Product Information

Epidermal Growth Factor Receptor human

E2645 (lyophilized powder), E3641 (buffered aqueous glycerol solution)

Product Description

The Epidermal Growth Factor Receptor (EGF receptor, or EGFR) is a large, membrane-bound glycoprotein with an extracellular domain that exhibits tyrosine kinase activity. Overexpression of the receptor can produce a neoplastic phenotype in cells and has been associated with poor prognosis or short survival time in patients with a number of types of cancer.

The mature glycosylated receptor molecule has a molecular mass of ~170 kDa. The amino acid sequence has been published.[1] The protein is a single chain polypeptide having a molecular mass of ~131.6 kDa, based on the amino acid sequence. The remainder of the mass is due to glycosylation of the protein.[2] The receptor isolation procedure, structure, functions and regulation, cellular physiology, and receptor-related molecules have been published.[2]

EGFR protein tyrosine kinase is activated when EGF binds to the extracellular binding domain. The first detectable response is the autophosphorylation of the C-terminal tyrosines, followed by phosphorylation of exogeneous substrates. The phosphorylated sequences of EGFR and other receptor tyrosine kinases have a high affinity for SH2 domain-containing proteins. These proteins are phosphorylated and activated by the receptor tyrosine kinases.[3] Activation of EGFR can be achieved in the absence of EGF by receptor dimerization with antibody[4] or by addition of 10 mM Mn^{2+}.

These products are the mature glycosylated receptor molecule, with a molecular mass of ~170 kDa. These products have been affinity-purified from human carcinoma A431 cells in the absence of EGF. EGF is not used to elute the material from the purification column. Nevertheless, this product is activated during purification. Therefore, there is only 10–20% activiation of the tyrosine kinase activity when EGF is added to this preparation.

Unit Definition: One unit (U) of the enzyme is defined as the amount needed to incorporate 1 pmol of phosphate into the substrate KVEKIGEGTYGVVYK (amino acid residues 6-20 of p34cdc2, also known as cdc2(6-20)) in 1 minute (1 min.).

Cat. No. E2645

This product is supplied as a lyophilized powder.

Preparation Instructions

The product is soluble in 10% glycerol (50 mg/mL).

Reconstitution with 0.1 mL of 10% glycerol yields a solution in 50 mM HEPES, pH 7.6, 150 mM NaCl, 0.05% Triton® X-100, 1 mM DTT, and 10% trehalose (cryoprotectant). This solution, prepared immediately upon initial thawing, can be divided into small aliquots and remains active for at least 1 year when stored at –70 °C.

Storage/Stability

The product ships on dry ice and storage at –20 °C is recommended. The product, as supplied, remains active for 5 years when stored properly. The activity decreases with more than one freeze/thaw cycle.

Cat. No. E3641

The product is supplied in a solution of 50% glycerol with 50 mM HEPES, pH 7.6, 150 mM NaCl, 0.1% Triton® X-100, and 1 mM DTT.

Storage/Stability

The product ships on dry ice and storage at –70 °C is recommended. The product, as supplied, remains active for 2 years when stored properly. The activity decreases with more than one freeze/thaw cycle. The product should be kept on ice when in use.

References

1. Ullrich, A. *et al*., Human Epidermal Growth Factor Receptor cDNA Sequence and Aberrant Expression of the Amplified Gene in A431 Epidermoid Carcinoma Cells. *Nature*, **309(5967)**, 418-425 (1984).
2. Carpenter, G., Receptors for Epidermal Growth Factor and Other Polypeptide Mitogens. *Annu. Rev. Biochem.*, **56**, 881-914 (1987).
3. Margolis, B. *et al*., The Tyrosine Phosphorylated Carboxyterminus of the EGF Receptor is a Binding Site for GAP and PLC-gamma. *EMBO J.*, **9(13)**, 4375-4380 (1990).
4. Yarden, Y., and Schlessinger, J., Epidermal Growth Factor Induces Rapid, Reversible Aggregation of the Purified Epidermal Growth Factor Receptor. *Biochemistry*, **26(5)**, 1443-1451 (1987).

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E2645,E3641pis Rev 06/21 NDH,CMH,RXR,RC,GCY,MAM 06/21