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Ecotoxicity effects of 3-chloromethcathinone (3-CMC) on the swimming behaviour of *Daphnia magna*: preliminary data

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Abstract

Background: The continuous release of various compounds can have potentially harmful effects on non-target organisms, raising concerns about the ecosystem and human health (1,2). 3-chloromethcathinone (3-CMC) is a chiral synthetic cathinone, classified as a new psychoactive substance (NPS) with similar effects to amphetamines and posing potential toxicological risks (3). After consumption, 3-CMC and its metabolites are excreted in urine and reach surface water via sewage, due to inefficient removal in wastewater treatment plants. (4). **Objectives:** This study aimed to evaluate the ecotoxicity of racemate 3-CMC on the swimming behaviour parameters using the freshwater microcrustacean, *Daphnia magna*, as an aquatic model. **Methods:** Neonates were used in a total of 20 daphnids per replicate, in a total of 5 replicates per group. The organisms were exposed to 260, 325 and 520 µg/L nominal sublethal concentrations of racemate 3-CMC for 9 days based on a previous 48 h immobilization assay. Daphniids were kept in moderately hard reconstituted water (MHRW) at 20 °C ± 2 °C, with a cycle of 16:8 h (light/dark) and fed every 48 h with *Raphidocelis subcapitata* suspension. Swimming behaviour was evaluated considering swimming speed, active time and total distance travelled. **Results:** No significant differences were observed in both active time and swimming speed. However, a significant decrease was observed in the total distance travelled at the highest concentration (520 µg/L). **Conclusions:** These results suggest that 3-CMC has a limited impact in the swimming behaviour of *D. magna*. However, additional physiological parameters are under evaluation to better understand the global effects of this environmental contaminant.

Keywords: environmental contaminants; synthetic cathinone; environmental risk assessment

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