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Product Description

Monoclonal anti Parvalbumin

PV 235

Concentrated supernatant

Product: Monoclonal anti-Parvalbumin

Code No: PV235

Form: Concentrated supernatant (no preservatives).

Quantities available: 200 µl, 500 µl, and 1 ml

Reconstitution: with corresponding amount of bi-distilled water

Description
Monoclonal anti-Parvalbumin is a mouse IgG1 produced by hybridization of mouse myeloma cells with spleen cells from mice immunized with parvalbumin purified from carp muscles (1). The antibody was evaluated for specificity and potency: a) by indirect immunofluorescent or immunoperoxidase labeling as well as Avidin-Biotin staining of cryostat or vibratome-sections of 4% paraformaldehyde fixed tissue; b) by immunoenzymatic labelling of immunoblots; c) by radioimmunoassay (RIA)(1).

The product is a monoclonal antibody (McAB) against parvalbumin, a calcium-binding protein of the EF-hand family related to calmodulin. The antibody reacts specifically with parvalbumin in tissue originating from human, monkey, rabbit, rat, mouse chicken and fish. The McAB specifically stains the ^{45}Ca-binding spot of parvalbumin (MW 12'000 and IEF 4.9) in a two-dimensional "immunoblot". In a RIA set up the McAB measures parvalbumin with a sensitivity of 10 ng/assay and an affinity of 7.9×10^{12} L/M (1).

Uses
Calcium binding-proteins represent a family of small, acidic proteins equipped with peculiar cavities which accept Ca^{2+} with high selectivity. There are two types of calcium binding-proteins, “trigger” and “buffer” proteins. The “trigger” type proteins (e.g. calmodulin and troponin-C) act by changing their shape upon binding Ca^{2+}. This distortion exposes regions on the surface of the protein, which interact with surrounding target molecules, altering their activity. The calcium binding-proteins of the “buffer”-type are conceived as a system in charge of controlling the Ca^{2+} concentration inside cells. Parvalbumin occurs mainly in subpopulations of nerve cells (2,4) and in fast muscle fibers (3). It might confer on these cells peculiar skills in the handling of calcium-ions. Parvalbumin is an attractive neuroanatomical tool and this McAB guarantees the continued production of a constant titer of anti-parvalbumin antibody with the same specificity and chemical identity.

Antibody performance
McAB 235 against parvalbumin specifically localizes parvalbumin using free-floating or mounted sections of brain and muscles probably of all vertebrates. Fixation does not seem to be a hindrance to the detection of the antigen since even 2.5% glutaraldehyde was compatible with immunolocalization on semithin (0.5 µm thin) cryo-sections of the rat cortex (4). It can be used with rat-parvalbumin as a tracer to quantify parvalbumin in the brain of various species (1).

Immunoblot
The specificity of antibody 235 could be determined by immunoblots of brain and muscle extracts (1). However, this antibody does not recognize well the parvalbumin molecule after SDS-gel electrophoresis.

Immunohistochemistry on parvalbumin knock out mice
Antibody 235 immunolabels a subpopulation of neurons in the normal brain with high efficiency (Fig. 2a), but does not stain the brain of parvalbumin knock out mice (Fig. 2b).

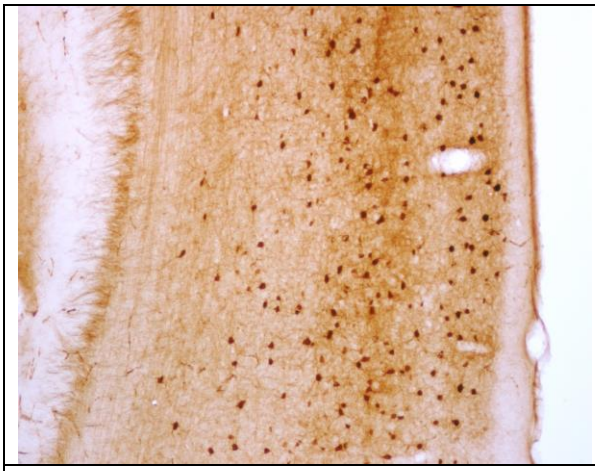

Fig 2a: immunohistochemical staining with McAB 235 in the hippocampus of a control mouse. Notice the strong staining of interneurons in layer II-VI. X100

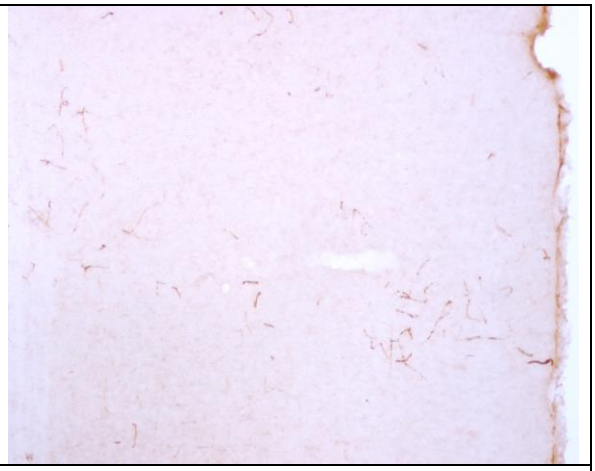

Fig 2b: Absence of immunohistochemical staining with McAB 235 in the cerebral cortex of a parvalbumin knock out mouse (5). Non-specific staining of the vessel walls due to the anti-mouse secondary antibody. X 100

Working dilutions
Immunohistochemistry: 1:5'000 - 1:10'000, when performed with the avidin-biotin method.
Immunoblotting: 1:1'000.
We recommend that the optimal dilution be determined by titration test.

Storage
For long storage, keep small aliquots of 1-2 µl at - 80°C (or at least - 20°C). For continuous use keep diluted solutions at 4°C (with 0.01% Na-azide). Avoid repeated freezing and thawing.

References

1. Celio M.R. et al., Cell Calcium 9:81-86, 1988
2. Celio M.R., Heizmann C.W. (1981) Nature 293: 300-302
3. Celio M.R., Heizmann C.W. (1982) Nature 297:504-506
4. Celio M.R. (1986) Science 231:995-997
5. Schwaller B., et al. (1999) Am. J. Physiol. 276. C395-403