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Anti-Human RANKL (Denosumab Biosimilar)

Catalog Number:	501901, 501902, 501903
Size:	1 mg, 5 mg, 20 mg
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	Denosumab
Application:	Flow cytometry, animal model study
Format:	Liquid
Product Description:	Anti-Human RANKL (Denosumab Biosimilar)
Isotype:	Human IgG2
Clonality:	Recombinant
Immunogen:	Human RANK Ligand
Species specificity:	Human
Purity:	>95% by reducing SDS-PAGE
Grade:	In vivo
Storage Conditions:	4ºC
Maximal Shelf Life:	12 months

BACKGROUND INFORMATION

Denosumab is a fully human monoclonal antibody belonging to the immunoglobulin G2 (IgG2) subclass, designed to specifically bind and neutralize the receptor activator of nuclear factor kappa-B ligand (RANKL). Structurally, Denosumab is a glycoprotein with a molecular weight of approximately 147 kilodaltons (kDa). It comprises two identical heavy chains and two identical light chains linked by disulfide bonds in the classic Y-shaped configuration characteristic of immunoglobulins. The molecule is produced in mammalian expression systems, typically Chinese Hamster Ovary (CHO) cells, which ensure proper folding, assembly, and human-like glycosylation essential for its stability and function.

The variable domains of Denosumab’s heavy (VH) and light (VL) chains contain complementarity-determining regions (CDRs) that confer high specificity for human RANKL, a trimeric cytokine belonging to the tumor necrosis factor (TNF) superfamily. These CDRs form a precise antigen-binding surface that engages RANKL via a network of hydrogen bonds and hydrophobic interactions with sub-nanomolar affinity. By binding directly to RANKL, Denosumab prevents it from interacting with its cognate receptor, RANK, located on the surface of osteoclast precursors and other myeloid-lineage cells. This blockade disrupts the RANK-RANKL signaling axis, which is a key regulator of cellular processes such as differentiation, activation, and survival of osteoclasts in experimental model systems.

The Fc (fragment crystallizable) region of Denosumab, derived from the IgG2 isotype, contributes to structural integrity and extended serum half-life through interactions with neonatal Fc receptors (FcRn). The IgG2 Fc structure, compared with IgG1,

exhibits reduced effector function, minimizing unwanted complement activation or antibody-dependent cytotoxic responses.