



**20<sup>th</sup>**  
**International Congress of Myriapodology**

**20<sup>th</sup> to 26<sup>th</sup> July 2025**  
**Srebrno Jezero, Serbia**

**Abstract Book**

---

**20<sup>th</sup> International Congress of Myriapodology, Abstract Book**

20<sup>th</sup> to 26<sup>th</sup> July 2025, Srebrno Jezero, Serbia

**Online Edition**

<https://20icm.bio.bg.ac.rs/>

**IMPRESSUM**

**PUBLISHER:**

University of Belgrade – Faculty of Biology

**EDITORS:**

Slobodan Makarov

Dragan Antić

**RECOMMENDED CITATION:**

Book

Makarov, S., & Antić, D. (Eds.). (2025). *20<sup>th</sup> International Congress of Myriapodology. Abstract Book* (164 pp.). University of Belgrade – Faculty of Biology. <https://20icm.bio.bg.ac.rs/>

Abstract

Akkari, N. (2025). Natural history collections and taxonomic research – A tale of timeless synergy and growth. In S. Makarov & D. Antić (Eds.), *20<sup>th</sup> International Congress of Myriapodology. Abstract Book* (p. 41). University of Belgrade – Faculty of Biology. <https://20icm.bio.bg.ac.rs/>

**TECHNICAL EDITOR:**

Nenad Lazarević

**Printing:** University of Belgrade – Faculty of Biology

**Circulation:** 100 copies

All rights reserved

University of Belgrade – Faculty of Biology

Belgrade, 2025

ISBN: 978-86-7078-189-4

DOI:

© Copyright 2025 by University of Belgrade – Faculty of Biology

---

## ORGANISING COMMITTEE

Slobodan MAKAROV, *President*  
Dragan ANTIĆ  
Boris DUDIĆ  
Bojan ILIĆ  
Zvezdana JOVANOVIĆ  
Luka LUČIĆ  
Jelena MILOVANOVIĆ  
Bojan MITIĆ  
Dalibor STOJANOVIĆ  
Mirko ŠEVIĆ  
Vladimir TOMIĆ  
Vukica VUJIĆ  
Nenad LAZAREVIĆ, *Technical Support*

## HONORARY COMMITTEE

Henrik ENGHOF (Denmark)  
Alessandro MINELLI (Italy)

## SCIENTIFIC COMMITTEE

Nesrine AKKARI (Austria)  
Dragan ANTIĆ (Serbia)  
Lucio BONATO (Italy)  
Amazonas CHAGAS-JÚNIOR (Brazil)  
Gregory EDGECOMBE (United Kingdom)  
Luiz Felipe INIESTA (Brazil)  
Zoltán KORSÓS (Hungary)  
Slobodan MAKAROV (Serbia)  
Bojan MITIĆ (Serbia)  
Carsten MÜLLER (Germany)  
Sofija PAVKOVIĆ-LUČIĆ (Serbia)  
Piyatida PIMVICHAI (Thailand)  
Bruce SNYDER (USA)  
Dalibor STOJANOVIĆ (Serbia)  
Thomas WESENER (Germany)

**EXCRETION AS THE MOST IMPORTANT REGULATION MECHANISM IN  
*GLOMERIS HEXASTICHA* BRANDT, 1833 (MYRIAPODA: DIPLOPODA: GLOMERIDA) FED A  
DIET TREATED WITH ZINC OXIDE SOLUTION**

Gordana ANDREJIĆ<sup>1</sup>, Filip ŠILJKOVIĆ<sup>2</sup>, Anđela KOVAČIĆ<sup>2</sup>, Zvezdana JOVANOVIĆ<sup>2</sup>, Jelena MILOVANOVIĆ<sup>2</sup>, Bojan ILIĆ<sup>2</sup>, Luka LUČIĆ<sup>2</sup>, Irena NOVAKOVIĆ<sup>3</sup>, Uroš ALEKSIĆ<sup>1</sup> & Slobodan MAKAROV<sup>2</sup>

