

Immunohistochemical localization of manganese superoxide dismutase in the rat cochlea

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摘要

Abstract

There has been recent increasing interest in the involvement of superoxide radicals (O_2^-) and their scavenging enzymes, the superoxide dismutases, in the pathophysiology of certain diseases. Since mitochondria are significant intracellular sources of O_2^- and important targets of oxidant injury, determining the intracochlear localization of mitochondrial O_2^- scavenging enzyme may provide important insight into the pathogenesis of injury due to cochlear oxidants. In order to locate the mitochondrial O_2^- scavenging enzyme, manganese superoxide dismutase (MnSOD), the authors used a modified immunoglobulin peroxidase bridge sequence method to detect MnSOD in paraffin-embedded, formalin-fixed rat cochleas. Site-specific immunolocalization of MnSOD could be demonstrated in the cochlear labyrinth, suggesting that the generation of intracochlear O_2^- was possibly implicated in the metabolically active sites and sites rich in vascularity. This study also provided a useful probe for detecting MnSOD immunohistochemically from ethylenediamine tetraacetic acid-treated materials without requiring an antigen retrieval procedure.