



## Regulation of neuronal nitric oxide synthase mRNA expression in the rat magnocellular neurosecretory system

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### Abstract

We examined the activation of nNOS mRNA expression within the supraoptic and paraventricular nuclei (SON and PVN) of the hypothalamus. In salt-loaded rats nNOS mRNA expression was significantly increased in both nuclei. In rats given i.p. injections of 1.5 M NaCl (4 ml/kg), a small but significant increase in nNOS mRNA expression in the SON and PVN was found 6 h after injection; no change was detected 2 or 4 h after injection. In rats in which hyponatraemia had been induced experimentally, nNOS mRNA was downregulated in the SON, and expression levels were not increased within 4 h after intense acute osmotic stimuli. Finally, neurons of the SON were antidromically-activated by neural stalk stimulation for 2 h. No increase of nNOS mRNA expression in the SON was observed 2 h after stimulation. Thus, increased electrical activity is not directly coupled to rapidly increased expression of nNOS mRNA, and hence acute increases in nNOS mRNA expression are unlikely to play a role in short-term adaptation of the magnocellular system to osmotic stimulation.

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