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EGF Human, Pichia

Epidermal Growth Factor Human Recombinant, Pichia
GRF0030

Product Overview

Name	EGF Human, Pichia
Description	
Epidermal Growth Factor Human Recombinant, Pichia	
Accession (Primary)	Q6QBS2
Synonyms	
Urogastrone, URG, EGF.	
Introduction	
Epidermal growth factor has a profound effect on the differentiation of specific cells in vivo and is a potent mitogenic factor for a variety of cultured cells of both ectodermal and mesodermal origin. The EGF precursor is believed to exist as a membrane-bound molecule which is proteolytically cleaved to generate the 53-amino acid peptide hormone that stimulates cells to divide. EGF stimulates the growth of various epidermal and epithelial tissues in vivo and in vitro and of some fibroblasts in cell culture.	
Source	
Pichia Pastoris.	
Physical Appearance	
Sterile Filtered White lyophilized (freeze-dried) powder.	
Formulation	
Lyophilized from a filtered concentrated solution in PBS, pH 7.4.	
Stability	
Lyophilized Epidermal Growth Factor Recombinant although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution EGF should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Please prevent freeze-thaw cycles.	
Purity	
Greater than 98.0% as determined by(a) Analysis by RP-HPLC. (b) Analysis by SDS-PAGE.	
Amino acid sequence	
NSDSECPLSH DGYCLHDGVC MYIEALDKYA CNCVVGYIGE RCQYRDLKWW E.	
Biological Activity	

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The ED_{50}, calculated by the dose-dependant proliferation of murine BALB/c 3T3 cells (measured by 3 H-thymidine uptake) is < 0.1 ng/ml corresponding to a specific activity of 1 x 10 7 Units/mg.

Solubility

It is recommended to reconstitute the lyophilized Epidermal Growth Factor in sterile 18MΩ-cm H2O not less than 100 µg/ml, which can then be further diluted to other aqueous solutions.

Background

Harnessing Pichia for Epidermal Growth Factor Human Recombinant Production: Novel Approaches and Therapeutic Implications Abstract: This research paper delves into a cutting-edge avenue of Epidermal Growth Factor (EGF) Human Recombinant production by leveraging Pichia as an expression host. Through a synthesis of advanced methodologies encompassing genetic engineering, fermentation, and bioinformatics, this study explores the potential of Pichia-based platforms for enhanced EGF yield and biological activity. The findings not only offer insights into efficient EGF production but also underscore the therapeutic prospects of this approach. Introduction: Epidermal Growth Factor (EGF) holds a crucial place in cellular processes. This paper explores a novel dimension of EGF Human Recombinant production utilizing Pichia expression systems, emphasizing both technical aspects and the potential impact on therapeutic applications. Pichia as an Expression Host: Pichia stands as a promising alternative to conventional expression platforms due to its robustness and eukaryotic machinery. This paper investigates the strategic integration of EGF gene into Pichia, utilizing tailored vectors and promoters for optimal protein production. Genetic Engineering Strategies: Precise genetic manipulation is pivotal for enhanced EGF yield. Gene codon optimization and signal peptide selection are meticulously undertaken to ensure proper protein folding and secretion in Pichia. Through these approaches, EGF expression and secretion are finely tuned, resulting in biologically active EGF. Fermentation and Protein Purification: Expression is followed by fermentation in controlled conditions, leading to EGF accumulation. This step is supplemented by purification processes like chromatography, ensuring high EGF purity. Biochemical assays validate the biological activity of the purified EGF, affirming its therapeutic potential. Bioinformatics in EGF-Pichia Interaction: Advanced bioinformatics analyses shed light on the intricate interactions between EGF and Pichia host. Structural modeling and molecular dynamics simulations provide insights into potential post-translational modifications and protein-protein interactions, enriching our understanding of EGF behavior in Pichia. Therapeutic Implications: Beyond production, the paper emphasizes the therapeutic significance of EGF produced in Pichia. Enhanced production efficiency directly impacts cost-effectiveness, broadening its accessibility for therapeutic use. The EGF-Pichia approach presents exciting avenues for wound healing therapies and targeted cancer interventions. Challenges and Future Directions: Despite the progress, challenges such as glycosylation patterns and scaling-up strategies remain. Future efforts should focus on refining glycosylation profiles to ensure consistent bioactivity and optimizing bioreactor designs to scale up production for clinical applications. Conclusion: In a synergy of advanced methodologies and therapeutic implications, the Pichia-based Epidermal Growth Factor Human Recombinant production presents an innovative paradigm. The intricate harmony between Pichia host and EGF production holds promise for novel therapies, underscoring the potential impact of this pioneering approach.

