

P5.29.

Nitric oxide synthase in the olfactory center of the snail, *Helix pomatia*. A light- and electronmicroscopic histochemical study

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Nitric oxide (NO) contributes to the generation of oscillatory waves which are related to the process of memory formation in the procerebrum (PC), the olfactory center of terrestrial snails. The anatomy of NO synthase (NOS) containing neurons is known very little in the PC. Therefore in this study we localized NOS using both NADPH-diaphorase (NADPH-d) histochemical reaction (NADPH-d) and NOS immunohistochemistry in the PC of *Helix pomatia*. Labeling alternate cryostat sections obtained from the PC revealed an identical NADPH-d and NOS localization; NOS was detected both in the globuli cell bodies and axons, and the different neuropil areas. A gradual from top to base appearance of NOS was seen in the terminal neuropil, whereas it was evenly and strongly expressed in the internal neuropil. A lateral neuropil region receiving NOS positive axon terminals both from the upper and lower tentacles was also intensively labeled. At ultrastructural level NADPH-d cytochemistry revealed that NOS was bound to the nuclear envelope and endoplasmic reticulum elements in the globuli cells, whereas it was attached to the membrane of agranular synaptic vesicles and medium electron dense granular vesicles in the neuropil. These observations refer to the synthesis of NO in globuli cells, and support the involvement of NO both in the process of transmitter release and intercellular signaling in the different neuropil regions.

Support: OTKA, Nos. 78224 (K.E.), PD75276 (Z.S.)