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Product Information

Monoclonal Anti-SKM1 (Skeletal Muscle Type 1 Sodium Channel)

Clone L/D3

Purified Mouse Immunoglobulin

Product Number **S 9568**

Product Description

Monoclonal Anti-SKM1 (Skeletal Muscle Type 1 Sodium Channel) (mouse IgG1 isotype) is derived from the L/D3 hybridoma produced by the fusion of mouse myeloma cells (P3/NS-1/1-Ag4) and splenocytes from BALB/c mice immunized with purified SKM1 sodium channel protein from rat.¹ The isotype is determined using Sigma ImmunoType™ Kit (Sigma ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma ISO-2).

Monoclonal Anti-SKM1 (Skeletal Muscle Type 1 Sodium Channel) recognizes rat SKM1 (260 kDa) and cross reacts with mouse but not with human or rabbit SKM1.^{1,5} The antibody epitope resides between amino acid residues 19-24 of the rat SKM1 (L/D3 epitope: Pro-Phe-Thr-Pro-Glu-Ser).¹ The antibody can be used in ELISA,¹ immunoblotting,¹ and immunohistology (4% paraformaldehyde fixation),¹ but not immunoprecipitation.

Sodium channels control the membrane ionic current that is produced at the depolarizing phase of an action potential. In mammals, the Na⁺ channel has two subunits that are transmembrane glycoprotein with a molecular weight of 260 kDa for the large subunit (α subunit) and 37-45 kDa for the short subunit (β subunit).^{1,2} Different Na⁺ channels are expressed in a variety of tissues, cells, and cancer cells. All of them possess the same basic structural features with four membrane-spanning pseudo-subunit domains containing multiple potential α -helical transmembrane segments.³

The predominant voltage-dependent sodium channel expressed in adult skeletal muscle is Skm1. It is mainly expressed at the neuromuscular junction and to a lesser extent in the sarcolemma and T-tubular membrane. This tight local expression of Skm1 is controlled at the transcription level by E-box elements that are located in the 5' promoter region.⁴

Mutations in the skeletal muscle voltage gated Na⁺ channel gene can lead to clinical phenotypes such as hyperkalemic periodic paralysis (HyperPP), paramyotonia congenita and potassium-aggravated myotonia.⁶

Monoclonal antibodies specific for SKM1 are an important tool for studying the physiology of Na⁺ channels.

Reagent

Monoclonal Anti-SKM1 (Skeletal Muscle Type 1 Sodium Channel) is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: Approx. 2 mg/ml.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots at -20 °C. Repeated freezing and thawing is not recommended. Storage in frost-free freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

By immunoblotting, a working antibody concentration of 2-4 μ g/ml is recommended using total cell extracts of C2 differentiated cells.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working concentrations by titration.

References

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