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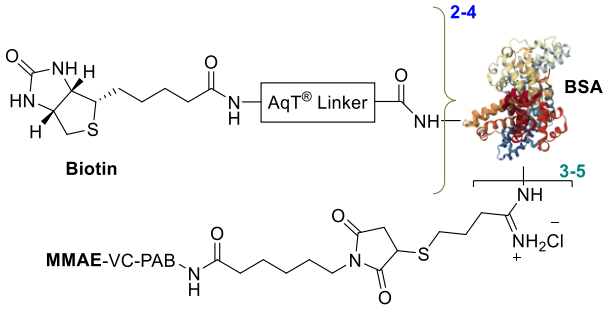
AqT® Biotin-BSA-MMAE

Lyophilized powder
100 μg and 500 μg of AqT® Biotin-BSA-MMAE conjugate lyophilized from PBS buffer containing sugar based stabilizer.
≥99% conjugates by SEC HPLC

Catalog Number: CM86161-100UG, CM86161-500UG



Product Description

Drug–BSA conjugates are widely used in immunoassays, including bead-based assays, ELISA, and biosensor platforms such as SPR and BLI. In these applications, BSA serves as a carrier protein that facilitates the presentation of small-molecule drugs on assay surfaces. However, conventional drug–BSA conjugates typically rely on passive adsorption to plastic, glass, or bead surfaces, which can result in random orientation, variable surface density, and reduced assay reproducibility. By incorporating biotin into the drug–BSA conjugate, these limitations can be overcome through specific and controlled immobilization on streptavidin-coated surfaces. In this format, biotin acts as a molecular anchor, enabling robust, reproducible attachment of the drug–BSA conjugate while preserving accessibility of the drug moieties for target binding.

Furthermore, this conjugate can function as a modular drug delivery platform in which the targeting component can be swapped without resynthesizing the drug conjugate. This enables selective targeting and killing of cells that bind biotin-containing constructs. The system can also be used to evaluate albumin-mediated tumor accumulation, payload release kinetics, and the biodistribution of protein–drug conjugates.

However, developing dual-labeled drug–BSA conjugates can be challenging because many drugs, including monomethyl auristatin E (MMAE), are highly hydrophobic. Conjugation of multiple hydrophobic molecules to BSA often reduces aqueous solubility and promotes aggregation. Biotin also possesses hydrophobic character, which can further exacerbate these issues. As a result, dual-labeled drug–biotin–BSA conjugates are rarely available as commercial products.

CellMosaic's proprietary AqT® super-hydrophilic linker technology addresses these challenges by enhancing aqueous solubility and minimizing aggregation. This Biotinylated BSA–MMAE conjugate incorporates AqT® linkers to improve conjugate stability, reduce nonspecific interactions, and maintain excellent assay performance. The conjugate is engineered with an optimized drug-to-protein ratio (DPR) of approximately **3–5 MMAE** molecules per BSA and a biotin loading of approximately **2–4 biotin molecules** per BSA, enabling efficient immobilization on streptavidin-coated surfaces. The hydrophilic AqT® linker helps minimize aggregation, reduce background signal, and improve assay robustness and reproducibility.

For bulk quantities and custom packaging requirements, please contact us for pricing and availability.

Key Features

- Lyophilized powder; ready for use after reconstitution with water. No additional buffer is required.
- **Dual-functional conjugate** containing an average of **2–4 Biotin molecules per BSA**, enabling convenient immobilization on streptavidin-coated surfaces and compatibility with streptavidin-based detection systems.
- **Optimal MMAE Loading** with an average of **3–5 MMAE molecules per BSA**.

- MMAE incorporation levels **accurately determined** by UV/HPLC and MS analysis; biotin incorporation levels determined by biotin assay.
- **Advanced AqT® linker technology:** Utilizes CellMosaic's proprietary, super-hydrophilic, water-soluble, charge-neutral AqT® linker to enhance aqueous solubility and minimize aggregation.

Chemical Information

- **Chemical Name**: AqT® Biotinylated BSA-MMAE.
- **Chemical Formula:** N/A/.
- **Molecular Weight: ~**71 KDa**.**
- **CAS Number:** Not Assigned.

Specifications

- **Physical Appearance:** white to off-white preservative-free lyophilized powder in a 2.0 mL centrifuge tube.
- **Storage Temp:** –20°C or below.
- **Purity:** ≥99% of conjugates by HPLC.
- **Amount of Biotin Loaded per BSA Molecule:** 2–4 (refer COA of each lot for actual value).
- **Amount of MMAE Loaded per BSA Molecule:** 3–5 (refer COA of each lot for actual value).

Storage/Stability

- Recommended storage of the product is below –20°C.
- Expiration before defrosting is 1 year after receiving.
- Once defrosted maintain at 2–8°C.
- For best quality use within 1 week of defrosting.

General Applications of Dual-Labeled AqT® Biotin-BSA-MMAE Conjugate

- **ELISA, IHC, and ICC Assay Development**: Detect and characterize anti-drug antibodies, drug-binding proteins, drug-binding receptors, and drug-specific monoclonal antibodies using streptavidin-coated surfaces.
- **Flow Cytometry Assays**: Analyze anti-drug antibodies, drug-binding proteins, and drug-binding receptors using streptavidin-conjugated fluorophores.
- **Immunoprecipitation and Pull-Down Studies:** Capture and enrich anti-drug antibodies, drug-binding proteins, and drug-binding receptors using streptavidin-coated beads.
- **SPR and BLI Binding Studies**: Immobilize the conjugate on streptavidin-coated sensor surfaces for binding and kinetic studies.
- **Magnetic Bead–Based Assays**: Capture, enrich, and isolate drug-binding proteins and antibodies using streptavidin-coated magnetic beads.
- **Microarrays and Multiplex Assays:** Immobilize the conjugate on streptavidin-coated surfaces for high-throughput screening and multiplexed assay formats.
- **Streptavidin-Based Targeting Platform:** A modular drug delivery system where the targeting component can be swapped without resynthesizing the drug conjugate. Screening different targeting ligands, preclinical targeting studies, cell-specific cytotoxicity assays.
- **Cell Ablation Reagent**: The conjugate could be used to selectively kill cells that bind biotin-containing constructs. Examples: Engineered cells expressing avidin/streptavidin, cells decorated with streptavidin antibodies.
- **Pharmacokinetic and Albumin Delivery Research:** Albumin-mediated tumor accumulation, payload release kinetics, biodistribution of protein-drug conjugates.

Important Notes

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