References

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Bibliography: Cereghino JL, Cregg JM. Heterologous protein expression in the methylotrophic yeast Pichia pastoris. FEMS Microbiol Rev. 2000;24(1):45-66. Hohenblum H, Gasser B, Maurer M, Borth N, Mattanovich D. Effects of gene dosage, promoters, and substrates on unfolded protein stress of recombinant Pichia pastoris. Biotechnol Bioeng. 2004;85(4):367-375. Ahmad B, Gromiha MM, Sarai A. Analysis and prediction of DNA-binding proteins and their binding residues based on composition, sequence and structural information. Bioinformatics. 2004;20(4):477-486. Sen CK, Roy S. Redox signals in wound healing. Biochim Biophys Acta. 2008;1780(11):1348-1361. Zhang J, Hu X, Luo L, et al. EGFR activation triggers electrical activity and calcium influx in Schwann cells through CaV1 channels. Exp Cell Res. 2019;378(1):24-30.

Precautions

EGF Human, Pichia is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (Q6QBS2)

Background

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in EGF-Pichia Interaction: Advanced bioinformatics analyses shed light on the intricate interactions between EGF and Pichia host. Structural modeling and molecular dynamics simulations provide insights into potential post-translational modifications and protein-protein interactions, enriching our understanding of EGF behavior in Pichia. Therapeutic Implications: Beyond production, the paper emphasizes the therapeutic significance of EGF produced in Pichia. Enhanced production efficiency directly impacts cost-effectiveness, broadening its accessibility for therapeutic use. The EGF-Pichia approach presents exciting avenues for wound healing therapies and targeted cancer interventions. Challenges and Future Directions: Despite the progress, challenges such as glycosylation patterns and scaling-up strategies remain. Future efforts should focus on refining glycosylation profiles to ensure consistent bioactivity and optimizing bioreactor designs to scale up production for clinical applications. Conclusion: In a synergy of advanced methodologies and therapeutic implications, the Pichia-based Epidermal Growth Factor Human Recombinant production presents an innovative paradigm. The intricate harmony between Pichia host and EGF production holds promise for novel therapies, underscoring the potential impact of this pioneering approach.

References for protein:

Bibliography: Cereghino JL, Cregg JM. Heterologous protein expression in the methylotrophic yeast Pichia pastoris. FEMS Microbiol Rev. 2000;24(1):45-66. Hohenblum H, Gasser B, Maurer M, Borth N, Mattanovich D. Effects of gene dosage, promoters, and substrates on unfolded protein stress of recombinant Pichia pastoris. Biotechnol Bioeng. 2004;85(4):367-375. Ahmad B, Gromiha MM, Sarai A. Analysis and prediction of DNA-binding proteins and their binding residues based on composition, sequence and structural information. Bioinformatics. 2004;20(4):477-486. Sen CK, Roy S. Redox signals in wound healing. Biochim Biophys Acta. 2008;1780(11):1348-1361. Zhang J, Hu X, Luo L, et al. EGFR activation triggers electrical activity and calcium influx in Schwann cells through CaV1 channels. Exp Cell Res. 2019;378(1):24-30.