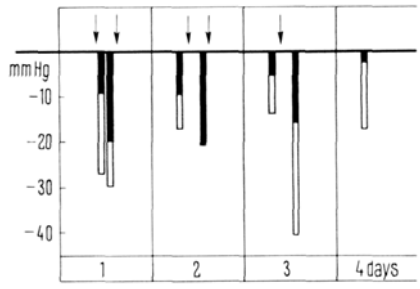

Changes in systolic blood pressure of hypertensive rats treated with 4-methoxy-3,5-dihydroxyphenylalanine. Open columns represent i.p., filled columns oral treatment. A total of 5 doses of 100 mg/kg was given over $2^1/_2$ days. The initial blood pressure of the oral group was 170 ± 3.6 mm Hg ($n = 5$), of the i.p. group 208 ± 2.9 mm Hg ($n = 5$). Pressure changes greater than 10 mm Hg are statistically significant ($p < 0.05$).

In conclusion our results demonstrate 4-methoxy-3,5-dihydroxyphenylalanine to be a precursor of a false adrenergic transmitter with antihypertensive properties in renal hypertensive rats.

Zusammenfassung. 4-Methoxy-3,5-dihydroxyphenylalanin, die metabolische Vorstufe eines «falschen» sympathischen Transmitters, bewirkt an renal-hypertonen Ratten sowohl bei intraperitonealer als auch bei oraler Verabreichung eine Senkung des Blutdrucks. Bei fehlender Sedation wird der Noradrenalingehalt im Gehirn weniger stark gesenkt als im Herzen.

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Electron Microscopy of Medial Lemniscal Terminal Degeneration in the Ventral Posterolateral Thalamic Nucleus of the Cat

The results presented in this note are part of an anatomical study of the thalamic termination of the classical spino-thalamic, the dorsal column-medial lemniscus and the cervico-thalamic systems in the cat. That the dorsal column nuclei (DCN) project via the medial lemniscus to the contralateral ventral posterolateral thalamic nucleus (VPL) is well known[1]. The cervico-thalamic system takes its origin in the lateral cervical nucleus (LCN) in the first and second cervical segments of the spinal cord. The axons cross to the contralateral anterior funiculus to travel in the dorsolateral part of the medial lemniscus to the thalamus[2]. Using light microscope techniques we have found preterminal degeneration in the contralateral VPL after unilateral lesions confined to the LCN (Boivie and Grant, to be published). By electrophysiological technique, the same site of termination has been found for the cervico-thalamic system[3]. The third system, the classical spino-thalamic, will not be dealt with here.

In a series of adult cats unilateral lesions of the DCN and the LCN, respectively, were made. The cats were perfused with buffered formalin according to a method described previously[4]. The lesions were cut in serial sections which were stained alternately with thionin and according to van Gieson. For this electron microscope investigation 2 cases with a post-operative survival period of 5 days were selected. One had a complete lesion of the DCN and the other an almost complete lesion of the LCN.

The contralateral VPL was dissected free and prepared for thin sectioning according to a method described before[4].

Degenerating terminal boutons were seen in both cases and the degeneration was of the electron dense type[5]. In the case with the DCN lesion, most of the degenerating terminal boutons were observed in synaptic contact with dendritic shafts (Figure 1), but some were in contact with cell bodies (Figure 2). The degenerating boutons were about 1 μ in diameter, were very electron dense and surrounded by normal boutons. The nerve cells contacted by the degenerating boutons seemed to be rather small, about 20 μ in cross-sectional diameter, while the dendrites contacted by the boutons were of different sizes.

In the case with the LCN lesion the degenerating terminal boutons were also found in contact with both dendritic shafts and cell bodies; most frequently, however, with the former. The degenerating boutons were of the

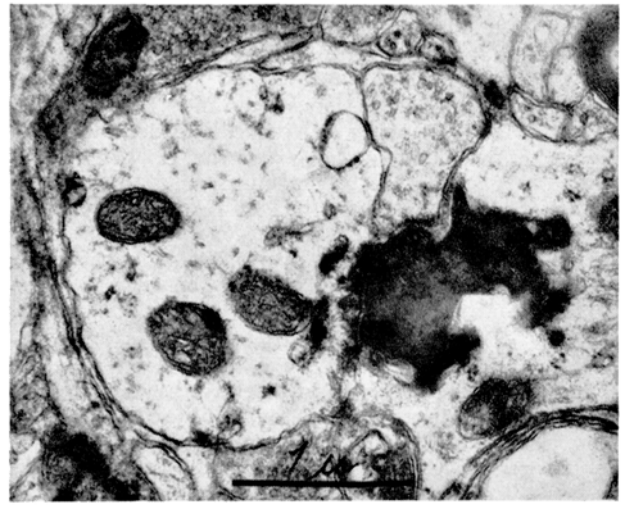

Fig. 1. Degenerating terminal bouton in the VPL 5 days after lesion of the DCN on the contralateral side. The bouton is situated on a medium sized dendrite. × 23,000.

