



3050 Spruce Street  
Saint Louis, Missouri 63103 USA  
Telephone 800-325-5832 • (314) 771-5765  
Fax (314) 286-7828  
email: techserv@sial.com  
sigma-aldrich.com

## Product Information

### Anti-Calsequestrin-1

produced in rabbit, affinity isolated antibody

Catalog Number **C0618**

#### Product Description

Anti-Calsequestrin-1 is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 66-84 located near the N-terminus of mouse calsequestrin-1 (GeneID: 12372), conjugated to KLH. This sequence is identical in human, rat, and dog calsequestrin-1 and highly conserved in bovine calsequestrin-1 (single amino acid substitution). This sequence is not found in calsequestrin-2. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-Calsequestrin-1 specifically recognizes calsequestrin-1 by immunoblotting (~60 kDa). Staining of the calsequestrin-1 band in immunoblotting is specifically inhibited by the immunizing peptide (mouse, amino acids 66-84).

Calcium ( $\text{Ca}^{2+}$ ) plays an important role as a messenger in the excitation-contraction coupling process of muscle cells. It is stored in the sarcoplasmic reticulum (SR) and released via the  $\text{Ca}^{2+}$  release channel/ryanodine receptor (RyR) complex. The  $\text{Ca}^{2+}$  concentration in muscle undergoes rhythmic changes due in large part to the  $\text{Ca}^{2+}$  transport and storage properties of the SR, which controls the state of contraction of the myofiber.  $\text{Ca}^{2+}$  is actively transported into the SR by the  $\text{Ca}^{2+}$ -dependent ATPases (SERCAs), transiently stored by the  $\text{Ca}^{2+}$ -binding protein calsequestrin and subsequently released by inositol 1,4,5-trisphosphate via the  $\text{Ca}^{2+}$  release channel/ryanodine receptor (RyR) resulting in muscle contraction.

Calsequestrin (CS also known as CSQ), the major  $\text{Ca}^{2+}$  binding protein in cardiac and skeletal muscle, is a high-capacity, low-affinity  $\text{Ca}^{2+}$  binding glycoprotein, which functions as an internal  $\text{Ca}^{2+}$  store in the lumen of the SR.<sup>1-3</sup> In mammals, two forms of the protein exist, calsequestrin-1 (CASQ-1, calmitin, aspartactin, laminin-binding protein) and calsequestrin-2 (CASQ-2), which encode the fast-twitch skeletal muscle and cardiac calsequestrin, respectively. Calsequestrin-1 (60 kDa) is found in the SR's terminal cisternae luminal space of fast skeletal muscle cells.<sup>1,2,4,5</sup>

Calsequestrin-1 has been identified as a putative autoantigen associated with eye muscle inflammation in Graves' disease.<sup>6,7</sup> Calsequestrin-2 (55 kDa) is found in the SR's terminal cisternae luminal space of both cardiac and slow skeletal muscle cells.<sup>3,8</sup> Mutations in CASQ2 are thought to be associated with catecholaminergic polymorphic ventricular tachycardia (CPVT). Calsequestrin is thought to regulate RyR signaling and  $\text{Ca}^{2+}$  release through triadin and junctin proteins.<sup>11,12</sup>

#### Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody concentration: ~1.6 mg/mL

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Storage/Stability

For extended storage, freeze in working aliquots at  $-20\text{ }^{\circ}\text{C}$ . Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours. For continuous use, store at  $2-8\text{ }^{\circ}\text{C}$  for up to one month.

#### Product Profile

Immunoblotting: a working antibody concentration of 0.5-1.0  $\mu\text{g}/\text{mL}$  is recommended using an extract of rat skeletal muscle S1 fraction.

Note: In order to obtain the best results and assay sensitivity in various techniques and preparations, we recommend determining optimal working concentrations by titration.

## References

1. McLennan, D.H., and Wong, P.T.S., *Proc. Natl. Acad. Sci. USA*, **68**, 1231-1235 (1971).
2. Jorgensen, A.O., et al., *J. Cell Biol.*, **80**, 372-384 (1979).
3. Jorgensen, A.O., et al., *J. Cell Biol.*, **98**, 1597-1602 (1984).
4. Nori, A., et al., *Exp. Cell Res.*, **260**, 40-49 (2000).
5. Nori, A., et al., *Am. J. Physiol. Cell Physiol.*, **291**, C245-C253 (2006).
6. Gunji, K., et al., *Autoimmunity*, **29**, 1-9 (1999).
7. Gopinath, B., et al., *Clin. Exp. Immunol.*, **145**, 56-62 (2006).
8. Volpe, P., et al., *Biochem. J.*, **301**, 465-469 (1994).
9. di Barletta, M.R., et al., *Circulation*, **114**, 1012-1019 (2006).
10. Viatchenko-Karpinski, S., et al., *Circ. Res.*, **94**, 471-477 (2004).
11. Lee, J.M., et al., *J. Biol. Chem.*, **279**, 6994-7000 (2004).
12. Györke, I., et al., *Biophys. J.*, **86**, 2121-2128 (2004).

CAA,ER,MAM 06/07-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.