<sup>1</sup>University of Belgrade, Institute for the Application of Nuclear Energy INEP, Banatska 31b, 11080 Zemun, Serbia

<sup>2</sup>University of Belgrade – Faculty of Biology, Studentski Trg 16, 11000 Belgrade, Serbia

<sup>3</sup>University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, 11000 Belgrade, Serbia  
zjovanovic@bio.bg.ac.rs

Millipedes (and other terrestrial invertebrates) have several strategies for metal detoxification, including storing metals in specialized tissues, reducing nutrient assimilation and regulating low metal concentrations through excretion. Zinc (Zn, vital element that plays a role in numerous biological processes) is tightly regulated and can be detoxified and eliminated through excretion. As millipedes mostly feed on decaying plant material, they are exposed to metals in soil and metals in their food sources and can be regarded as potential model-organisms in ecotoxicological studies. In this study, we aimed to analyze the Zn detoxification potential of the millipede *Glomeris hexasticha* Brandt, 1833 under laboratory conditions. Adults (30 males and 30 females) were collected in the autumn of 2024 in Hyde Park, Belgrade. Before the start of the experiment, males and females were kept separately in plastic boxes for two weeks on the soil and leaf litter (common oak) from their collection site. Millipedes in the control group (10 males and 10 females) were fed with leaves treated with distilled water, while animals in experimental groups (10 males and 10 females per group) were fed with leaves treated with two concentrations of zinc oxide (ZnO) solution (2 mg/ml, 5 mg/ml; 150 µl of solution per 100 mg of leaves in each group). The experiment lasted 30 days and faecal pellets were collected weekly. The concentrations of Zn in leaves, whole body, and feces, were determined by atomic absorption spectrophotometry (Shimadzu AA 7000). The Zn content analysis was performed in triplicate. The following parameters were measured and calculated: bioaccumulation factor (BAF), transfer to faeces, excretion proportion and relative increase in Zn concentration. Significant differences of Zn concentrations of faecal pellets among treatments were analyzed by Kruskal-Wallis and Mann-Whitney *U*-test using SPSS 30.0.0.0. (Armonk, NY). The values of BAF were the highest in the control group, and then sharply dropped in treatment groups, suggesting that animals accumulated less Zn relative to the high leaf concentrations, possibly due to saturation or regulation. Transfer to faeces is lower in treated groups than in controls for males, but stable for females, suggesting sex-specific excretion patterns. In the control groups, faecal Zn was roughly proportional to whole body Zn, whereas in the treated groups, faecal Zn was significantly higher than whole body Zn, indicating that most of the Zn was excreted. The relative increase in Zn in faeces is much higher than in body, suggesting that millipedes excrete a significant portion

of ingested Zn. For both sexes, the relative increase in Zn of faeces is higher at 5 mg/ml than at 2 mg/ml, indicating a dose-dependent response in which higher Zn exposure leads to greater excretion. Our findings suggest that excretion serves as the primary mechanism for regulating Zn concentration in *G. hexasticha*.

**Keywords:** bioaccumulation factor, detoxification, ecotoxicology, millipedes, trace metal.

---

CIP - Каталогизacija u publikaciji Narodna biblioteka Srbije, Beograd

595.6(048)(0.034.2)

**INTERNATIONAL Congress of Myriapodology (20 ; 2025 ; Beograd)**

Abstract Book [Elektronski izvor] / 20th International Congress of Myriapodology

20th to 26th July 2025, Srebrno Jezero, Serbia ; [editors Slobodan Makarov, Dragan

Antić]. - Beograd : University, Faculty of Biology, 2025 (Beograd : University, Faculty

of Biology). - 1 elektronski optički disk (CD-ROM) ; 12 cm

Sistemske zahteve: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž 100.

ISBN 978-86-7078-189-4

a) Стоноге -- Апстракти

COBISS.SR-ID 172424457