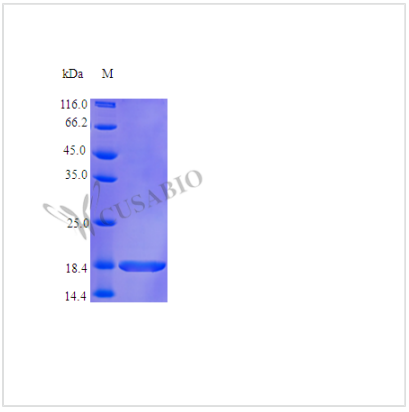
Recombinant Human Aminoacyl tRNA synthase complex-interacting multifunctional protein 1 protein (AIMP1), partial (Active)

Product Code	CSB-AP002281HU
Abbreviation	Recombinant Human AIMP1 protein, partial (Active)
Uniprot No.	Q12904
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered PBS, pH 7.4
Product Type	Other
Immunogen Species	Homo sapiens (Human)
Biological Activity	Fully biologically active when compared to standard. The ED50 as determined by the apoptotic effect using serum free human MCF-7 cells is less than 40 ng/ml, corresponding to a specific activity of >2.5x10^4 IU/mg.
Purity	>98% as determined by SDS-PAGE.
Sequence	SKPIDVSRLD LRIGCIITAR KHPDADSLYV EEVDVGEIAP RTVVSGLVNH VPLEQMQNRM VILLCNLKPA KMRGVLSQAM VMCASSPEKI EILAPPNGSV PGDRITFDAF PGEPDKELNP KKKIWEQIQP DLHTNDECVA TYKGVPFEVK GKGVCRAQTM SNSGIK
Research Area	Cancer
Source	E.coli
Target Names	AIMP1
Expression Region	147-312aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	Tag-Free
Mol. Weight	18.2 kDa
Protein Length	Partial
PubMed ID	7929199; 14702039; 15489334; 10358004; 10850427; 11306575; 12237313; 11818442; 14500886; 16472771; 17443684; 19362550; 21092922; 20068231; 21269460; 22223895; 22814378; 24275569; 10852899; 11157763
Image	



Description

Recombinant Human AIMP1 protein is expressed in E. coli and corresponds to the 147-312 amino acid region of the human protein. This tag-free, partial-length protein is purified to a level greater than 98% as determined by SDS-PAGE. It appears to be fully biologically active, with an ED50 of less than 40 ng/ml for inducing apoptosis in serum-free MCF-7 cells, indicating a specific activity of over 2.5 × 10^4 IU/mg. The endotoxin level is maintained below 1.0 EU/μg, ensuring suitability for research applications.

AIMP1, also known as aminoacyl tRNA synthase complex-interacting multifunctional protein 1, plays what seems to be a critical role in protein synthesis by interacting with aminoacyl tRNA synthetases. Beyond its involvement in translation, AIMP1 is recognized for its multifunctional nature. It participates in various cellular pathways, including apoptosis and immune response modulation - though the full extent of these roles may not be completely understood. Its diverse functions make it an important protein for studying cellular processes and disease mechanisms in research settings.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Apoptosis Induction Studies in Cancer Cell Lines

This recombinant AIMP1 protein fragment can be used to investigate apoptotic mechanisms in various cancer cell lines, building on the demonstrated apoptotic effect in MCF-7 cells. The defined ED50 of less than 40 ng/ml provides a quantitative baseline for dose-response studies across different cancer cell types. Whether this apoptotic effect translates consistently across all tumor cell models remains to be seen. Researchers can examine the specificity and potency of AIMP1-induced apoptosis in diverse cell lines, though responses may vary significantly between different cancer types. The high purity and biological activity make it suitable for mechanistic studies exploring downstream apoptotic pathways.

2. Protein-Protein Interaction Mapping

The biologically active AIMP1 fragment (147-312aa) can serve as a probe to identify and characterize protein binding partners involved in aminoacyl-tRNA synthetase complex regulation. Pull-down assays and co-immunoprecipitation experiments using cell lysates may reveal interaction networks that weren't previously known. The tag-free nature is particularly advantageous here - it helps ensure that binding studies reflect native protein interactions without potential interference from fusion tags. This application could be valuable for understanding AIMP1's role beyond the aminoacyl-tRNA synthetase complex, though some interactions might be missed if they require the full-length protein.

3. Antibody Development and Validation

This highly pure recombinant protein can be used as an immunogen for generating specific antibodies against the 147-312aa region of human AIMP1. The defined protein fragment allows for production of region-specific antibodies that are less likely to cross-react with other AIMP family members. Generated antibodies can then be validated using this same recombinant protein in ELISA, Western blot, and immunofluorescence applications. The high purity level helps minimize contamination that could lead to non-specific antibody responses, though some cross-reactivity issues might still arise.

4. Structure-Function Relationship Studies

The specific 147-312aa fragment represents what appears to be a defined functional domain of AIMP1 that retains biological activity. This makes it potentially valuable for structure-function analysis. Researchers can perform mutagenesis studies on this region to identify critical residues responsible for apoptotic activity, though not all functional aspects may be preserved in this truncated form. Comparative studies between full-length AIMP1 and this fragment could help delineate the minimal functional domain requirements. The quantified biological activity provides a measurable endpoint for assessing the effects of structural modifications.

5. Cell Death Pathway Screening Assays

The standardized apoptotic activity of this AIMP1 protein makes it suitable for high-throughput screening applications to identify modulators of AIMP1-induced cell death. The defined ED50 value allows for consistent assay conditions across experimental replicates and different research groups - at least in theory. Researchers can screen compound libraries or genetic modifications that either enhance or inhibit AIMP1-mediated apoptosis. The low endotoxin level helps ensure that observed effects are specifically due to AIMP1 activity rather than inflammatory responses, though distinguishing between direct and indirect effects can still be challenging.

Endotoxin	Less than 1.0 EU/μg as determined by LAL method.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a

	concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.