

# Accumulation of Pb, Cd, Zn and Cu in tapeworm tissue imaged by LA-ICP-MS method

Michaela Tvrdoňová<sup>1</sup> / Tomáš Vaculovič<sup>1,2</sup> / Viktor Kanický<sup>1,2</sup>, Zuzana Čadková<sup>3</sup>, Jiřina Száková<sup>4</sup>, Pavel Tlustoš<sup>4</sup>, Vítězslav Otruba<sup>1</sup>

<sup>1</sup>*Department of Chemistry, Faculty of Science, Masaryk University, Kotlářská 2, CZ-61137, Brno, Czech Republic*

<sup>2</sup>*CEITEC, Masaryk University, Kamenice 5, CZ-62500, Brno, Czech Republic*

<sup>3</sup>*Department of Zoology and Fisheries, Faculty of Agrobiological Sciences, Food and Natural Resources, Czech University of Life Sciences, Kamýcká 129, 165 21 Praha, Czech Republic*

<sup>4</sup>*Department of Agroenvironmental Chemistry and Plant Nutrition, Faculty of Agrobiological Sciences, Food and Natural Resources, Czech University of Life Sciences, Kamýcká 129, 165 21 Praha, Czech Republic*

e-mail: [358018@mail.muni.cz](mailto:358018@mail.muni.cz)

## Abstract:

Bioaccumulation of toxic compounds and elements in living organisms is a major ecological risk. Due to anthropogenic overproduction of these compounds, their concentration in air, water and soil is increasing. Some metals are easily transferred from soil to plants and after that to animals. This study focuses on the accumulation of lead (as a typical toxic heavy metal) in tapeworm *Hymenolepis diminuta*, caused by the soil-plant-rat-tapeworm lead transport chain. The method of laser ablation with ICP-MS can determine the amount of the toxic elements (e.g. Pb, Cd) and biologically active elements such as are Cu and Zn in the tapeworm cross-section samples. Moreover, the technique provides the concentration maps (images) with very good spatial resolution (typically 10 - 100  $\mu\text{m}$ ). The results for different body segments of the tapeworm (head, neck, center and the end of the body) are presented and discussed.

## Acknowledgement:

This project was supported by Czech Science Foundation GA13-18154S, by the project "CEITEC - Central European Institute of Technology" (CZ.1.05/1.1.00/02.0068) from European Regional Development Fund and Student Project Grant at MU (specific research, rector's programme) - Category A (MUNI/A/1461/2014).