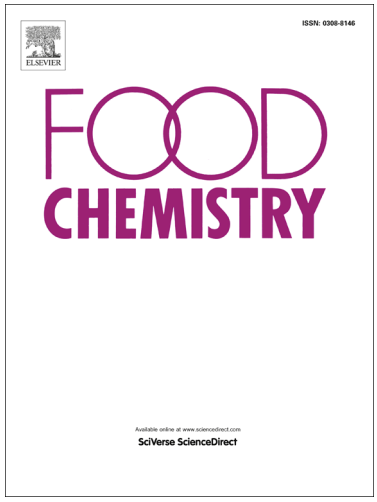

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Arsenic hyperaccumulation and speciation in the edible ink stain bolete (*Cyanoboletus pulverulentus*)

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This paper is dedicated to Tjakko Stijve on the occasion of his 80th birthday.

Abstract

The edible ink stain bolete (*Cyanoboletus pulverulentus*) was found to hyperaccumulate arsenic. We analyzed 39 individual collections determined as *C. pulverulentus*, mostly from the Czech Republic. According to our results, concentrations of arsenic in *C. pulverulentus* fruit-bodies may reach 1,300 mg kg^{-1} dry weight. In most collections, data for total and bioavailable arsenic in underlying soils were collected but no significant correlation between the soil arsenic content and the associated fruit-bodies was found. Within the fruit-bodies, we found the majority of arsenic is accumulated in the hymenium. Besides occasional traces of methylarsonic acid (MA), the arsenic speciation in all mushroom samples consisted solely of dimethylarsinic acid (DMA) and no inorganic arsenic was detected. Because of the carcinogenic potential of DMA, *C. pulverulentus* should not be recommended as an edible mushroom and its consumption should be restricted.

Keywords: Edible mushrooms, Dimethylarsinic acid, Soil, Health risk, HPLC-ICPMS