3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

Annexin V from human placenta
Catalog Number **A9460**
Storage Temperature –70 °C

Annexin V Biotin Conjugate from human placenta
Catalog Number **A7810**
Storage Temperature 2–8 °C

Annexin V FITC Conjugate from human placenta
Catalog Number **A9210**
Storage Temperature 2–8 °C

Annexin V Synonyms: Calphosbindin I; Lipocortin V; PAP-1

Product Description

Annexin V
Molecular mass: ~36 kDa
pI:[1,2] 4.8

Annexin V belongs to a class of Ca^{2+}-dependent binding proteins shown to be involved in exocytosis, protein kinase C inhibition, and calcium channel activity in cartilage matrix vesicles.[1] All of these functions are related to the ability of annexin to bind to acidic phospholipids. This product has a high affinity for phosphatidylserine and can be used in determination of apoptosis in cells. During early apoptosis, phosphatidyl-serine, normally found on the cytoplasmic side of the membrane, translocates from the inner part of this membrane to the outer part. This exposes the phosphatidylserine, which can be recognized by annexin V and macrophages. Annexin V and its conjugates may be used to detect apoptotic cells significantly earlier than DNA-based assays.

Annexin V also strongly binds to phosphatidylserine in large unilamellar vesicles at low pH; whereas, at neutral pH, 20–100 μM Ca^{2+} is required to induce binding.[1]

There are two different classes of annexins based on the interaction of annexins with membranes in the presence of Ca^{2+}: annexins enhancing membrane interactions (I, II, IV, and VII) and annexins inhibiting membrane interactions (V and VI).[1]

Similar to other annexins, the amino acid sequence of Annexin V consists of a core of four repeats of a highly conserved 70 amino acid residue motif and a unique N-terminal tail.[3] Within each repeat, there is a 17 amino acid residue consensus sequence, which is postulated to form part of the Ca^{2+} and/or phospholipid binding site.

Annexin V-FITC conjugates have applications in flow cytometry, fluorescence microscopy, and laser scanning cytometry for the detection of early apoptotic cells.[4-7]

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.

Preparation Instructions

The Annexin V products are supplied as aqueous solutions and can be further diluted in standard aqueous buffers or media for use.

Storage/Stability

Annexin V (Catalog Number A9460) is shipped on dry ice and it is recommended to store the product at –70 °C.

The Annexin V conjugates (Catalog Numbers A7810 and A9210) are shipped on wet ice and it is recommended to store these products at 2–8 °C.

References

1. Kohler, G. et al., Annexin V interaction with phosphatidylserine-containing vesicles at low and neutral pH. Biochem., **36(26)**, 8189-8194 (1997).
2. McCormack and Cobbold, eds., Cellular Calcium: A Practical Approach, IRL Press, Oxford, p. 535-566.
3. Pigault, C., et al., Formation on two-dimensional arrays of annexin V on phosphatidylserine-containing liposomes. J. Mol. Biol., **236(1)**, 199-208 (1994).
4. Koopman, G., et al., Annein V for flow cytometric detection of phosphatidylserine expression on B cells undergoing apoptosis. Blood, **84(5)**, 1415-1420 (1994).
5. Verhoven, B., et al., Mechanisms of phosphatidylserine exposure, a phagocyte recognition signal, on apoptotic T lymphocytes. J. Exp. Med., **182(5)**, 1597-1601 (1995).
6. Vermes, I. et al., A novel assay for apoptosis. Flow cytometric detection of phosphatidylserine expression on early apoptotic cells using fluorescein labeled Annexin V. J. Immunol. Methods, **184(1)**, 39-51 (1995).
7. Homberg, C.H., et al., Human neutorphils lose their surface Fc gamma RIII and acquire Annexin V binding sites during apoptosis *in vitro*. Blood, **85(2)**, 532-540 (1995).

BW,CMH,NSB,BKR,MAM 08/08-1

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.