

[Cell Mol Neurobiol.](#) 2000 Dec;20(6):763-71.

B-Type and C-type natriuretic peptides modify norepinephrine uptake in discrete encephalic nuclei of the rat.

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Abstract

1. We previously demonstrated that atrial natriuretic factor and B- and C-type natriuretic peptides (ANF, BNP, and CNP, respectively) modified catecholamine metabolism by increasing the neuronal uptake and decreasing the neuronal release of norepinephrine in the rat hypothalamus. The aim of the present work was to study the effects of natriuretic peptides BNP and CNP on norepinephrine uptake as an index of the amine metabolism in discrete areas and nuclei of the central nervous system (CNS) of the rat. 2. Experiments were carried out in vitro using the punchout technique in diverse areas and nuclei of rat CNS. Results showed that 100 nM BNP and 1 nM CNP increased norepinephrine (NE) uptake in all brain areas and nuclei studied. 3. Present results permit us to conclude that BNP and CNP regulate NE metabolism independently of the encephalic area or nucleus involved. In fact, NE uptake increased in nuclei related to the regulation of cardiovascular activity as well as nuclei associated with endocrine metabolism and hydrosaline homeostasis. These observations suggest that BNP and CNP may be involved in the regulation of these physiological processes in an indirect manner through modifications of noradrenergic neurotransmission. Present findings provide further support to the hypothesis that CNP would be the main natriuretic peptide in brain. Furthermore, previous as well as present results support the role of the natriuretic peptides as neuromodulators of noradrenergic transmission at the presynaptic level.