of the Fab was similar to that of mAb 1C1 in that it showed specific reactivity toward AM and AS only. The sensitivity of the icELISA (0.16 µg/mL – 40 µg/mL for AM, 8.0 ng/mL – 60 ng/mL for AS) was sufficient for analysis of anti-malarial drugs, and its utility for quality control of analysis of *Artemisia* spp. was validated. The Fab expression and refolding systems provided a good yield of high-quality antibodies.

Keywords: Recombinant antibody, ELISA, Artemisinin

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