Product No. C-5922
Lot 027H4806

Monoclonal Anti-CNPase

Mouse Ascites Fluid
Clone 11-5B

Monoclonal Anti-CNPase (mouse IgG1 isotype) is derived from the 11-5B hybridoma[1] produced by the fusion of mouse myeloma cells and splenocytes from immunized RBF/Dn mice. Purified human 2',3'-cyclic nucleotide 3'-phosphodiesterase (E.C.3.1.4.37, CNPase) was used as the immunogen. The isotype is determined using the Sigma ImmunoType™ Kit (Sigma Stock No. ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma Stock No. ISO-2). The product is provided as ascites fluid with 0.1% sodium azide (see MSDS)* as a preservative.

Specificity

Monoclonal Anti-CNPase[1] reacts specifically with CNPase in ELISA, immunoblotting and immunohistochemical staining of brain sections. In an immunoblotting assay, the antibody localizes both CNP1 (46kD) and CNP2 (48kD) bands of the enzyme and recognizes whole brain CNPase of human, bovine, mouse, rat, rabbit, dog, sheep and pig but not guinea pig or chicken.[2] Immunohistochemical staining performed on paraffin, cryostat, or vibratome sections of rat brain, reveals a selective staining of oligodendrocytes in the grey and white matter. Nerve cells and axons are not stained and astroglial cells do not appear to be labeled.

Description

CNPase (2',3'-cyclic nucleotide 3'-phosphodiesterase, E.C.3.1.4. 37) is a unique enzyme. It is a constituent of cells that elaborate myelin in the central and peripheral nervous systems, i.e. oligodendrocytes and Schwann cells respectively, and is virtually absent in other cell types in the nervous system.[2] The enzyme isolated from mammalian brain, even in the presence of reducing agents, is primarily a mixed dimer of approximately 94 kD. The dimer consists of a varied proportion of CNP1 (46 kD) and CNP2 (48 kD) subunits in various species. The amino acid sequence of the various CNPases, which are encoded by genes in chromosome 17 in humans, appear to be highly conserved immunologically. The high levels of CNPase observed in oligodendrocytes[2,3] and Schwann cells portend a vital role of this enzyme in the normal function of these cells. They are distinguished from nearly all other cells by their ability to synthesize and maintain vast amounts of multilamellar membrane, known as myelin. It seems very likely that CNPase is expressed at high levels in these particular cells to facilitate the elaboration and maintenance of myelin or to carry out functions imposed or afforded by the unique membrane structure of myelin. Since the enzyme is a myelin-associated enzyme, it is of considerable interest in the study of diseases and disorders in which myelin is affected, such as multiple sclerosis, subacute sclerosing panencephalitis, acquired immunodeficiency with CNS involvement, peripheral neuropathies, etc. Another important use is the study of reinnervation of the neuromuscular junction and the identification of oligodendrocyte progenitor cells, very early in postnatal development.

Uses

Monoclonal Anti-CNPase may be used for the localization of CNPase using various immunochemical assays such as ELISA, immunoblot, dot blot and immunocytochemistry.

Titer: 1:500

The antibody titer was determined by immunoblotting of fresh bovine whole brain extract.

In order to obtain best results in different techniques and preparations, it is recommended that each individual user determine their optimum working dilutions by titration assay.

Storage

For continuous use, store at 2-8°C. For extended storage, freeze in working aliquots. Repeated freezing and thawing is **not** recommended. Storage in "frost-free" freezers is **not** recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

* Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous

and safe handling practices.

References

1. Sprinkle, T., et al., Brain Res. **426**, 349 (1987).
2. Sprinkle, T., CRC Crit. Rev. Neurobiol., **4**, 235 (1989).
3. Reynolds, R., et al., Neuroscience, **28**, 181 (1989).