More Tools for Speedy Antibody-Drug Conjugate Discovery

Fab-αMFc-CL-MMAE

Fab Anti-Mouse IgG Fc-MMAE Antibody with Cleavable Linker

Catalog Number **AM-202-AE**

DESCRIPTION

Fab-αMFc-CL-MMAE is a Fab fragment of an anti-mouse IgG Fc specific antibody conjugated to monomethyl auristatin E (MMAE) with a cleavable linker. The antibody portion is a polyclonal antibody which is specific to the Fc region of mouse IgGs. *The **Fab-αMFc-CL-MMAE** antibody also cross-reacts with the Fc region of Rat IgGs.* Monomethyl auristatin E (MMAE) is a cytotoxic small molecule which inhibits cell division by blocking the polymerization of tubulin. The cleavable linker connecting MMAE to the antibody is stable in extracellular fluid, but can be cleaved by endosome cathepsins upon entering cells.

APPLICATIONS

Antibody-drug conjugates (ADCs), which have become a new targeted therapy against cancer, consist of an antibody linked to a cytotoxic drug. The ADCs bind selectively to the target cancer cells via the monoclonal antibody portion. Internalization of the ADCs releases the drug to do its damage. Prior to testing the function of ADCs in cell-based assays, each monoclonal antibody is typically conjugated directly with a cytotoxic drug. This step is time consuming and expensive, requiring milligram quantities of purified antibody, separate conjugation of each antibody, and further isolation of the ADC from the unconjugated drug. Using secondary antibody-drug conjugates (2°ADC) in a cell-based cytotoxic assay is a quick and economical alternative to pre-screening monoclonal antibodies as ADC candidates against tumor cells. Instead of conjugating the monoclonal antibody with a cytotoxic drug, the naked monoclonal antibody is added directly to the cells in the presence of the 2°ADC. Internalization of the monoclonal antibody/2°ADC complex can achieve a similar effect of targeted drug release within the cells as the monoclonal antibody-drug conjugate. Furthermore, the 2°ADC can also be applied to screen protein ligands for receptor-mediated cell targeting.

Fab-αMFc-CL-MMAE is a 2°ADC for pre-screening antibodies with a mouse IgG Fc moiety or recombinant mouse IgG Fc fusion proteins to determine their cytotoxicity as MMAE bioconjugates. When applied in combination with tumor specific mouse monoclonal antibodies, **Fab-αMFc-CL-MMAE** can help determine the cytotoxic potential for these antibodies against target cell lines. The mono-valence nature of Fab 2°ADC may have some advantage in certain applications than the full length IgG 2°ADC.

EXAMPLE DATA

It has been demonstrated that Herceptin-DM1 conjugates (T-DM1) displayed potent killing activity against Her2-overexpressing tumor cells but not normal Her2 expression or Her2 negative cells. Here cytotoxicity of a mouse anti-mouse Her2 (αHER2) mAb was tested in four breast cancer tumor cell lines expressing different amount of Her2 marker. SKBR3 and HCC1954 are Her2 overexpressing cell lines, MCF7 has normal Her2 expression, and MDA-MB468 is Her2 negative. *In vitro* the growth of SKBR3 is slightly stimulated by the αHER2 mAb, while MCF7 and MDA-MB468 are not affected by the unconjugated αHER2 mAb (Fig A). In the presence of 1:6 ratio of mouse αHer2 mAb/**Fab-α MFc-CL-MMAE**, potent killings are observed for the Her2 overexpressing SKBR3 and HCC1954 cells, while the Her2 normal MCF7 or negative MDAMB468 cells are not affected (Fig B). The 2°ADC **Fab-αMFc-CL-MMAE** alone has minimal toxicity towards these cells (Fig C).

Fig A. Cytotoxic Profile of Mouse αHER2 mAb in the Presence of Unconjugated αMFc Secondary IgG

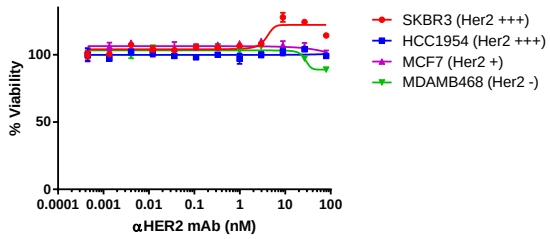


Fig B. Cytotoxic Profile of Mouse αHER2 mAb in the Presence of 1:6 Ratio of Fab αMFc-CL-MMAE

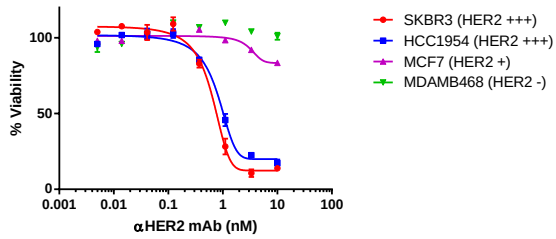
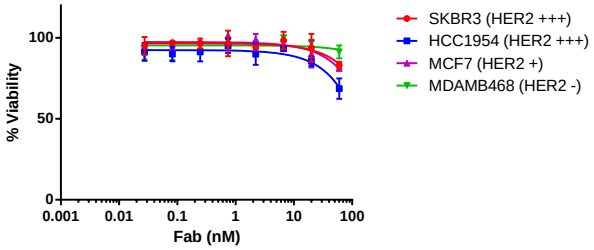


Fig C. Cytotoxic Profile of Fab αMFc-CL-MMAE Alone



STORAGE

Store in -20°C or -70°C manual defrosted freezer. Avoid repeated freeze-thaw cycle.