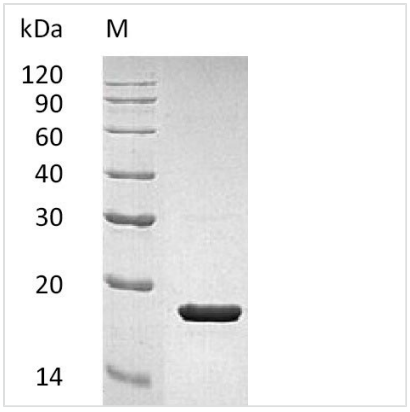
Recombinant Human Interleukin-1 receptor antagonist protein (IL1RN) (Active)

Product Code	CSB-AP004601HU
Abbreviation	Recombinant Human IL1RN protein (Active)
Uniprot No.	P18510
Storage Buffer	Lyophilized from a 0.2 μm filtered 20mM PB, 8% Trehalose, 4% Mannitol, 50mM NaCl, 0.05% Tween80, pH7.5.
Product Type	Interleukins
Immunogen Species	Homo sapiens (Human)
Biological Activity	The ED50 as determined by its ability to inhibit IL-1 beta induced NF-kB signaling in 293-IL1 Res cells is 13.2 ng/mL.
Purity	Greater than 95% as determined by SDS-PAGE.
Sequence	RPSGRKSSKMQAFRIWDVNQKTFYLRNNQLVAGYLQGPNVNLEEKIDVVPIEP HALFLGIHGGKMCLSCVKSGDETRLQLEAVNITDLSENRKQDKRFAFIRSDSG PTTSFESAACPGWFLCTAMEADQPVSLTNMPDEGVMVTKFYFQEDE
Research Area	Immunology
Source	E.coli
Target Names	IL1RN
Expression Region	26-177aa
Tag Info	Tag-Free
Mol. Weight	17.26 kDa
Protein Length	Full Length of Mature Protein

Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Recombinant Human Interleukin-1 receptor antagonist protein (IL1RN) gets produced in E. coli and contains the complete mature protein spanning amino acids 26 to 177. This tag-free protein achieves purity levels exceeding 95%

when measured by SDS-PAGE, which appears to ensure solid quality for research applications. The biological activity of IL1RN has been confirmed, showing an ED50 of 13.2 ng/mL based on its capacity to block IL-1 beta induced NF-kB signaling in 293-IL1 Res cells. Endotoxin levels stay below 1.0 EU/μg, as measured through the LAL method.

Interleukin-1 receptor antagonist (IL1RN) serves as a key protein that works to block interleukin-1 activities by attaching to its receptor, effectively stopping signal transmission. It likely plays a major role in controlling immune and inflammatory responses, which makes it particularly important for research into immune regulation and inflammatory diseases. Studying how IL1RN interacts with its receptor may help clarify the pathways involved in inflammation and immune response control.

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. IL-1β Signaling Pathway Inhibition Studies

This recombinant IL1RN protein works well for investigating how IL-1β signaling gets blocked in different cell culture systems. Given its proven ability to stop IL-1β induced NF-κB signaling at an ED50 of 13.2 ng/mL, researchers can build dose-response curves and figure out the best concentrations for blocking IL-1β activity in vitro. The protein acts as a useful tool for examining the competitive antagonism between IL1RN and IL-1β at the IL-1 receptor level. This approach proves especially valuable for breaking down downstream signaling cascades and spotting molecular targets that get affected by IL-1β pathway changes.

2. Anti-IL1RN Antibody Development and Validation

The high purity (>95%) and tag-free characteristics of this recombinant protein make it a strong candidate as an immunogen and standard for creating specific antibodies against human IL1RN. Researchers can apply this protein in immunization protocols, antibody screening tests, and validation of antibody specificity through competitive binding experiments. Since the protein maintains biological activity, functional antibodies can be identified and characterized based on whether they can neutralize IL1RN activity. This supports creating research tools for detecting and measuring endogenous IL1RN in biological samples.

3. Inflammatory Response Modulation in Cell Culture Models

This bioactive IL1RN protein can be applied to examine inflammatory responses in various cell types by preventing IL-1β-mediated inflammation. Researchers might use the protein to explore how IL-1 receptor antagonism influences

cytokine production, cell growth, and programmed cell death in immune cells, fibroblasts, or other relevant cell lines. The low endotoxin level (<1.0 EU/μg) helps ensure that any observed effects stem specifically from IL1RN activity rather than bacterial contamination issues. This allows for detailed studies of how inflammation resolves and how tissue balance gets maintained in controlled lab settings.

4. Protein-Protein Interaction Studies

The recombinant IL1RN works in biochemical tests to examine its interactions with IL-1 receptors and other binding partners. Surface plasmon resonance, bio-layer interferometry, or similar biophysical methods can be used to measure binding kinetics, affinity constants, and interaction specificity of IL1RN. The mature protein sequence (26-177aa) represents what occurs naturally, making it appropriate for structural and functional interaction research. These studies may contribute to understanding the molecular foundations of IL-1 receptor antagonism and identifying possible regulatory mechanisms.

5. Cytokine Network Analysis in Co-culture Systems

This IL1RN protein can help dissect complex cytokine networks by specifically blocking IL-1β signaling in multi-cellular co-culture systems. Researchers might investigate how IL-1 receptor antagonism affects communication between different cell types, such as immune cells and stromal cells, in inflammatory or tissue repair models. The established biological activity allows for precise control of IL-1β signaling while keeping other cytokine pathways unchanged. This proves valuable for understanding IL-1β's role in complex biological processes and identifying what happens downstream when the pathway gets inhibited.

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.