Annexin V, Recombinant

Ordering Information	*Storage Conditions*
Product Number: 20014 (100 µg), 20015 (1 mg).	Store at -20 °C Expiration date is 6 months from the date of receipt

General Properties

Source:	E. coli
Molecular Weight:	36 KD
Purity:	>95% by SDS-PAGE
Concentration:	2 mg/mL in PBS (pH 7.4)

Biological Applications

Annexin V is used as a probe in annexin V affinity assay to detect apoptotic cells, which have expressed phosphatidylserine on the cell surface, a feature found in apoptosis as well as other forms of cell death. Apoptosis is a form of programmed cell death, which is used by the body to remove unwanted, damaged or senescent cells from tissues. Removal of apoptotic cells is carried out via phagocytosis by white blood cells such as macrophages or dendritic cells.

Annexin V has been successively used to detect apoptotic cells *in vitro* (cells in a culture tube) and *in vivo* (in laboratory mice and in patients). Pathological processes in which apoptosis occurs include inflammation, ischemia damage of the heart caused by myocardial infarction, apoptotic white blood cells present in an atherosclerotic plaque in blood vessels, transplanted organs in the donor patient which are rejected by the immune system or tumor cells which are exposed to cytostatic drugs during chemotherapy.

Phagocytic white blood cells recognize apoptotic cells by their exposure of negatively charged phospholipids (phosphatidylserine) on the cell surface. In normal cells the negative phospholipids reside on the inner side of the cellular membrane and the outer surface of the membrane is occupied by phospholipids, which do not have a charge. After cells have made the decision to commit suicide, the negatively charged phospholipids are transported to the outer cell surface by a hypothetical protein known as scramblase. Phagocytic white blood cells express a receptor, which can detect the negatively charged phospholipids. After detection the apoptotic cells are removed. Phagocytes rapidly remove the apoptotic cells of healthy individuals. However, in pathological processes, the removal of apoptotic cells may be delayed or even absent. Dying cells in tissue can be detected with annexin V.

Labeling of annexin V with fluorescent or radioactive molecules makes it possible to detect the binding of labeled annexin V to the cell surface of apoptotic cells. After binding to the phospholipid surface, annexin V assembles into a cluster known as a trimer. This trimer consists of three annexin V molecules, which are bound to each other via non-covalent protein-protein interactions. The formation of annexin V trimers results in the formation of a two-dimensional crystal lattice on the phospholipid membrane. The clustering of annexin V on the membrane greatly increases the intensity of annexin V when labeled with a fluorescent or radioactive probe.

Disclaimer: *This product is for research use only and is not intended for therapeutic or diagnostic applications. Please contact our technical service representative for more information.*

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Ordering: sales@aatbio.com; Tel: 800-990-8053 or 408-733-1055; Fax: 408-733-1304
Technical Support: support@aatbio.com; Tel: 408-733-1055