

Product Specification Sheet

**Purified S100 protein or Ca-binding protein A1/S100A1**

Cat. # S1001-R-200	Purified <b>bovine</b> S100 protein for ELISA or Standards	<b>SIZE:</b> 200 ug
Cat. # S1002-R-100	Purified <b>Human</b> S100 protein for ELISA or Standards	<b>SIZE:</b> 100 ug

Calcium (Ca<sup>2+</sup> or Ca) is the most abundant cation and it is required for many physiological activities such as bone formation and it acts as a second messenger in signal transduction. However only 1% of Ca is present in ionic form in biological fluids. Ca concentration is regulated by calcitropic hormones that act on bone, kidney, and intestine. Extracellular Ca<sup>2+</sup>-levels are sensed and regulated by Calcium Sensing receptor (CASR). When Ca levels are limiting then it must be taken up by active, transcellular pathways comprising (1) Ca<sup>2+</sup> entry across apical membrane, (2) cytosolic transport of Ca<sup>2+</sup> across the cell from apical to basolateral membrane facilitated by a family of low mol wt Calcium binding proteins (CABPs) that include vitamin D3-dependent **Ca<sup>2+</sup> binding proteins (calbindin-D9k, Calbindin-28k, Calretinin, Parvalbumin, S100, calmodulin)** and finally (3) an active extrusion of Ca<sup>2+</sup> through basolateral membrane mediated by **Ca<sup>2+</sup>-ATPase** and **Na<sup>+</sup>-Ca<sup>2+</sup> exchangers (NCX)**. Ca<sup>2+</sup> absorption in intestine and its reabsorption in kidney are carried out by Ca<sup>2+</sup> Transport (CaT) proteins, CaT-1, CaT-2 or Epithelial Ca Channel (ECAC1/ECAC2/CaT-Like (CaT-L) proteins.

Calbindins are Ca-binding proteins belonging to the troponin C superfamily. There are two types of CaBPs: the "trigger"- and the "buffer"-CaBPs. The conformation of "trigger" type CaBPs changes upon Ca<sup>2+</sup> binding and exposes regions on protein that interact with target molecules, thus altering their activity. The buffer-type CABP are thought to control the intracellular calcium concentration. **S100 protein** or Ca-binding protein A1/S100A1 is also a member of low mol wt, cytoplasmic, calcium binding troponin family. It is produced in the brain, muscle, and heart and a wide variety of normal and tumor cells. S100 has two subunits: **S100-alpha** (mouse/rat/human 94 aa, chromosome 1q21) and **S100-beta** (mouse, rat/human 92 aa chromosome 21q22.2-q22.3) that forms either homodimer (alpha-alpha known as S-100a(0) or beta-beta known as S-100b) and heterodimers (known as S-100a) of ~21 kDa. S100 alpha and beta chains show ~58% sequence identity. At least 9 different genes for S100 have been assigned on chromosome 21 namely S100A1-S1009. S-100 contains 2 EF-hand domains. S100A1 improves cardiac contractile performance both by regulating sarcoplasmic reticulum Ca ion handling myofibrillar Ca-ion responsiveness. Leakage of S100 protein by glial cells into the extracellular matrix, CSF and serum are useful in monitoring traumatic brain injury.

**Source of Antigen and Antibodies**

**Bovine S100 protein (Cat # S1001-R-200)** is purified (>99%) from bovine tissues (mol wt 21 kDa). It is supplied in Tris buffer, pH 7.4 in solution at 200 ug/200 ul or in powder form (200 ug/vial). Lyophilized protein should be dissolved in water or other desired buffers.

Store Frozen in suitable size aliquots at -20oC. Stable for 1-2 years

**Human S100** protein was purified from tissue or fluids from individual that have been shown to be negative for HIV, HCV, and HbSAg.. However, all precautions must be taken when using and disposing the proteins. Human S100 is supplied in purified form (>95% pure, mol wt 21 kDa; **Cat # S1002-R-100**). It is supplied PBS, pH 7.4 containing 5 mM beta-mercaptoethanol, 5mM EDTA in solution at 100 ug/500 ul or in powder form (100 ug/vial). Lyophilized protein should be dissolved in PBS, 5 mM beta- mercaptoethanol in 500 ul or other desired concentrations.

Store Frozen in suitable size aliquots at -20oC. Stable for 1-2 years.

**Note: This product is not to be used for animal treatment, in vivo research or in any other contact procedure with livestock.**

**Storage**

**Short-term:** unopened, undiluted liquid vials for less than a week at 4oC.

**Long-term:** at -20C or below in suitable aliquots after reconstitution. Do not freeze and thaw and store working, diluted solutions.

**Stability:** 6-12 months at -20oC or below.

**Shipping:** 4oC for solutions and room temp for powder.

**General References:** (1) Engelkamp D et al (1993) PNAS 90, 6547-6551; Herrera GA et al (1988) Am. J. Pathol. 89, 168-176; Isobe T et al (1978) J. Neurochem. 30, 921-923; Morri K et al (1991) BBRC 175, 185-191; Most P et al (2001) PNAS 98, 13889-13894; Schafer BW et al (1995) Genomics 25, 638-643

*\*This product is for In vitro research use only.*

Antibodies: CaT-1/2; Calbindins, S100, Parvalbumin, Calretinin

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