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RECOMBINANT HUMAN EGF

Recombinant Growth Factor for Defined Media and Cell Therapy Manufacturing



- GMP manufacturing
- Animal-origin-free recombinant production
- Carrier-free and tag-free formulation
- Strict endotoxin control (<0.05 EU/μg)
- Functionally validated bioactivity
- Consistent batch-to-batch performance

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Product Overview

Recombinant human Epidermal Growth Factor (EGF) is a key signaling protein that regulates epithelial cell proliferation, survival and tissue regeneration through activation of the epidermal growth factor receptor (EGFR). This pathway plays a central role in epithelial biology and is widely used in modern cell culture systems, including organoid models and stem-cell–derived epithelial lineages.

Canvax recombinant human EGF corresponds to the mature 52-amino-acid domain of the human protein and is produced using a recombinant expression system under animal-origin-free conditions. The protein is supplied carrier-free and tag-free to ensure high purity and minimal interference with downstream cellular signaling pathways.

The product is designed to function as a controlled raw material for advanced cell culture workflows, including epithelial expansion, organoid culture and defined media supplementation. Strict endotoxin control, analytical characterization and functional validation ensure reliable biological activity and consistent batch-to-batch performance.

The protein is delivered as a stable lyophilized preparation to facilitate long-term storage, convenient handling and high recovery after reconstitution.

Product Specification	
Protein	Human EGF
Bioactivity	EC50 = 0.07 ng/mL Batch representative
Expression system	*E. coli*
Purity	>98%
Endotoxin	<0.05 EU/μg
Formulation	Lyophilized
Animal origin status	Animal origin-free (AOF)
Carrier	None

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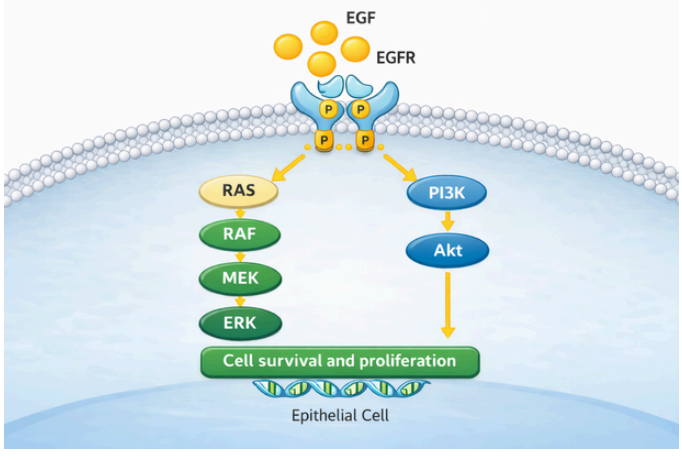
Biological Function

Epidermal Growth Factor (EGF) is a potent mitogenic cytokine that regulates proliferation, survival and differentiation in epithelial and epithelial-derived tissues.

EGF exerts its biological activity through binding and activation of the epidermal growth factor receptor (EGFR), a receptor tyrosine kinase broadly expressed in epithelial and stem-cell-derived cell populations.

Ligand binding induces EGFR dimerization and receptor autophosphorylation, triggering intracellular signaling cascades including the MAPK (RAS–RAF–MEK–ERK) and PI3K–AKT pathways that regulate cell proliferation, survival and tissue regeneration.

In cell culture systems, recombinant EGF is widely used to support epithelial cell expansion, organoid growth and differentiation processes in stem-cell-derived models.



Simplified diagram of EGF–EGFR signaling. Ligand binding induces receptor dimerization and activation of MAPK and PI3K–AKT pathways, leading to transcriptional programs that support epithelial cell proliferation and survival.

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Applications in Advanced Cell Culture

Canvax recombinant growth factors are developed as critical raw material for advanced cell culture systems:

- Designed for defined and serum-free media formulations
- Consistent biological performance across batches
- Scalable supply from research to GMP manufacturing environments

Recombinant human EGF is widely used as a critical growth factor in defined cell culture systems requiring controlled activation of EGFR signaling. Its ability to promote epithelial proliferation and survival makes it an essential component of many advanced culture media formulations.

Organoid culture systems

EGF is a core component of niche-factor cocktails used to support growth and long-term maintenance of epithelial organoids.

Stem cell differentiation models

EGF is frequently incorporated into differentiation protocols for human ESC and iPSC-derived epithelial lineages. Controlled EGFR signaling contributes to the expansion of progenitor populations and supports the generation of specialized epithelial cell types.

