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InnoCyto Inc.

15375 Barranca Pkwy, Suite I-103
Irvine, CA 92618
Email: info@innocyto.com
Phone: 1-949-418-7543

Anti-Human EGFR (Panitumumab Biosimilar)

Catalog Number:	504601, 504602, 504603, 504604, 504605
Size:	1 mg, 5 mg, 20 mg, 5 mg, 20 mg
Target Name:	EGFR, Proto-oncogene c-ErbB-1, Receptor tyrosine-protein kinase erbB-1, HER1
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	Panitumumab
Application:	Flow cytometry, animal model study
Reactivity:	Human
Format:	Liquid
Product Description:	Panitumumab Biosimilar, Human EGFR/ErbB-1/HER1 Monoclonal Antibody
Isotype:	Human IgG2
Clonality:	Recombinant
Immunogen:	Human EGFR / ErbB-1 / HER1
Species specificity:	Human
Purity:	>95% by reducing SDS-PAGE
Grade:	In vivo
Storage Conditions:	4ºC
Maximal Shelf Life:	12 months
Synonyms:	ErbB1, HER1
RRID:	AB_3739322
Antibody Type:	Recombinant
Reactivity:	Human
GeneID:	1956

BACKGROUND INFORMATION

Panitumumab is a fully human monoclonal antibody of the immunoglobulin G2 kappa (IgG2κ) subclass, specifically engineered to bind with high affinity to the epidermal growth factor receptor (EGFR), also known as ErbB1 or HER1. Structurally, Panitumumab is a recombinant glycoprotein with a molecular weight of approximately 147 kilodaltons (kDa). The molecule comprises two identical heavy chains and two identical light chains interconnected by disulfide bonds, forming the typical Y-shaped structure of immunoglobulin molecules. It is expressed in mammalian cell systems, such as Chinese Hamster Ovary (CHO) cells, allowing proper glycosylation, folding, and assembly consistent with native human antibodies.

The variable domains of Panitumumab's heavy (VH) and light (VL) chains, which contain complementarity-determining regions (CDRs), mediate specific recognition of EGFR's extracellular domain III. This region corresponds to the receptor's ligand-binding site for epidermal growth factor (EGF) and transforming growth factor-alpha (TGF-α). By occupying this site, Panitumumab prevents ligand-induced receptor dimerization, autophosphorylation, and subsequent activation of intracellular tyrosine kinase domains. This blockade interferes with downstream signaling cascades such as the RAS-RAF-MEK-ERK and phosphatidylinositol 3-kinase (PI3K)-AKT pathways, which regulate cellular processes including proliferation, differentiation, and survival. In experimental systems, this precise receptor blockade provides a model for studying EGFR-mediated signal regulation and receptor dynamics.

The Fc (fragment crystallizable) domain of Panitumumab, derived from the IgG2 isotype, is characterized by minimal effector activity compared with IgG1 antibodies. It exhibits limited affinity for Fc gamma receptors (FcγRs) and complement component C1q, thereby reducing antibody-dependent cellular cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC). However, the Fc region contributes to molecular stability and prolongs half-life through interactions with neonatal Fc receptors (FcRn), enabling antibody recycling. Overall, Panitumumab exemplifies a rationally designed human IgG2 monoclonal antibody that combines high-affinity ligand blockade with structural stability, serving as a precise molecular tool for exploring receptor-mediated signaling and protein–protein interactions.

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