

IMMUNO-ELECTRON MICROSCOPIC LOCALIZATION OF NEUROPEPTIDES IN THE NUCLEUS OF THE SOLITARY TRACT, IN RELATION TO CARDIOVASCULAR CONTROL.

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The ultrastructural morphology of synaptic nerve profiles containing vasopressin (AVP), oxytocin (OXT), leu-enkephalin (ENK) and substance P (SP) was compared in the nucleus of the solitary tract (NTS), where the fibre distribution of AVP and OXT shows considerable overlap with that of ENK and SP.

Immuno-electron microscopy was performed with the PAP method according to the pre-embedding staining technique. Application of the detergent Triton X-100 proved to be indispensable for the demonstration of AVP and OXT, whereas ENK and SP could be very well visualized without it. AVP and OXT containing synaptic profiles could not be distinguished from each other on the basis of morphology or synaptic relations. The same applied to ENK and SP fibres which differed, however, from AVP and OXT profiles in synaptic relations and ultrastructural localization of peroxidase reaction product. The latter difference disappeared when Triton was used in both groups. It is at present unclear why using Triton is a necessity for the demonstration of AVP and OXT. Differing incorporation in precursor molecules might explain this phenomenon. Synaptic contacts were mostly axo-dendritic with symmetrical as well as asymmetrical paramembranous specializations. AVP and OXT appear to be localized in the NTS in large granular vesicles sizing 70-80 nm, while in the neural lobe hormone - containing granules average 140 nm. This suggests that AVP and OXT fibres in NTS and hypophysis belong to separate systems.

The peptidergic synapses described in the present study could well form a morphological basis for the effects concerning blood pressure elevation, which local application of AVP, OXT and SP have been found to elicit in this area.