Primary cell expansion

Many primary epithelial and fibroblast cultures require exogenous EGF to sustain proliferation and survival in vitro. Supplementation with recombinant EGF enables robust expansion while maintaining physiologically relevant signaling conditions.

Regenerative biology and disease modeling

EGF signaling plays an important role in tissue regeneration, wound-healing responses and epithelial homeostasis. As a result, recombinant EGF is commonly used in regenerative biology studies, cancer research and disease modeling platforms.

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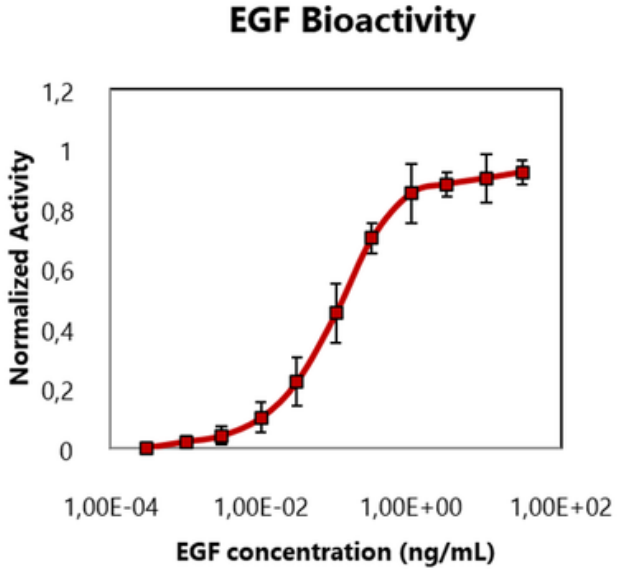
Functional Bioactivity

The biological activity of Canvax recombinant human EGF was evaluated using a quantitative SRE-luciferase reporter assay in HEK293T cells, a widely used model for assessing EGFR-mediated signaling.

Cells transiently transfected with an SRE reporter construct were stimulated with serial dilutions of recombinant EGF. Activation of the EGFR signaling pathway resulted in dose-dependent induction of luciferase expression, which was quantified and normalized to Renilla control to account for assay variability.

The recombinant EGF demonstrated robust biological activity with a half-maximal effective concentration (EC50) in the sub-nanomolar range, consistent with the expected potency of high-quality recombinant human EGF.

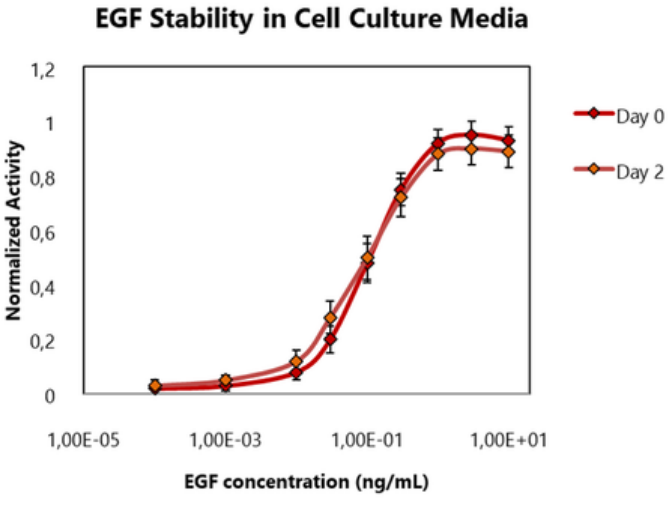
EC50 = 0.07 ng/mL (11.6 pM)



Dose-response bioactivity of recombinant human EGF measured using an SRE-luciferase reporter assay in HEK293T cells. Dose-dependent activation of EGFR signaling confirms robust biological activity.

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Preservation of Bioactivity in Cell Media



Preservation of recombinant human EGF bioactivity following incubation in cell culture media. Dose–response curves obtained using an SRE-luciferase reporter assay in HEK293T cells show comparable activity between freshly prepared EGF (Day 0) and protein preincubated in cell culture media for two days (Day 2)

Epidermal Growth Factor (EGF) is widely used in stem cell and organoid culture systems where sustained signaling activity is required to maintain proliferation and controlled differentiation. In many culture systems, the limited stability of growth factors can contribute to variability and frequent media replacement.

To evaluate the stability of recombinant human EGF in cell culture media, the protein was incubated for two days prior to functional testing. Bioactivity was assessed using an SRE-luciferase reporter assay in HEK293T cells.

