Recombinant Human FCRN

Catalog Number: 8639-FC

DESCRIPTION

Source	Human embryonic kidney cell, HEK293-derived human FCRN protein Ala24-Ser297, with a C-terminal 6-His tag Accession # P55899
N-terminal Sequence Analysis	Ala24 (FCRN), Ile21 (β2 Microglobulin)
Structure / Form	Non-covalently associated with β2 Microglobulin from HEK293 cells.
Predicted Molecular Mass	31 kDa (FCRN), 10 kDa (β2 Microglobulin)

SPECIFICATIONS

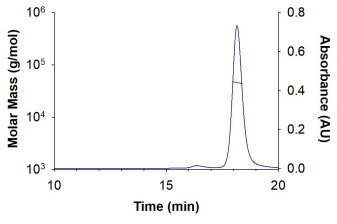
SDS-PAGE	30-36 kDa (FCRN), 10 kDa (β2 Microglobulin)
Activity	Measured by its binding ability in a functional ELISA. When Recombinant Human FCRN is immobilized at 2 µg/mL (100 µL/well), the concentration of biotinylated human IgG that produces 50% of the optimal binding response is approximately 2-10 µg/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

DATA

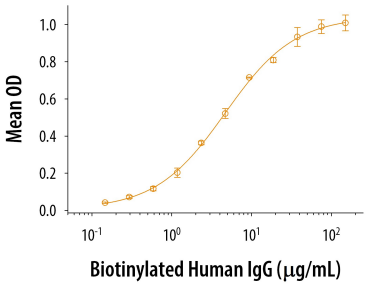
SEC-MALS



SEC-MALS Data	Result
Retention Time	18.0 - 18.4 min
MW - Predicted (Monomer)	41.0 kDa
MW - MALS	45.6 kDa
Polydispersity	1.000
System Suitability: BSA Monomer 66.4 ± 3.32 kDa	Pass

Recombinant Human FCRN Protein SEC-MALS. Recombinant Human FCRN (Catalog # 8639-FC) has a molecular weight (MW) of 45.6 kDa as analyzed by SEC-MALS, suggesting that this protein is a heterodimer. MW may differ from predicted MW due to post-translational modifications (PTMs) present (i.e. Glycosylation).

Bioactivity



Bioactivity of human FCRN When recombinant human FCRN (Catalog # 8639-FC) is immobilized at 2 µg/mL (100 µL/well), the concentration of biotinylated human IgG that produces 50% of the optimal binding response is approximately 2-10 µg/mL.

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BACKGROUND

The neonatal Fc receptor (FCRN) is an approximately 45 kDa transmembrane glycoprotein with structural homology to MHC class I proteins. It is widely expressed in endothelial and epithelial cells and plays an important role in IgG homeostasis and antigen presentation by dendritic cells (1, 2). Mature human FCRN consists of a 274 amino acid (aa) extracellular domain (ECD) with two N-terminal alpha domains, one α3/immunoglobulin-like domain, a 23 aa transmembrane segment, and a 44 aa cytoplasmic domain (3). Within the ECD, human FCRN shares 68% aa sequence identity with mouse and rat FCRN. Mouse FCRN binds with high affinity to IgG from mouse, human, rat, rabbit, guinea pig, bovine, and sheep, while human FCRN binds IgG with significantly lower affinity and is much more restricted in terms of species recognition (4). It does not bind the structurally related chicken IgY (5). FCRN additionally binds to albumin, and both it and IgG are bound at pH 5.0 but not at pH 8.0 (3, 6). FCRN associates noncovalently with beta 2-Microglobulin, and this interaction is important for the intracellular trafficking of FCRN (7-10). FCRN cycles between the plasma membrane and acidified intracellular compartments of endothelial cells and epithelial cells (5, 8). It binds endocytosed IgG and albumin in the low pH vesicles and transports them to the plasma membrane for extracellular release at higher pH. This protects IgG and albumin from lysosomal degradation and helps maintain the circulating levels of both proteins (5, 6). This mechanism is involved in the bidirectional transport of IgG across epithelial and endothelial barriers including neonatal IgG absorption in the intestine and fetal uptake of maternal antibodies through the placenta (5, 8, 11, 12). In the kidney, FCRN recycles albumin to the serum but removes IgG from the glomular basement membrane and promotes its excretion into the urine (13, 14). FCRN is also expressed in neutrophils and myeloid antigen presenting cells (7, 15, 16). It can enhance IgG-mediated phagocytosis and antigen presentation by these cells, but it promotes the degradation of opsonizing IgG rather than returning it to the circulation (15, 16).

References:

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