

ELECTRON MICROSCOPIC STUDY OF THE CHOLINERGIC AND NONCHOLINERGIC NEURONS IN MEDIAL SEPTUM AND DIAGONAL BAND OF BROCA NUCLEI IN THE RAT

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Cholinergic system is actually object of many immunohistochemical studies, specially in nuclei of the basal forebrain. The use of combinations of retrograde and anterograde tracing techniques with acetylcholinesterase (AChE) histochemistry or choline acetyltransferase (ChAT) immunohistochemistry has shown the mapping of cholinergic neurons and their projections.

The aim of the present study was to examine in detail, at electron microscopic level, the morphology of immunoidentified cholinergic and nonimmunostained neurons in medially septum and vertical limb of the diagonal band of Broca nuclei.

Immunohistochemistry was carried out using monoclonal anti-ChAT antibody from Boehringer Mannheim GmbH. Three immunodetection methods were used: Avidin-Biotin-Peroxidase (ABP); Peroxidase-Antiperoxidase (PAP), Streptavidin-Peroxidase (SAP). Cryostat and vibrotome sections were incubated and prepared for electron microscopy. Two types of neurons were found in both nuclei. The ChAT-immunoreactive cells appeared with characteristic morphology and distribution of the endomembrane system (ES), specially the rough endoplasmic reticulum, Golgi apparatus and other related organelles. The ultrastructural features of noncholinergic neurons displayed a very different ES, resembling to the interneurons in other brain localizations. These observations support the theory that ES is a very specific system in neurons with different functional activity.