9051 Mira Mesa Blvd, #910094
San Diego, CA 92191
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MBP Protein

Myelin Basic Protein Human
NTP0041

Product Overview

Name	MBP Protein
Description	
Myelin Basic Protein Human	
Accession (Primary)	P02686
Synonyms	
Maltose-binding periplasmic protein, MBP, MMBP, Maltodextrin-binding protein, malE, b4034, JW3994.	
Source	
Human brain.	
Physical Appearance	
Sterile Filtered White lyophilized (freeze-dried) powder.	
Formulation	
MBP was lyophilized containing no additives.	
Stability	
Lyophilized MBP although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution Myelin Basic Protein should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Please prevent freeze-thaw cycles.	
Purity	
Greater than 95.0% as determined by SDS-PAGE.	
Solubility	
It is recommended to reconstitute the lyophilized MBP in sterile 18MΩ-cm H2O not less than 100 µg/ml, which can then be further diluted to other aqueous solutions.	
Background	
Myelin Basic Protein (MBP) stands as a cornerstone in the intricate architecture of the nervous system. As a vital component of the myelin sheath, MBP plays a pivotal role in ensuring the integrity and rapid transmission of nerve impulses. Over the years, scientific inquiry into MBP has revealed its multifaceted functions, not only as a structural element but also as a regulatory molecule involved in various cellular processes. This research seeks to unravel the complexities of MBP, exploring its structural characteristics, physiological significance, and its involvement in neurological disorders. Structural Marvel of MBP: MBP, an intrinsically disordered protein, boasts a unique structure	

allowing it to interact with lipid membranes, especially those found in the myelin sheath. Its high arginine and lysine content gives it a positive charge, enabling strong electrostatic interactions with the negatively charged lipids in myelin. This structural adaptation is crucial for the compact wrapping of myelin around axons, facilitating efficient electrical signal conduction. Physiological Significance in Myelination: In the central nervous system (CNS), oligodendrocytes produce myelin, a lipid-rich substance that insulates axons. MBP, as a major constituent of myelin, plays an indispensable role in this process. It stabilizes the myelin sheath's structure, ensuring its tight adherence to the axon and promoting the fast, saltatory conduction of nerve impulses. Without functional MBP, myelin integrity is compromised, leading to reduced nerve conduction velocity and impaired neural communication. Beyond Structural Functions: Recent studies have revealed that MBP is not merely a structural protein but also possesses regulatory functions. It participates in signaling pathways crucial for oligodendrocyte development and myelination. Moreover, MBP's interaction with cytoskeletal elements suggests its involvement in cellular processes such as axon guidance and neuronal plasticity. Understanding these regulatory roles provides insights into the broader impact of MBP on neural development and function. Implications in Neurological Disorders: Alterations in MBP have been linked to various neurological disorders, including multiple sclerosis (MS). In MS, the immune system erroneously targets MBP, leading to demyelination and subsequent neurological impairments. Research into MBP-related pathologies not only aids in understanding disease mechanisms but also offers potential therapeutic avenues. Targeting MBP-specific immune responses is a focus of research for developing MS treatments. Conclusion: MBP, as the guardian of neural transmission, stands as a testament to the marvels of biological architecture. Its intricate structure and multifaceted functions make it indispensable for the proper functioning of the nervous system. Beyond its role as a structural protein, MBP's involvement in cellular signalling adds layers to its significance. In the realm of neurological disorders, MBP's complexities provide both challenges and opportunities, guiding scientists toward innovative therapies. This research delves into the world of MBP, appreciating its contributions to neuroscience while aiming to decipher the mysteries that lie within its molecular intricacies.

Precautions

MBP Protein is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (P02686)

Background

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