

Behavioral response of daphnia magna (Crustacea, Cladocera) to low concentration of microcystin

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Abstract

© SGEM2014 All Rights Reserved. In this paper, the effect of low concentration ($0.15 \mu\text{g L}^{-1}$) of cyanobacterial toxin – microcystin-LR on *Daphnia magna* laboratory clones was investigated. Swimming activity (median swimming speed) and spatial distribution of the daphnids were determined and analyzed in real time by the authors developed a hardware-software system “TrackTox”. The system performs the identification and tracking of the test organisms using computer vision algorithms. The behavioral response of the daphnids was studied under normal conditions and after application of microcystin-LR. In both cases exposure time was 30 minutes, the data were counted 5 times s^{-1} . It is shown that the addition of microcystin significantly increased median swimming speed of the *Daphnia magna* ($P=0.01$). After the behavior experiments observation of the survival of daphnids in the same solutions was conducted. Daphnids mortality after 48 hours exposure to the $0.15 \mu\text{g L}^{-1}$ concentration of microcystin-LR is not registered.

Keywords

Behavioral response, Computer vision, *Daphnia magna*, Microcystin-LR, Toxicity