Contaminants occurrence in the main allochthonous invasive species (*Silurus glanis*): an alert from Northern Italian freshwaters

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Abstract

The European catfish (*Silurus glanis*, Linnaeus 1758) is a native specie to Eastern Europe and Western Asia. It is a top food-chain predator, and then can well reflect freshwaters environmental contamination. In Italy this alien species has received an increasing interest also for commercial purposes, as it is the case for the Eastern European market, where its flesh is greatly appreciated. A monitoring was carried out from 2007 to 2015 in northern Italian freshwaters; European catfish (n. 119) were captured using electro-fishing boat. Samples size ranged from 60 to 120 cm, with weight ranging from 1.5 to 10.5 Kg. The aims of this study were: 1) to investigate heavy metals contamination (Hg, Cd, As and Cr) in order to verify if metals levels exceed the maximum levels (MLs) established by the European Regulations (1881/2006 UE and 629/2008 UE, setting the MLs for Hg, Pb, Cd in fish muscle); 2) to characterize the human exposure to polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs), polychlorobiphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) contamination associated with *S. glanis* consumption, analyzing samples collected from Po river basin (PAH) and from Varese Lake (PCDD/Fs, DL PCBs, NDL PCBs). The ML of 0.5 mg $Kg^{-1}$for Hg was exceeded in 18% of samples, while Pb and Cd were always lower than the MLs. As and Cr concentrations in *Silurus glanis* flesh were comparable to published data (Mendil and Uluzlu, 2007; Matasin *et al*., 2011). All samples presented detectable levels of PCDD/Fs, PCBs, PAHs; in particular the levels of DL-PCBs and benz[a]pyrene could constitute a health concern, especially to individuals whose diet consist of a high percentage of this fish. Our results wish to contribute to investigating the potential risk related to the frequent consumption of European catfish, implementing the knowledge about the pollution status of a nonnative species that is rapidly spreading in European rivers and lake.

Keywords: environmental contaminants, European catfish, heavy metals, PAHs, PCDD/Fs, PCBs, Po basin