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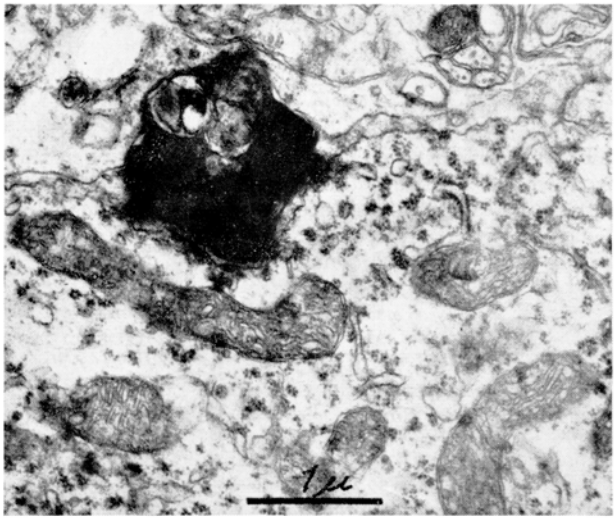

Fig. 2. Degenerating terminal bouton in the same case as in Figure 1. The bouton contacts a cell body. Note the high density of the bouton. × 18,000.

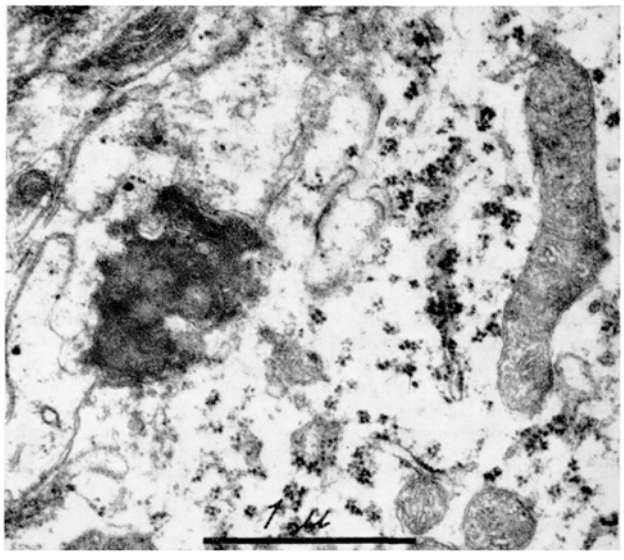

Fig. 3. Degenerating terminal bouton in the VPL 5 days after lesion of the LCN of the contralateral side. The bouton contacts a cell body (right). × 28,000.

same size and were only a small part of the total number of boutons in the area as in the DCN case.

The extreme density of the degenerating boutons indicates that the degeneration in the VPL described here is rather advanced already after 5 days[6]. That may be the reason why only the electron dense type of degeneration[5] and not the filamentous type[7] was seen. It has been proposed that the filamentous type is present only in the early stage of degeneration[8].

Degenerating boutons were seen in the VPL in synaptic contact with both nerve cell bodies and dendrites after lesions of the DCN as well as of the LCN. The same double localization has been found in most parts of the central nervous system after transection of afferent fibres[4,6,9,10]. In most cases the degenerating boutons on the dendrites are more numerous[6,9]. Probably the reason for this is the larger surface area of the dendrites compared to that of the cell body[11].

Zusammenfassung. Fünf Tage nach Zerstörung des Nucleus cervicalis lateralis in einer Katze und der Hinterstrangkerne in einer anderen, wurde das elektronmikroskopische Bild der degenerierenden Boutons in den kontralateralen VPL studiert. Die Boutons waren in beiden Fällen meistens in synaptischem Kontakt mit Dendriten, aber auch mit Zellkörpern und zeigten elektrondichten Typus von Degeneration. Die nicht degenerierenden Boutons waren viel zahlreicher als die degenerierenden.

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Some Structural Features of Isolated Mitochondrial Membranes

Subunits in the unit-membrane have been described by various authors. SJÖSTRAND[1] found an electron-transparent 'ultrastructural element' in sections of mitochondrial membranes and of the smooth endoplasmic reticulum, fixed with OsO_4 or $KMnO_4$; a similar subunit was also found by DEUTSCH and KRAUSE[2] in cross sections of isolated mitochondrial membranes treated with enzymes and fixed with OsO_4. Negatively-stained isolated membranes of the frog retina show an array of spherical particles (BLASIE et al.[3]). PEASE[4] has found electron-dense spherical particles in sections of membranes of some mitochondria. Similar particles, 'structural globular particles' (diameter about 60 Å), were observed by DEUTSCH and KRAUSE[2] in sections of isolated mito-

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