

Immunohistochemical localization of manganese superoxide dismutases in the rat vestibular dark cell regions

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摘要

Abstract

A modified immunoglobulin peroxidase bridge sequence method was used to detect the localization of manganese superoxide dismutase (MnSOD), a superoxide radical (O₂[•]) scavenging enzyme locating in mitochondrial matrix, in the vestibular labyrinth of pigmented rats. Strong positive MnSOD immunostaining was demonstrated in the dark cell regions of the ampullae, utricle, and common crus. The result provides for the first time direct evidence demonstrating the existence of mitochondrial O₂ scavengers in the vestibular labyrinth and illustrates that the specific sites for vestibular MnSOD immunolocalization are the dark cell regions. This site specificity of MnSOD immunolocalization suggests that dark cell regions may possess high metabolic activity and may encounter constant threat from O₂. We assume MnSOD is needed in protecting some physiologic functions of the dark cell regions. Cell types showing negative MnSOD immunostaining may conceivably be relatively vulnerable to acute O₂ damage.