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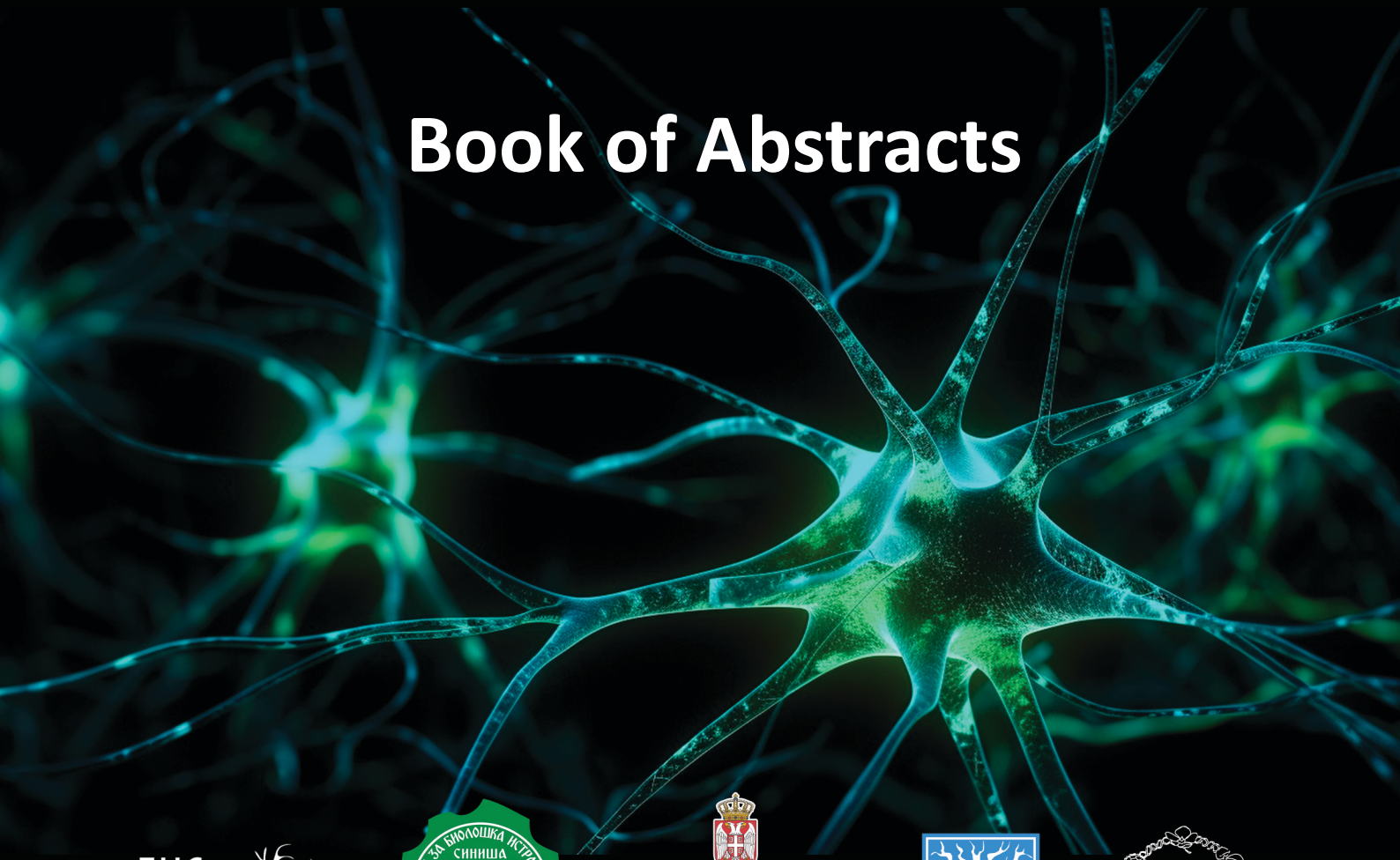

Book of Abstracts

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The effect of different subanesthetic doses of ketamine on BDNF levels in different brain structures in the mouse model of depression

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Major depressive disorder (MDD) affects over 300 million people worldwide. The administration of the sub-anaesthetic dose of ketamine, an NMDAr antagonist, was recently approved as highly effective antidepressant whose therapeutic effects are associated with an increase in BDNF levels in the brain. However, lowering the effective dose of ketamine because of its adverse effects is an important goal. We assessed the changes in BDNF levels after the single administration of two subanesthetic doses of ketamine (6mg/kg, Ket6 and 10mg/kg, Ket10) in the chronic unpredictable stress (CUS) mouse model of depression-like behavior in different brain structures.

Male C57BL/6J mice exposed to CUS were treated at the postnatal day 70 with either vehicle, Ket6, or Ket10. Following tail suspension test (TST), to assess depressive phenotype at 2- and 7-days post-treatment, animals were sacrificed and the prefrontal cortex (PFC), hippocampus, and striatum were isolated and processed for Western blot analyses. Statistical significance was determined by 1-way ANOVA.

Only Ket6 achieved an antidepressant effect that was extinguished at 7 days. Both doses caused a significant increase in BDNF levels in the striatum while neither dose was able to induce BDNF levels in the hippocampus. The increase in BDNF levels in the PFC was observed only 7 days after the treatment and only with Ket10.

The increase in BDNF levels was the greatest in the striatum when it correlated with the antidepressive effects of ketamine. Although this increase was sustained for 7 days it did not correlate with the antidepressive behavior which was already extinguished.

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