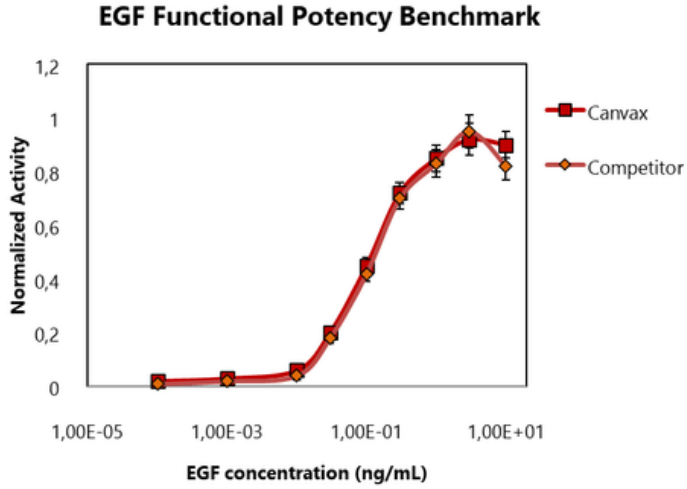
Recombinant human EGF retained full biological activity after two days of incubation in cell culture media, with comparable EC50 values observed between freshly prepared protein and preincubated samples. These results demonstrate that the protein maintains functional stability under typical cell culture conditions.

Functional Bioactivity Benchmark

To further assess functional equivalence, Canvax recombinant EGF was evaluated in parallel with a commercially established reference EGF under identical experimental conditions. The resulting dose–response curves showed overlapping activity profiles, confirming equivalent functional potency across the tested concentration range.

These results demonstrate that the recombinant protein reliably activates EGFR-dependent signaling pathways and provides consistent biological performance suitable for demanding cell culture workflows.

Canvax EGF showed an EC50 of 0.11 ng/mL (17.6 pM), which was equivalent to the EC50 observed for commercially established reference EGF (0.11 ng/mL, 17.6 pM).



Functional bioactivity benchmark of Canvax recombinant EGF against a commercially established reference EGF. Overlapping dose–response curves demonstrate equivalent functional potency.

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Quality and Analytical Characterization

To ensure reliable performance in demanding cell culture systems, recombinant human EGF from Canvax is subjected to multiple analytical and functional quality control assays.

These tests verify the purity, molecular identity and biological activity of the protein and ensure reproducible batch-to-batch performance

Designed as a controlled raw material for defined media and advanced cell culture systems.

Need more info? Request Quality Documents

Parameter	Typical specification
Identity	Correct molecular mass
Protein integrity	Single band profile
Purity	>98%
Endotoxin	<0.05 EU/µg protein
Bioactivity	Representative EC50 within expected range
Sterility	No microbial growth detected
Mycoplasma	Negative
Recovery	>95%

GMP-grade material includes an expanded analytical characterization panel covering host cell impurities, protein identity, functional potency testing and others.

Available Formats and Ordering Information

Product	Reference	Format	Ordering
Recombinant Human EGF	CR009	100 µg (Lyophilized)	Order Online

Research-grade material is intended for evaluation and process development activities. **Additional RUO formats are available upon request**. Contact us.

Product	Reference	Supply format	Ordering
Recombinant Human EGF GMP	CR009-GMP	Bulk supply	Contact us info@canvaxbiotech.com

GMP manufacturing is available upon request for customers requiring controlled production environments and full quality documentation.

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GMP Manufacturing and Quality Capabilities

Canvax operates GMP-certified facilities designed to support biopharmaceutical development programs requiring a controlled transition between early-stage activities and GMP manufacturing environments.

GMP Manufacturing Facilities



GMP-certified facilities designed for the manufacture of biopharmaceutical products, operating under ISO 9001 and ISO 13485 quality systems.

Bulk Supply and Scalability



Manufacturing capacity to support bulk supply requirements, from development-scale batches to larger volumes aligned with program needs.

Fill & Finish and Packaging



Fill and finish capabilities for client-specific formats, supporting controlled dispensing, packaging and labeling under qualified conditions.

Analytical Characterization



Extended analytical capabilities for protein characterization, including identity, purity and bioactivity assessment, supporting robust quality control strategies.

Supply Chain Reliability



Integrated manufacturing and quality systems designed to support consistent supply, change control and long-term program continuity.

Additional information related to manufacturing capabilities, supply formats and GMP programs is available upon request at info@canvaxbiotech.com