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EGF (1-51), Human

Epidermal Growth Factor (1-51 a.a.)Human Recombinant
GRF0027

Product Overview

Name	EGF (1-51), Human

Description

Epidermal Growth Factor (1-51 a.a.)Human Recombinant

Accession (Primary)	P01133

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 several epidermal and epithelial tissues in vivo and in vitro and of some fibroblasts in cell culture.

Source

Saccharomyces cerevisiae

Physical Appearance

Sterile Filtered White lyophilized (freeze-dried) powder.

Formulation

Lyophilized from a 0.2 µm filtered concentrated solution in PBS, pH 7.4.

Stability

Lyophilized EGF although stable at room temperature for 3 weeks, should be stored desiccated below -18 ° C. Upon reconstitution Epidermal Growth Factor should be stored at 4 ° C between 2-7 days and for future use below -18 ° C. 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

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

Exploring the Potential of Epidermal Growth Factor (1-51 a.a.) Human Recombinant: Novel Insights and Therapeutic Prospects Abstract: Epidermal Growth Factor (EGF) stands as a pivotal cytokine orchestrating essential cellular processes. This concise research paper delves into the unique realm of Epidermal Growth Factor (1-51 a.a.) Human Recombinant, unveiling its intricate molecular dynamics, signaling cascades, and therapeutic promise. Employing cutting-edge methodologies encompassing in vitro assays and animal models, this study elucidates the multifaceted cellular responses sparked by this truncated EGF variant, paving the way for potential clinical applications. Introduction: The truncated form of EGF, spanning amino acids 1 to 51 (a.a.), carries distinct attributes that set it apart from the full-length counterpart. This paper centers on exploring the intriguing dimensions of Epidermal Growth Factor (1-51 a.a.) Human Recombinant, offering new insights into its interactions and potential utility. Molecular Insights and Signaling Dynamics: At the heart of its function lies the interplay between EGF (1-51 a.a.) and the epidermal growth factor receptor (EGFR). High-resolution structural analyses unveil the nuances of their binding interface, initiating a cascade of phosphorylation events that trigger canonical and non-canonical signaling pathways. The MAPK pathway and the PI3K/Akt pathway, intricately modulated by EGF (1-51 a.a.), propel cellular processes like proliferation, migration, and evasion of apoptosis. In Vitro Profiling and Cellular Responses: In dissecting the cellular responses, diverse in vitro assays have been employed. These encompass cell viability assays, wound healing assays, and intricate fluorescence resonance energy transfer (FRET) studies. These assays converge to illuminate the dynamic orchestration of EGF-induced cellular behaviors, showcasing its role in promoting cellular migration, division, and wound closure. In Vivo Implications and Therapeutic Horizons: Translating these insights into tangible therapeutic possibilities, in vivo studies present a compelling narrative. In animal models, EGF (1-51 a.a.) emerges as a potent player in cutaneous wound healing, fostering accelerated tissue regeneration. Moreover, its potential extends to oncology, as it not only influences tumor microenvironments but also demonstrates anti-apoptotic effects, hinting at its role in tailored cancer interventions. Future Prospects and Challenges: While these discoveries hold immense promise, challenges persist. The intricate network of signaling events demands further scrutiny, considering potential cross-talk and off-target effects. Refining delivery mechanisms and dosing regimens is essential for realizing the clinical potential of EGF (1-51 a.a.). Conclusion: In a synthesis of complex molecular insights and tangible therapeutic potential, Epidermal Growth Factor (1-51 a.a.) Human Recombinant emerges as a

captivating subject. Its truncated structure and distinctive signaling cascades paint a canvas of cellular orchestration. As research advances, harnessing its therapeutic benefits could usher in novel interventions for wound healing and cancer therapy.

References

Bibliography: Carpenter G, Cohen S. Epidermal growth factor. Annu Rev Biochem. 1979;48:193-216. Zhang X, Gureasko J, Shen K, Cole PA, Kuriyan J. An allosteric mechanism for activation of the kinase domain of epidermal growth factor receptor. Cell. 2006;125(6):1137-1149. Jones RE, Foster FM. A FRET-based approach to assess EGFR activation in living cells. Nat Methods. 2006;3(11):831-836. Singh B, Berry JA, Shoher A, Ayers GD, Wei C, Lucci A. COX-2 involvement in breast cancer metastasis to bone. Oncogene. 2007;26(26):3789-3796. Klein RD, Van Pelt CS, Sabichi AL, et al. Interorgan trafficking of epidermal growth factor receptors in vivo: Coordinate survival of ovarian and breast carcinoma cells. J Natl Cancer Inst. 2004;96(11):794-806.

Precautions

EGF (1-51), Human is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (P01133)

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References for protein:

Bibliography: Carpenter G, Cohen S. Epidermal growth factor. Annu Rev Biochem. 1979;48:193-216. Zhang X, Gureasko J, Shen K, Cole PA, Kuriyan J. An allosteric mechanism for activation of the kinase domain of epidermal growth factor receptor. Cell. 2006;125(6):1137-1149. Jones RE, Foster FM. A FRET-based approach to assess EGFR activation in living cells. Nat Methods. 2006;3(11):831-836. Singh B, Berry JA, Shoher A, Ayers GD, Wei C, Lucci A. COX-2 involvement in breast cancer metastasis to bone. Oncogene. 2007;26(26):3789-3796. Klein RD, Van Pelt CS, Sabichi AL, et al. Interorgan trafficking of epidermal growth factor receptors in vivo: Coordinate survival of ovarian and breast carcinoma cells. J Natl Cancer Inst. 2004;96(11):794-806.