

SUMMARY OF PhD THESIS

"The study of the mineral composition of selected edible mushrooms species from Amanita (*Amanitaceae*) and Chanterelle (*Cantharellaceae*) family: the environmental and nutritional aspect"

The thesis includes the assessment of the selected elements content in three species of edible mushrooms from Amanita family (*Amanita rubescens*, *Amanita fulva*, *Amanita vaginata*) and Common Chanterelle (*Cantharellus cibarius*) collected from spatially located forest ecosystems in Poland.

The mercury content in the samples of fruiting bodies and soil were determined by the cold vapor atomic absorption spectrometry (CV-AAS), and the other elements (Ag, Al, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Pb, Rb, Sr, and Zn) were analyzed using the technique of optical emission spectrometry with inductively coupled plasma (ICP-OES) and the mass spectrometry with inductively coupled plasma (ICP-MS) with the collision chamber (As, Ag, Ba, Cd, Co, Cu, Cr, Li, Mn, Ni, Pb, Rb, Sr, Tl, V, U and Zn). In addition, the measurement of the radionuclide ^{134}Cs , ^{137}Cs and ^{40}K activity in the fruiting bodies of Common Chanterelle was made using gamma spectrometry with HPGe semiconductor detector.

Data of the mineral composition and fruiting bodies and the soil substrate allowed the estimation of the bioconcentration factor (BCF), enabling the bioconcentration process evaluation of the analyzed elements. In addition, the effect of the place, from where the samples were gathered, on the fruiting bodies mineral content was analyzed.

In the second part of the thesis the effect of the culinary processing on the content of the elements in the fruiting bodies and the determination of minerals bioavailability from culinary processed fruiting bodies of Common Chanterelle using *in vitro* methods UBM (ang. Unified Bioaccessibility Method) were evaluated. The results were used to assess the nutritional value of Common Chanterelle.

Moreover, an assessment of toxicological risk of the studied mushrooms species was made by referring obtained concentrations of cadmium, lead and mercury in the fruiting bodies to the limits prescribed under the provisional tolerable weekly intake (PTWI) for these elements.