Impacts of Ketamine Exposure on the Growth of C. Virginica Larvae

Gustavo Salcedo and Sheree Pagsuyoin

Ketamine, an anesthetic, is widespread in aquatic ecosystems due to their high use and continuous discharge from wastewater treatment facilities. The impacts of this psychoactive compound on aquatic organisms are largely unknown. In this study we examined the exposure effects of ketamine on the growth and development of C. virginica during the larval stage. Three-day old larvae from a local hatchery were exposed for 2 weeks to environmental concentrations of ketamine spiked in artificial marine water (100 ng/L and 1,000 ng/L) to determine effects on macro-physiological characteristics (survival, size, mobility). Results show decreased survival after 2 weeks of exposure to low (55%, $p<0.009$) and high (33% ($p<0.019$) ketamine concentrations compared to control. Size decreased by 30% ($p< 0.000$) and 44% ($p< 0.000$), respectively. The average velocity of the larvae decreased compared to control (by 68% in 100 ng/L, and 71% in 1000 ng /L). There was also a notable change in movement patterns from linear (control) to motionless (exposed). Our findings suggest a need for further studies on the possible adverse effects of ketamine on aquatic organisms given its pseudo-persistence in streams, and possible compounding effects with other pollutants including other psychoactive drug residues.

Presenting Author: Gustavo Salcedo