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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 (Nimotuzumab Biosimilar)

Catalog Number:	504101, 504102, 504103
Size:	1 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:	Nimotuzumab
Application:	Flow cytometry, animal model study
Reactivity:	Human
Format:	Liquid
Product Description:	Anti-Human EGFR (Nimotuzumab Biosimilar)
Isotype:	Human IgG4
Clonality:	Recombinant
Immunogen:	Human EGFR / ErbB-1
Species specificity:	Human
Purity:	>95% by reducing SDS-PAGE
Grade:	In vivo
Storage Conditions:	4ºC
Maximal Shelf Life:	12 months
Synonyms:	ErbB1, HER1
Antibody Type:	Recombinant
Reactivity:	Human

BACKGROUND INFORMATION

Nimotuzumab is a humanized monoclonal antibody of the immunoglobulin G1 (IgG1) subclass, engineered to selectively target the extracellular domain of the epidermal growth factor receptor (EGFR), also known as ErbB1 or HER1. Structurally, Nimotuzumab is composed of two identical heavy chains and two identical light chains interconnected by disulfide bonds, forming the characteristic Y-shaped quaternary structure of immunoglobulins. The molecule has an approximate molecular weight of 150 kilodaltons (kDa) and a glycoprotein composition typical of monoclonal antibodies expressed in mammalian systems, such as Chinese Hamster Ovary (CHO) cells, which ensure accurate folding and N-linked glycosylation.

The variable domains of the heavy (VH) and light (VL) chains contain complementarity-determining regions (CDRs) responsible for antigen recognition. Derived from murine antibody sequences and grafted onto human immunoglobulin frameworks, these CDRs define Nimotuzumab’s high-affinity, selective binding to subdomain III of the EGFR’s extracellular region. This domain is essential

for the receptor's interaction with natural ligands, such as epidermal growth factor (EGF) and transforming growth factor-alpha (TGF-α). By binding to this epitope, Nimotuzumab competitively inhibits ligand-induced receptor dimerization and autophosphorylation, thereby blocking downstream activation of EGFR-dependent intracellular signaling cascades, including the RAS-RAF-MEK-ERK and PI3K-AKT-mTOR pathways that regulate cell survival, proliferation, and differentiation.

The Fc (fragment crystallizable) region of Nimotuzumab, typical of the IgG1 isotype, provides structural stability and prolongs serum half-life through interaction with the neonatal Fc receptor (FcRn). It also allows for secondary effector functions such as antibody-dependent cellular cytotoxicity (ADCC) and complement fixation under experimental conditions. Overall, Nimotuzumab exemplifies rational antibody engineering - integrating the ligand-blocking capabilities of an EGFR antagonist with the pharmacokinetic and effector properties of a stable IgG1 framework.

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