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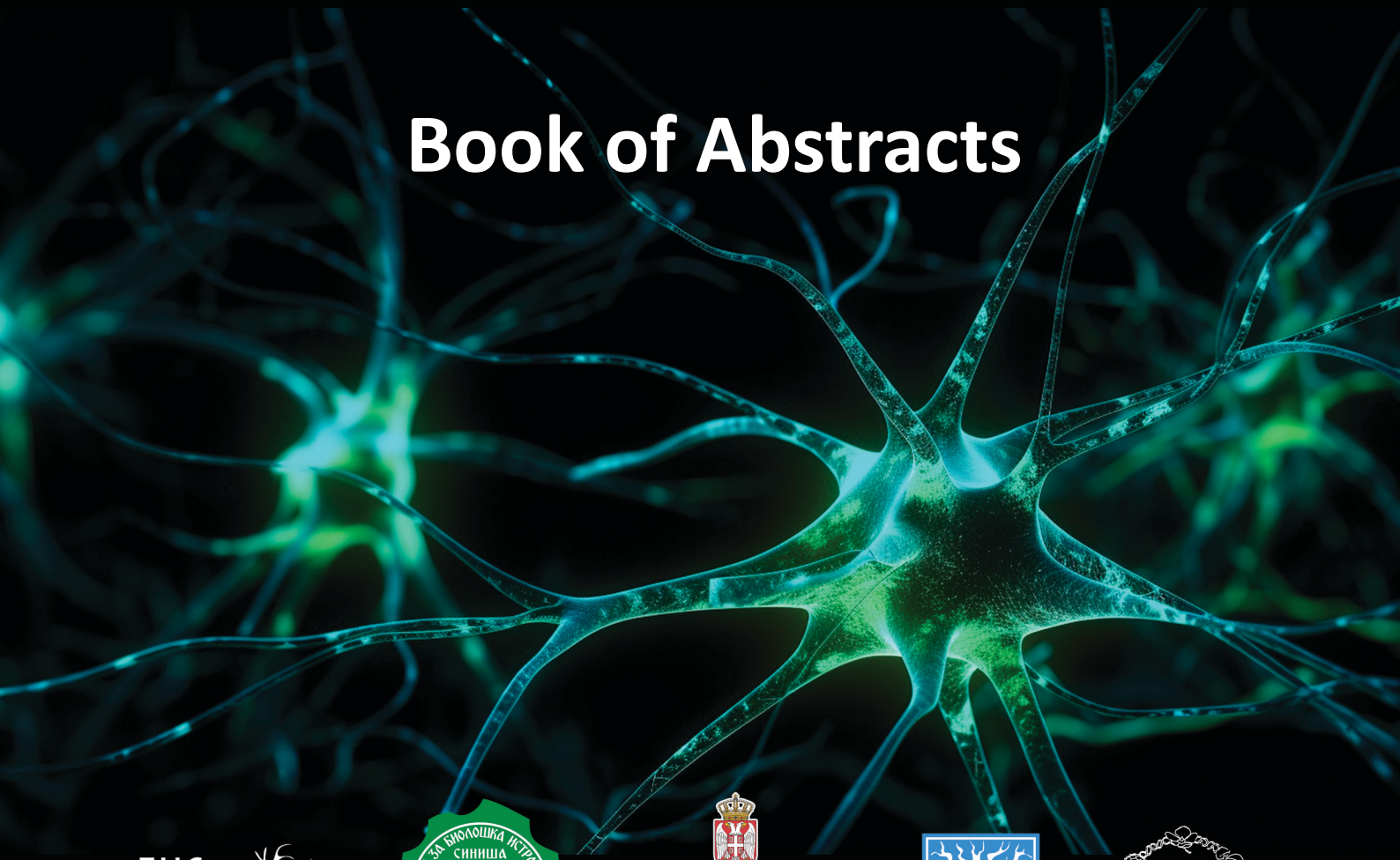

Book of Abstracts

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Prolonged zaleplon treatment enhance GABAergic and glutamatergic signaling in the hippocampus of male Wistar rats

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Zaleplon, a member of Z-drugs, is a pyrazolopyrimidine hypnotic with sedative, anxiolytic, anticonvulsant and muscle relaxant properties. Zaleplon is approved for the short-term management of insomnia since acting as positive γ-aminobutyric acid (GABA) receptor allosteric modulator increases efficacy of inhibition on brain excitability. Importantly, for the proper functioning of the brain a balance between inhibitory (*i.e.,* GABAergic) and excitatory (*i.e.,* glutamatergic) system must be accomplished. This may be fulfilled by control of presynaptic elements (synthesis or degradation of glutamate and GABA neurotransmitters, their compartmentation, releasing and recycling) and regulation of expression and function of glutamate and GABA receptors. Hence, we aimed to investigate effects of prolonged zaleplon treatment on the expression of proteins involved in the gabaergic and glutamatergic signalization in the hippocampus of adult male Wistar rats. Five-day intraperitoneal administration increased level of components of GABAergic signalization (glutamate decarboxylase 67-GAD67, vesicular GABA transporter-VGAT and α1 subunit of GABA receptor-GABAAα1). This was accompanied by increased level of glutamatergic components (vesicular glutamate transporter 1-vGlut1 and subunits of glutamate N-Methyl-d-aspartate receptor-NMDAR, namely NR1, NR2A, NR2B), which clearly indicate maintenance of balance between main inhibitory and excitatory neurotransmitters. Given the importance of equilibrium of these systems for neuronal excitability, synaptic plasticity and cognitive functions, as well as its involvement in the mood, feeding behavior, reproductive functions, pain sensitivity, aging, etc., the current and prospective pharmaceuticals increasingly rely on GABA/glutamate balance.

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