

## Kandungan logam berat (Cd, Hg, dan Pb) pada ikan sapu-sapu, *Pterygoplichthys pardalis* (Castelnau, 1855) di Sungai Ciliwung

[Concentration of heavy metals (Cd, Hg, and Pb) of amazon sailfin catfish, *Pterygoplichthys pardalis* (Castelnau, 1855) in Ciliwung River West Java]

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### Abstrak

Ikan sapu-sapu (Loricariidae) melimpah di Sungai Ciliwung dan dimanfaatkan sebagai salah satu sumber protein hewani. Kondisi perairan Sungai Ciliwung ditengarai tercemar logam berat dan jika dikonsumsi ikan sapu-sapu dari sungai ini akan beresiko bagi kesehatan. Penelitian ini bertujuan untuk menganalisis konsentrasi logam berat (Cd, Hg, dan Pb) pada beberapa organ ikan sapu-sapu dari Sungai Ciliwung. Sampel ikan dan air sungai diambil pada musim penghujan dan kemarau di tiga lokasi sepanjang Sungai Ciliwung, yaitu Bogor (hulu), Depok (tengah), dan Jakarta (hilir). Konsentrasi logam berat diukur menggunakan spektrofotometer serapan atom (SSA), dianalisis menggunakan uji ANOVA dan dilanjutkan dengan uji *Tuckey* dengan bantuan program R.i7386 3.0.0. Rata-rata konsentrasi Cd pada insang, hati, dan otot ikan berturut-turut 0,000146  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0,000828  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0,000075  $\mu\text{g}\cdot\text{g}^{-1}$ . Rata-rata konsentrasi Hg pada insang, hati, dan otot ikan berturut-turut 0,002826  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0,004333  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0,003960  $\mu\text{g}\cdot\text{g}^{-1}$ . Rata-rata konsentrasi Pb pada insang, hati, dan otot ikan berturut-turut 0,002571  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0,005467  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0,001609  $\mu\text{g}\cdot\text{g}^{-1}$ . Konsentrasi ketiga logam berat pada organ ikan maupun air sungai berada di bawah nilai ambang batas menurut Standar Nasional Indonesia, FAO, maupun Peraturan Pemerintah Republik Indonesia. Uji ANOVA menunjukkan bahwa konsentrasi logam berat pada organ tubuh ikan berdasarkan lokasi dan musim tidak berbeda nyata, namun konsentrasi logam berat antar organ target dan jenis logam berbeda nyata. Perlu kehati-hatian dalam mengkonsumsi ikan sapu-sapu dari Sungai Ciliwung karena beberapa logam berat telah terdeteksi pada organ ikan tersebut.

Kata penting: Cd, Hg, Pb, *P. pardalis*, Sungai Ciliwung

### Abstract

Amazon armored catfish (Loricariidae) *Pterygoplichthys pardalis* is abundant in the Ciliwung River and consumed by local people. The present status of the Ciliwung River is polluted by heavy metals and fishes from this river may have the potential hazardous effect on human health. The aim of this study was to analyze the concentration of heavy metals (Cd, Hg, and Pb) in Amazon armored catfish organs from the Ciliwung River. Fish collection and water sampling were conducted in the rainy and dry seasons in three parts of the Ciliwung River, i.e. Bogor (upstream), Depok (middle), and Jakarta (downstream). Heavy metal concentrations were measured by atomic absorption spectrophotometer (AAS). One-way analysis of variance (ANOVA) and Tuckey's test using R.i386 3.0.0 were performed to access whether heavy metal concentrations varied significantly between location, season, organ and heavy metal. The average of Cd concentrations in the gills, liver, and muscle were 0.000146  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0.000828  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0.000075  $\mu\text{g}\cdot\text{g}^{-1}$ , respectively. The average of Hg concentrations in the gills, liver, and muscle were 0.002826  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0.004333  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0.003960  $\mu\text{g}\cdot\text{g}^{-1}$  respectively. The average of Pb concentrations in the gills, liver, and muscle were 0.002571  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0.005467  $\mu\text{g}\cdot\text{g}^{-1}$ ; 0.001609  $\mu\text{g}\cdot\text{g}^{-1}$  respectively. The concentration of heavy metals in fish organs were below the permissible limits of the environmental standard of Indonesia and FAO. Heavy metal concentrations in the water were below the baseline of the Indonesia Government Regulation. ANOVA clearly revealed that there was no significant variation of the heavy metal concentrations among the sites and seasons, however the significant difference was found among the organs and type of heavy metal. Local people should be aware because some heavy metals have the tendency to accumulate in various organs of Amazon armored catfish in the Ciliwung River.

Keywords: Cd, Hg, Pb, *P. pardalis*, Ciliwung River

### Pendahuluan

*Pterygoplichthys pardalis* dikenal dengan nama ikan sapu-sapu, merupakan salah satu spe-

sies Loricariidae berasal dari Amerika Selatan dan Amerika Tengah (Armbruster 2004). Ikan ini memiliki karakteristik bentuk tubuh pipih dorso-ventral tertutup oleh kulit keras (Kottelat *et al.*

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