

Joint meeting

The 7th International Symposium on Neurocardiology

NEUROCARD 2015

**The 6th International Symposium on
Noninvasive Electrocardiology**

**SCIENTIFIC PROGRAM
&
BOOK OF ABSTRACTS**

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Serbian Autonomic Society, SAS

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International College of Cardiology

Russian Society for Holter Monitoring and Noninvasive Electrophysiology

Russian Society of Cardiologists

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Ukraine Neurocardiological Society

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P3 Daily treadmill running maintains the synthesis of catecholamines on the basal level and decreases oxidative stress in the right and left heart auricles of chronically stressed rats

Gavrilović Lj., Stojiljković V., Dronjak S., Popović N., Pejić S., Todorović A., Pavlović I., Pajović B. S.

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Chronic social isolation is a **psychosocial stress** which has effects on sympathoneural system and is associated with development of many disorders including cardiovascular diseases. It is known that exercise training acts as an important modulator of sympathoneural system.

This study examined the effects of daily exercise on gene expression of tyrosine hydroxylase (TH), dopamine- β -hydroxylase (DBH) and phenyl ethanolamine N-methyltransferase (PNMT), as well as on activity of monoamine oxidase (MAO A and MAO B) in both heart auricles of chronically psychosocially stressed rats. We also investigated gene expression of vesicular monoamine transporter 2 (VMAT2) in stellate ganglia, as well as the concentration of malondialdehyde (MDA) and activity of the antioxidant enzymes catalase (CAT) and glutathione peroxidase (GPx) in both *heart* auricles. We used model of chronic combined social isolation and treadmill running (CSITR). CSITR treatment was achieved by exposing the individually housed rats to the daily treadmill running for a period of 12 weeks.

Exposure of chronically stressed rats to daily exercise maintains protein levels of TH and DBH in basal level, which probably confirms absence of de novo noradrenaline synthesis in both auricles. CSITR increased protein levels of PNMT in the left heart auricle, which confirms conversion of noradrenaline to adrenaline. The increased activities of MAO A and MAO B in the left auricle probably indicate adrenaline degradation. The decreased gene expression of VMAT2 in the right and left stellate ganglia probably confirms absence of impact of sympathoneural system. Decreased concentrations of MDA in the left auricle, and unchanged concentrations of MDA in the right auricle, are followed by decreased activity of CAT and GPx in the left auricle, as well as by unchanged activity of CAT and GPx in the right auricle.

Daily exercise decreases impact of sympathoneural system on both auricles, maintains the synthesis of catecholamines on the basal level and decreases oxidative stress level in the heart auricles of chronically stressed rats.