EDITORIAL COMMENT

MASTICATION AND SENSIBILITY, OR THE FIVE NEW FINDINGS IN THE CAT MESENCEPHALIC TRIGEMINAL NUCLEUS

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"Einstein, on being asked why he insisted on using ordinary hand soap for shaving, replied:
- Two soaps? That is too complicated".

• The brain even of small animals, like the rat, is complicated in its structure and its function.The hardware of the smartest "personaP'computer is difficult to unravel. Those studying the brain know, that those brain structures that left the common evolutionary path are even harder to study. Such a structure is the mesencephalic nucleus of the trigeminal system, responsible for the sensibility of the jaw-closing muscles and the periodontium. The mesencephalic trigeminal nucleus (MTN) is a drop-like nucleus with an enormous thin tail, extending from the rostral pons along the entire caudo-rostral length of the midbrain. While all sensory ganglia of the spinal and cranial nerves are placed outside the central nervous system, the MTN, that exists of the same primary afferent neurons, is placed in the brainstem. As a consequence, this nucleus receives projections from other brain parts, projects to non-primary afferent target areas, contains a different topo graphy and neurochemistry, in which it distinguishes itself from other primary afferent sensory ganglia of the spinal and cranial nerves. In this volume of *Biomedical Reviews,* the first neurochemical updateness on the cat MTN appears (1). Moreover, it stems from the Department of Anatomy, Thracian University Medical Faculty in Stara Zagora by Nikolai Lazaro v and Christo Chouchkov known for their skin receptor studies and their connectivity to and in the MTN. They earned the First Dimitri Kadanoff Memorial Award truly.

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Several aspects have been studied by them in this 7 mm elongated nucleus. One has to realize what this meant for the applied techniques like electron microscopy or immuno-cytochemistry: an endless task for ultrastructural morphology, years of study for the immunocytochemistry of a restricted amount of neurotransmitters. The following outcomes were then achieved by N. Lazarov and C. Chouchkov: *(i)* New is the distributional findings on axosomatic (lot) and axodendritic (few) contacts, *(if)* New is the distribution of small or medium and large sized neurons; up to 40% of the large neurons are not unipolar but multipolar, *(Hi)* New is that unipolar large neurons are glutamatergic, while multipolar neurons are GABAergic, *(iv)* New is that the unipolar large cells are surrounded by peptidergic, serotoninergic and dopaminergic networks of axons, and (v) New (and unexpected) is the finding that the dopamine 1 (Dl) receptor seems to be related to the jaw-closer part of the MTN, while the D2 receptor is coupled to

the periodontal and mechanoreceptor related part of this nucleus.

Some envy is present by these *Editorial Comment* authors who worked on the human MTN (2). Here the disadvantages are large, due to postmortem material. Moreover, small neurotransmitters undergo easily leakage; in human material, the delay in fixation affects structure and cytochemistry. The results in the cat, however, are supportive for the human studies. The lesson we learned is: although one has one soap, as the innovative scientist in Bulgaria has, good results can be obtained (see 3).

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