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PRESENCE OF THIAMINE PYROPHOSPHATASE ACTIVITY IN CENTRAL AND PERIPHERAL MYELIN SHEATHS OF THE RAT.

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Thiamine pyrophosphatase (TPPase), one of the most important enzymes involved in thiamine metabolism, has been demonstrated histochemically in specific cytoplasmic localizations in neurons and glial cells. Although some evidences indicate a significant thiamine metabolism associated to myelinated fibers, there is a lack of information about fine localization of TPPase in myelin sheaths. The purpose of the present work was to study cytochemical localization of TPPase in central and peripheral myelin sheaths. Corpus callosum, spinal cord and sciatic nerves from 8 adult Wistar rats were processed for histochemical TPPase demonstration according the method of Novikoff and Goldfisher. Our observations on central and peripheral myelin sheaths reveal the presence of TPPase activity in three main locations: a) within oligodendroglial and Schwann cytoplasmic clefts between myelin lamellae, b) in myelin major dense line, and c) within the periaxonal space. In addition to this myelin associated TPPase, enzymatic activity was observed also in specific cytoplasmic localizations in myelinogenic cells: Oligodendrocytes showed TPPase within nuclear envelope and endoplasmic reticulum cisternae whereas Schwann cells displayed TPPase activity within endoplasmic reticulum and Golgi saccules. TPPase in myelinated fibers could play an important role taking part in conduction of nervous impulses or being involved in the maintenance of structural configuration of myelin sheaths.