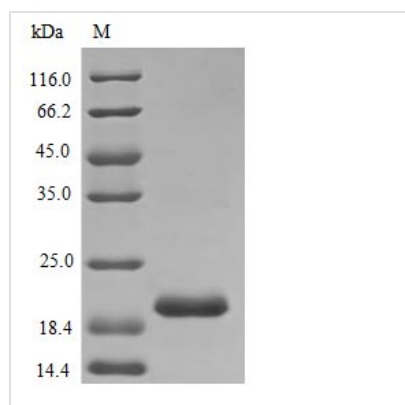




Recombinant Rat Prolactin protein (Prl) (Active)

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| Product Code | CSB-AP000081RA |
| Abbreviation | Recombinant Rat Prl protein (Active) |
| Uniprot No. | P01237 |
| Form | Lyophilized powder |
| Storage Buffer | Lyophilized from a 0.2 µm filtered PBS, pH 7.4 |
| Product Type | Hormone |
| Immunogen Species | Rattus norvegicus (Rat) |
| Biological Activity | Fully biologically active when compared to standard. The ED50 as determined by a cell proliferation assay using rat Nb2-11 cells is less than 1.0 ng/ml, corresponding to a specific activity of $>1.0 \times 10^6$ IU/mg. |
| Purity | $>98\%$ as determined by SDS-PAGE. |
| Sequence | LPVCSGGDCQ TPLPELFDRV VMLSHYIHTL YTDMFIEFDK QYVQDREFIA KAINDCPTSS LATPEDKEQA QKVPPEVLLN LILSLVHSWN DPLFQLITGL GGIHEAPDAI ISRAKEIEEQ NKRLLEGIEK IISQAYPEAK GNEIYLVWSQ LPSLQGVDEE SKDLAFYNNI RCLRRDSHKV DNYLKFLRCQ IVHKNNC |
| Research Area | Signal Transduction |
| Source | E.Coli |
| Target Names | Prl |
| Expression Region | 30-226aa |
| 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 | 22.6 kDa |
| Protein Length | Full Length of Mature Protein |
| PubMed ID | 6283362; 6251061; 6993473; 728396; 925136 |

Image





Description

Recombinant Rat Prolactin protein (Prl) is expressed in E. coli and spans the full length of the mature protein from amino acids 30 to 226. This tag-free protein appears to be of high purity, exceeding 98% as verified by SDS-PAGE analysis. It exhibits full biological activity, with an ED50 of less than 1.0 ng/ml in a rat Nb2-11 cell proliferation assay, indicating a specific activity greater than 1.0×10^6 IU/mg. Endotoxin levels are maintained below 1.0 EU/ μ g, as measured by the LAL method.

Most researchers know prolactin as the hormone behind lactation and milk production in mammals. What's less obvious is how this protein reaches into many other biological processes - immune system regulation, cell growth, even behaviors that seem unrelated to reproduction. This versatility is likely why prolactin has become such an important research target in endocrinology and physiology, offering windows into cellular pathways that might otherwise remain hidden.

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 Viability Assays

This recombinant rat prolactin protein works well as a positive control or standard in cell proliferation assays, especially with prolactin-responsive cell lines. The demonstrated biological activity with an ED50 of less than 1.0 ng/ml in rat Nb2-11 cell proliferation assays suggests it could serve as a reliable reference standard for dose-response studies. Researchers might find it particularly useful for investigating prolactin signaling pathways and their effects on cell growth and survival in various rat-derived cell culture systems. The high purity (>98%) and low endotoxin levels make it suitable for sensitive cell-based experiments where contamination could skew results.

2. Prolactin Receptor Binding Studies

The biologically active recombinant protein can be used in receptor binding assays to characterize prolactin receptor interactions and binding kinetics. This protein works in competitive binding experiments to determine receptor affinity constants and to screen for potential prolactin receptor antagonists or modulators. Since the protein lacks fusion tags, binding studies may more accurately reflect native prolactin-receptor interactions without potential interference. These studies could contribute to understanding prolactin receptor pharmacology and signal transduction mechanisms in rat model systems, though results may vary depending on specific experimental conditions.

3. Antibody Development and Validation



This highly pure recombinant rat prolactin protein appears well-suited as an immunogen for generating prolactin-specific antibodies or as a standard for antibody characterization. The protein can be used in ELISA development, Western blot validation, and immunohistochemistry optimization studies. Researchers can use it to determine antibody specificity, cross-reactivity, and sensitivity in various immunoassay formats. The confirmed biological activity provides additional validation that the protein likely maintains proper folding and native-like structure, which is crucial for generating antibodies that recognize endogenous prolactin.

4. Biochemical Characterization and Structure-Function Studies

The recombinant protein can be used in biochemical assays to investigate prolactin's molecular properties, including protein stability, aggregation behavior, and post-translational modifications. Researchers might perform comparative studies between this E. coli-expressed prolactin and native rat prolactin to understand how expression systems impact protein function. The defined expression region (amino acids 30-226) representing the full-length mature protein allows for precise structure-function relationship studies and analysis of specific domains or residues that may be critical for biological activity.

5. Signal Transduction Pathway Analysis

This biologically active prolactin protein can stimulate prolactin-responsive cells for downstream signaling pathway analysis, including JAK-STAT, MAPK, and PI3K/Akt pathways. Researchers can perform time-course experiments to monitor phosphorylation events, gene expression changes, and protein interactions following prolactin treatment. The consistent biological activity and low endotoxin levels should ensure reliable and reproducible results in signaling studies, though some variability between experiments is likely normal. This application appears particularly valuable for investigating prolactin's role in various physiological processes and disease models in rat-based research systems.

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| 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. |