SANTA CRUZ BIOTECHNOLOGY, INC.

α-2M (9A3): sc-81541

BACKGROUND

α-2 macroglobulin (α-2M) is a homotetrameric serum protein consisting of four identical subunits that form dimers through disulfide bonds. Initially, α-2M was characterized as a pan-proteinase inhibitor that was able to "bait" proteinases into cleaving specific peptide sequences on α-2M. This interaction induces a conformational change in α-2M, thus enabling it to "trap" the proteinase and inhibit its further activity. Subsequently, α-2M has also been shown to function as a carrier protein and regulator of cytokines during inflammation. Circulating transforming growth factor β (TGFβ) in serum is primarily bound to α-2M, which renders TGFβ inactive. α-2M also binds to IL-6 and, thereby, increases the concentration of IL-6 near lymphocytes, hepatocytes and stem cells involved in mediating the inflammatory cascade. Mutations and deletions in the gene encoding α-2M are associated with an increased incidence of Alzheimer's disease (AD), which is consistent with the role of α-2M in mediating the clearance and degradation of Aβ, the major component of β-Amyloid deposits accumulated during AD.

REFERENCES

1. Barrett, A.J., et al. 1973. The interaction of α-2 macroglobulin with proteinases. Characteristics and specificity of the reaction, and a hypothesis concerning its molecular mechanism. Biochem. J. 133: 709-724.
2. Tsuchiya, Y., et al. 1987. Sequence analysis of the putative regulatory region of rat α-2 macroglobulin gene. Gene 57: 73-80.
3. Borth, W., et al. 1990. Binding of IL-1 β to α macroglobulins and release by thioredoxin. J. Immunol. 145: 3747-3754.
4. Poller, W., et al. 1992. Cloning of the human α-2 macroglobulin gene and detection of mutations in two functional domains: the bait region and the thiolester site. Hum. Genet. 88: 313-319.
5. Webb, D.J., et al. 1998. Localization of the binding site for TGFβ in human α-2 macroglobulin to a 20 kDa peptide that also contains the bait region. J. Biol. Chem. 273: 13339-13346.
6. Blacker, D., et al. 1998. α-2 macroglobulin is genetically associated with Alzheimer disease. Nat. Genet. 19: 357-360.

CHROMOSOMAL LOCATION

Genetic locus: A2M (human) mapping to 12p13.31.

SOURCE

α-2M (9A3) is a mouse monoclonal antibody raised against α-2M from plasma of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2b} in 1.0 ml PBS with < 0.1% sodium azide and 5% glycerol.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

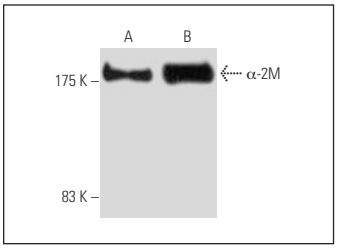
α-2M (9A3) is recommended for detection of α-2M of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for α-2M siRNA (h): sc-40297, α-2M shRNA Plasmid (h): sc-40297-SH and α-2M shRNA (h) Lentiviral Particles: sc-40297-V.

Molecular Weight of α-2M subunits: 185 kDa.

Molecular Weight of tetrameric α-2M: 718 kDa.

DATA



Immunoprecipitation of α-2M from human plasma (**B**) using α-2M (9A3): sc-81541 (mouse monoclonal antibody) followed by Western blot analysis using α-2M (2D9): sc-69750 (mouse monoclonal antibody) as compared with human plasma (**A**).

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.