

# In vivo stimulation of locus coeruleus: Effects on amygdala subnuclei

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The locus coeruleus (LC) is the major noradrenergic nucleus and sends projections to almost all brain areas. A marked increase in norepinephrine release has been demonstrated in several brain areas in response to exposure to acute stressful stimuli, especially those innervated by LC projections. One of the brain areas innervated by LC neurons is the amygdala, a structure highly involved in emotional processes and memory formation. The aim of this study was to increase knowledge of the functional connectivity between the LC and the amygdala subnuclei. To reach this objective, we evaluated c-fos immunoreactive cells in amygdala nuclei following direct electrical stimulation of the LC in conscious animals. This analysis of c-fos immunoreactivity could inform whether there are differences in activity of the amygdala subnuclei related to LC electrical stimulation in conscious animals. Our results showed a marked increase in c-fos activity in these amygdala subnuclei both ipsilateral and contralateral to LC electrical stimulation in vivo. Therefore, our study provides evidence that in vivo electrical stimulation of LC is able to activate the amygdala subnuclei as measured by c-fos expression. © 2017 by Acta Neurobiologiae Experimentalis.

Amygdala subnuclei

C-Fos

Locus coeruleus

Noradrenergic system

protein c fos

amygdala

animal

cytology

electrostimulation

hemispheric dominance

injuries

locus ceruleus

male

metabolism

nerve cell

nerve tract

physiology

procedures

rat

Sprague Dawley rat

Amygdala

Animals

Electric Stimulation

Functional Laterality

Locus Coeruleus

Male

Neural Pathways

Neurons

Proto-Oncogene Proteins c-fos

Rats

Rats, Sprague-Dawley