CHROMIUM ACCUMULATION IN WILD EDIBLE MUSHROOMS: UPTAKE AND TOXICITY

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The environmental pollution has increased notably the interest to the fungi for its accumulation capacity of heavy metals. Chromium can be considered even a trace element, but in excessive dose is a toxic for health. The aim of this work was to provide the accumulation capacity (bioconcentration or bioexclusion) of chromium in fruit bodies of some edible mushrooms, in relation to some factors: substrate (soil acidity and organic matter content), species and ecology (mycorrhizal and saprophyte), and morphological portion (hymenophore and rest of the fruit body), and finally the evaluation of the toxicological risk derivative from its consumption. 167 edible mushroom samples of 22 species and 50 soil growing samples of forest upper soil horizon, from two differentiated zones in reason of greater or smaller pollution in the province of Lugo (Galicia, Spain) were collected. Fungi samples were divided in two anatomical portions, hymenophore and the rest of the fruit body, processed by wet digestion in the acid medium and analyzed its chrome content by ICP-OES. The obtained data were treated statistically through the Program SPSS version 19.0. As result, more accumulator species were: Lycoperdon utriforme (5.76 ppm), Coprinus comatus (5.38 ppm) and Agaricus campestris (5.22 ppm). Cantharellus cibarius (0.726 ppm) and Tricholoma portentosum (0.885 ppm) accumulated chrome in minor quantity. There were not statistically significant differences between chromium levels in hymenophore and in the rest of the fruit bodies but there were for the ecology factor between mycorrhizal and saprophytic species. All mushroom species were bioexclusors of chromium (BCF < 0.5) in relation to the soil growing the mushroom. Organic matter and pH do not show a significant influence on the accumulation of chromium in the studied species. From the toxicological point of view, taking into account the participation of the mushrooms in the human diet, it can be considered that its chrome contribution, it does not suppose risk for the health of the consumer.

Keywords: chromium, mushrooms, bioconcentration factors