

SOME METALLIC ELEMENTS AND ARSENIC IN MEDICINAL *WOLFIPORIA EXTENSA* FROM POLYMETALLIC SOILS

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Introduction

Sclerotia is a dense mass of mycelium developed by some saprophytic fungi, which is located under the ground and is collected in some regions of the World as traditional medicine and ingredient in meals. The province of Yunnan in China is one of the regions in Asia where foraging for sclerotia of *W. extensa* is tradition while cultivation in field condition becomes popular too. The Yunnan land, because of the occurrence of the Circum-Pacific Mercuriferous Belt, is one of a specific regions in the World with polymetallic soils that are enriched in certain metallic elements (Fan, 199). This can have a consequence in elevated or highly elevated content of some of them (e.g. Hg) in fungi foraged in some regions of the Yunnan province (Falandysz et al., 2015). This study is aimed at investigating the occurrence and variability and evaluate data on eighteen trace mineral constituents in sclerotia of *W. extensa* from polymetallic soils of Yunnan.

Methods

Sclerotia of *Wolfiporia extensa* (Peck) Ginns were collected from 19 places across of the Yunnan in 2012. The inner part of the sclerotia which is white in colour and free of skin or pine roots were separated for a study. Further the sclerotia were sliced into small pieces, dried at 105 °C and powdered using porcelain mortar. Then, subsamples of dried and powdered mushrooms were digested in pressurized polytetrafluoroethylene vessels with concentrated nitric acid under pressure into the microwave oven. An elemental analysis of elements was carried out using the ELAN DRC II ICP-MS Inductively Coupled Plasma Mass Spectrometer equipped with a Meinhard concentric nebulizer, cyclonic spray chamber, Pt cones and quadruple mass analyzer and was used for this study. The methods of trace element measurement was validated and controlled by preparation of standard solutions, calibration of instrument and daily run of blank samples and duplicates and replicates with each analytical cycle. All samples were analyzed in batches with certified references material and blanks. The computer software Statistica, version 10.0 (Statsoft Polska, Kraków, Poland), was used for statistical analysis of data.

Results

We examined the correlation matrix obtained from a possible 19 x 18 data matrix. The model could explain up to 85.6% variability in the data matrix by five factors for which an eigenvalue was greater than 1. The first PC (PC1) was under influence by variables associated with positively

correlated As, Co, Cs, Li, U and V. The second PC (PC2) was strongly influenced by positively correlated Ba, Cd, Cr and Sr. The third PC (PC3) was influenced by negatively correlated variables describing Rb and Zn, the fourth (PC4) by positively correlated Cu and Tl, and the fifth (PC5) by negatively correlated for Ni.

Conclusion

The metallic elements such as Co, Cs, Cu, Li, Rb, U, V and Zn could be found in sclerotia but contents are smaller than in wild growing mushrooms. The toxic compounds such as Ag, As, Cd, Pb, Rb and Tl are at very low level in sclerotia and without toxicological significance.

References

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