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Regional Meeting

Belgrade, Serbia, July 10–13, 2019

ДНС
SNS Друштво за неуронауке Србије
Serbian Neuroscience Society



National Neuroscience
Society of Romania



Neuroscience Society
of Turkey



ABSTRACT BOOK

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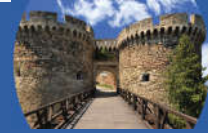
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Thursday, July 11, 2019

13:45-15:00

Room Atlantic 1
Room Atlantic 2

POSTER SESSION 1

P140

IRON MODULATES NOREPINEPHRINE EFFECT ON ASTROCYTES

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Aims: Astrocyte position between synapses and blood vessels allows them to fulfil crucial functions such as regulation of synaptic activity and potassium buffering. Well positioned in the close vicinity of synaptic cleft astrocytes are considered to be a direct target of norepinephrine (NE). Synaptic activity and neurotransmitter actions can be influenced by extracellular iron. Here we investigated whether iron interacts with NE and if this interaction can modulate astrocyte response to NE.

Methods: To investigate the interaction between iron and norepinephrine we used spectrophotometry approach. Iron effect on astrocyte response to NE was examined by the whole-cell patch-clamp technique. Membrane currents were recorded from cultured cortical astrocytes prepared from WT rats.

Results: Using spectrophotometry we observed that iron interacts with NE which leads to the formation of a stable complex in the 1:1 stoichiometry. We also found that iron bound to NE completely blocks NE-induced increase of large-conductance calcium sensitive potassium current in astrocytes.

Conclusions: Astrocyte response to NE is modified when this neurotransmitter forms a complex with iron. This implies that NE binding to astrocytic noradrenergic receptors may be prevented by iron. Our findings point toward compromised astrocyte functions related to the potassium buffering when NE action is modified by iron.