

13th INTERNATIONAL
CONGRESS
OF THE SERBIAN SOCIETY
OF TOXICOLOGY



1st TOXSEE
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CONFERENCE

Present and Future of toxicology: Challenges and opportunities



10 - 12 May, 2023 Belgrade

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BOOK

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HRONIČNI EFEKAT ALUMINIJUMA U HRANI NA OSOBINE FITNESA KOD LARVI *LYMANTRIA DISPAR* L. (*EREBIDAE*).

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Aluminijum (Al) je najzastupljeniji metal u Zemljinoj kori. Ovaj metal ima različite primene u mnogim granama industrije, uključujući hranu, medicinu, farmaciju i kozmetiku. Mehanizmi toksičnosti ovog metala još uvek nisu dovoljno razjašnjeni. Do sada su najčešće ispitivani efekti pesticida koji sadrže aluminijum, dok su rezultati koji opisuju dejstvo različitih koncentracija ovog metala na fitofagne insekte retki, posebno u Srbiji. U našem eksperimentu, larve gubara (*Lymantria dispar* L., Erebidae) bile su izložene hroničnom dejstvu aluminijuma (tretman, T) u hrani (T1=50; T2=250, T3=500 i T4=1000 microg/g suve hrane), od izleganja do trećeg dana petog larvenog stupnja (V3). Praćene su osobine fitnesa (relativna brzina rasta - RGR, masa larve (V3) i vreme razvića - DT), kao prvi pokazatelji uticaja aluminijuma na rast i razvoj.

Statistički značajna razlika je otkrivena kod svih osobina fitnesa na T2 i T4. Primećene su značajne razlike: između kontrole - i tretmana (T1 i T2) za masu larve i DT; kontrole - i tretmana (T3 i T4) za RGR i DT; kao i između T1 i T4 za RGR i masu larve. Na tretmanima T1, T2, T3 postoje značajne pozitivne korelacije između mase larvi i RGR, dok na T2, T3 i T4 postoje značajne negativne korelacije između RGR i DT. Promene osobina fitnesa insekata mogu biti prvi signal upozorenja na prisustvo aluminijuma u hrani.

KLJUČNE REČI: aluminijum, hronični efekat, osobine fitnesa, gubar



CHRONIC EFFECT OF DIETARY ALUMINUM ON FITNESS TRAITS IN

LARVAE LYMANTRIA DISPAR L. (EREBIDAE)

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Aluminum (Al) is the most abundant metal in the Earth's crust. It has a variety of applications in many branches of industry, medicine, pharmacy and cosmetics. The mechanisms of toxicity of this metal have not yet been elucidated. So far, the effects of pesticide containing Al have been investigated, while the results describing the effect of different concentrations of this metal on phytophagous insects are rare, especially in Serbia. In our experiment, larvae of gypsy moth (*Lymantria dispar* L., Erebidae) were exposed to a chronic effect of dietary aluminum (treatment, T) (T1=50; T2 =250, T3=500 and T4=1000 microg/g of dry food), from hatching until the third day of the fifth larval stage (V3). Fitness traits (relative growth rate – RGR, larval mass at V3, and development time – DT) were monitored, as the first indicators of aluminum influence on growth and development.

Statistically significant differences were detected in all fitness traits between T2 and T4. In more detail, differences were noticed between: Control – and treatments (T1 and T2) for larval mass and DT; Control – and treatments (T3 and T4) for RGR and DT; as well as between T1 and T4 for RGR and larval mass. On treatments T1, T2, T3, there are significant positive correlations between larval mass and RGR, while on T2, T3 and T4, there are significant negative correlations between RGR and DT. Changes in insect fitness traits can be the first warning signal of the aluminum presence in food.

KEYWORDS: aluminum, chronic effect, fitness traits, gypsy moth