

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived mouse SIRP alpha/CD172a protein		
	Mouse SIRP α /CD172a (Met1-Asn373) (Gly365Asp) Accession # P97797	IEGRMDP	Mouse IgG _{2A} (Glu98-Lys330)
	N-terminus		C-terminus
N-terminal Sequence Analysis	Lys32		
Structure / Form	Disulfide-linked homodimer		
Predicted Molecular Mass	65.1 kDa (monomer)		

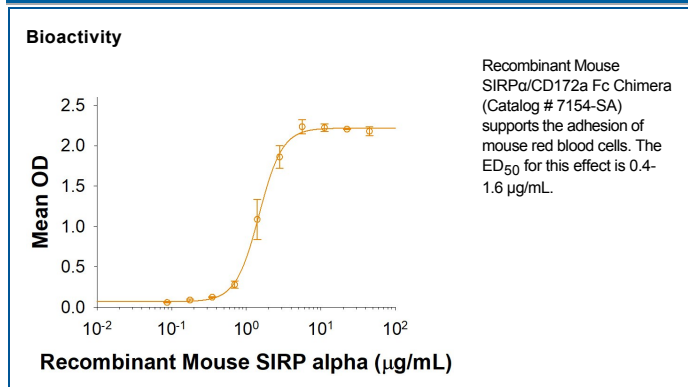
SPECIFICATIONS

SDS-PAGE	115-125 kDa, reducing conditions
Activity	Measured by the ability of the immobilized protein to support the adhesion of mouse red blood cells. The ED ₅₀ for this effect is 0.4-1.6 μ g/mL. Optimal dilutions should be determined by each laboratory for each application.
Endotoxin Level	<1.0 EU per 1 μ g of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 μ m filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 μ g/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. <ul style="list-style-type: none"> • 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



BACKGROUND

Signal regulatory protein alpha (SIRP α , designated CD172a), also called SHPS-1 (SHP substrate 1) and previously, MyD-1 (Myeloid/Dendritic-1), is a homodimeric, 100-105 kDa type I transmembrane glycoprotein that belongs to the SIRP/SHPS (CD172) family of the immunoglobulin superfamily (1-5). SIRPs are paired receptors, with similar extracellular domains but differing C-termini and functions (1, 2). The 513 amino acid (aa) mouse SIRP α contains a 342 aa extracellular domain (ECD) with one V-type and two C1 type Ig domains and many potential N-glycosylation sites. It has a 117 aa cytoplasmic sequence with ITIM motifs that recruit tyrosine phosphatases SHP-1 and SHP-2 when phosphorylated (4). Mouse and human SIRP α have at least 30 described polymorphisms, including the human SIRP α prominent variant BIT (Brain Ig like molecule with Tyrosine-based activation motifs, also called SIRP α_2 or PTPNS) (2). In mouse, one splice variant lacks aa 147-364, which eliminates the C type Ig domains, while another lacks only aa 425-428 (6). Mouse SIRP α ECD shares 61%, 75%, 62%, 61%, and 59% aa sequence identity with human, rat, equine, bovine, and porcine SIRP α , respectively, and shares 62% aa identity with mouse SIRP β 1 (2). SIRP α is expressed mainly on myeloid cells, including macrophages, neutrophils, dendritic and Langerhans cells (3 - 7). It is also found on neurons, smooth muscle and endothelial cells (8-10). SIRP α shows adhesion to the ubiquitous CD47/IAP (integrin associated protein), while SIRP γ binds more weakly and SIRP β 1 does not bind at all (1, 2). Mouse and human SIRP α are allelic in nature, and variation(s) in the V-type Ig-like domain likely impacts its binding to CD47 (11). SIRP α engagement generally produces a negative regulatory signal (4). Low SIRP α recognition of CD47, which occurs on aged erythrocytes or platelets or xenogenic cells, promotes clearance of CD47^{low} cells from circulation (12 - 14). SIRP α recognition of surfactants SP-A and SP-D in the lung can inhibit alveolar macrophage cytokine production (15). The CD47 integrin-SIRP α interaction is reported to promote macrophage fusion during osteoclastogenesis (16).

References:

1. Barclay, A.N. (2009) *Curr. Opin. Immunol.* **21**:47.
2. van Beek, E.M. *et al.* (2005) *J. Immunol.* **175**:7781.
3. Liu, Y. *et al.* (2005) *J. Biol. Chem.* **280**:36132.
4. Sano, S-I. *et al.* (1999) *Biochem. J.* **344**:667.
5. Lee, W.Y. *et al.* (2010) *J. Biol. Chem.* **285**:37953.
6. Swissprot Accession # P97797.
7. Miyashita, M. *et al.* (2004) *Mol. Biol. Cell* **15**:3950.
8. Wang, X.X. & K.H. Pfenniger (2005) *J. Cell Sci.* **119**:172.
9. Maile, L.A. *et al.* (2003) *Mol. Biol. Cell* **14**:3519.
10. Johansen, M.L. & E.J. Brown (2007) *J. Biol. Chem.* **282**:24219.
11. Takenaka, K. *et al.* (2007) *Nat. Immunol.* **8**:1313.
12. Ishikawa-Sekigami, T. *et al.* (2006) *Biochem. Biophys. Res. Commun.* **343**:1197.
13. Olsson, M. *et al.* (2005) *Blood* **105**:3577.
14. Ide, K. *et al.* (2007) *Proc. Natl. Acad. Sci. USA* **104**:5062.
15. Gardai, S.J. *et al.* (2003) *Cell* **115**:13.
16. Lundberg, P. *et al.* (2007) *Biochem. Biophys. Res. Commun.* **352**:444.