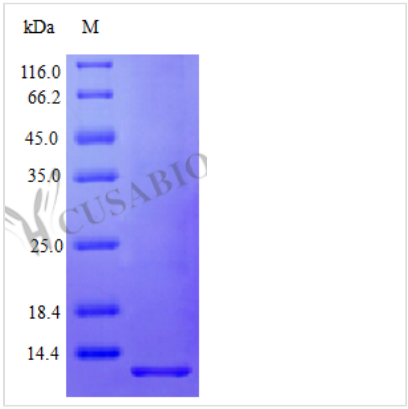
Recombinant Human Pro-neuregulin-1, membrane-bound isoform protein (NRG1), partial (Active)

Product Code	CSB-AP002861HU
Abbreviation	Recombinant Human NRG1 protein, partial (Active)
Uniprot No.	Q02297
Storage Buffer	0.2 μm filtered PBS, pH 7.4 ,lyophilized
Product Type	Growth Factors
Immunogen Species	Homo sapiens (Human)
Biological Activity	Fully biologically active when compared to standard. The ED50 as determined by a cell proliferation assay using serum free human MCF-7 cells is less than 5 ng/ml, corresponding to a specific activity of > 2.0 × 105 U/mg.
Purity	>96% as determined by SDS-PAGE.
Sequence	SHLVKCAEKE KTFCVNGGEC FMVKDLSNPS RYLCKCPNEF TGDRCQNYVM ASFYKAEELY Q
Research Area	Neuroscience?
Source	E.Coli
Target Names	NRG1
Expression Region	177-237aa
Tag Info	Tag-Free
Mol. Weight	7.0 kDa
Protein Length	Partial of Isoform 12
PubMed ID	1350381; 7509448; 8096067; 7782315; 14702039; 16421571; 9333014; 12145742; 17565985; 15489334; 7689552; 1348215; 7902537; 10523851; 10597312; 10867024; 8062828; 8639490
Image	

Description

Recombinant Human Pro-neuregulin-1, membrane-bound isoform protein (NRG1) is expressed in E. coli, specifically covering the 177-237 amino acid region of Isoform 12. This tag-free product achieves a purity exceeding 96% as verified by SDS-PAGE and maintains an endotoxin level under 1.0 EU/μg, as determined by the LAL method. The protein appears to be fully biologically active, with an ED50 of less than 50 ng/ml in a cell proliferation assay using serum-free human MCF-7 cells, demonstrating a specific activity greater than 2.0 × 10^4 IU/mg.

Pro-neuregulin-1 seems to play a crucial role in cellular communication and growth, particularly in the nervous system. It's involved in various pathways related to cell proliferation and differentiation. This protein may be important for research because it likely contributes to understanding processes like synaptic plasticity and neural development. Many researchers find it a valuable tool in studies focused on cellular signaling and neurobiology.

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. Cell Proliferation and Growth Factor Studies

This recombinant NRG1 fragment (177-237aa) shows potent biological activity with an ED50 of less than 50 ng/ml in MCF-7 cell proliferation assays. This makes it valuable for investigating neuregulin-1 signaling pathways in vitro. Researchers can study dose-response relationships in various cell lines that express ErbB receptors - particularly focusing on the specific bioactive domain represented by this fragment. The high purity (>96%) and defined activity appear suitable for quantitative studies examining cell cycle regulation and growth factor-dependent cellular responses. Low endotoxin levels suggest that observed effects are likely attributable to NRG1 activity rather than inflammatory responses.

2. ErbB Receptor Binding and Signaling Assays

The biologically active NRG1 fragment can serve as a ligand in receptor binding studies to characterize ErbB receptor interactions and downstream signaling cascades. This specific amino acid region (177-237) likely contains critical binding domains. These may be useful for investigating receptor specificity and affinity in biochemical assays. Researchers often apply this protein in competition binding experiments, receptor activation studies, and phosphorylation assays to understand the molecular mechanisms of neuregulin-ErbB signaling. The standardized activity measurement provides what appears to be a reliable reference for comparative studies across different experimental conditions.

3. Structure-Function Relationship Studies

This partial isoform 12 fragment represents a defined bioactive region of NRG1 that can be used to map functional domains within the larger neuregulin-1 protein. Expressing amino acids 177-237 as a tag-free protein allows for structural studies and functional characterization of this specific segment. There's no interference from fusion tags, which is often a problem with other preparations. Researchers can apply this fragment in mutagenesis studies, protein-protein interaction assays, and comparative analyses with other NRG1 isoforms to identify critical residues for biological activity. The high specific activity (>2.0 × 10? IU/mg) suggests that this region retains essential functional properties of the full-length protein.

4. Antibody Development and Validation

The purified NRG1 fragment may serve as an antigen for generating specific antibodies against this particular region of neuregulin-1. It also works as a standard for validating existing antibodies. The tag-free nature of the protein helps ensure that antibodies developed will recognize native NRG1 epitopes without cross-reactivity to fusion tags. This protein works in ELISA development, Western blot standardization, and immunoassay calibration procedures. The defined amino acid sequence (177-237) and high purity make it suitable for epitope mapping studies and antibody specificity testing.

5. Pharmacological Research Tools

This bioactive NRG1 fragment can be applied as a research tool in preclinical studies investigating compounds that modulate neuregulin signaling pathways. The standardized biological activity and consistent ED50 values make it suitable for screening assays designed to identify agonists, antagonists, or modulators of NRG1 function. Researchers often apply this protein in cell-based assays to evaluate the effects of small molecules or other therapeutic candidates on neuregulin-mediated cellular responses. The low endotoxin content appears compatible with sensitive cell culture systems used in drug discovery research.

Endotoxin	Less than 1.0 EU/μg as determined by LAL method.
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.