

Improvement of a flow-through type chamber for an aquatic bio-monitoring system using adhesiveness to substratum of heliozoon cells

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SUMMARY

Our research group previously reported a novel bio-monitoring system for aquatic hazards that uses adhesiveness of the heliozoon, *Raphidiophrys contractilis*, to the substratum. This system uses a flow-through type chamber in which cells damaged by harmful materials are flushed away by the water current, while cells retained in the chamber are continuously monitored with a digital camera. In this study, we improved the flow-through chamber to optimize substrate-dependent adhesiveness of *R. contractilis*. The improved chamber was characterized by a small volume (0.45 ml) and an exchangeable coverslip bottom. *R. contractilis* was more adherent to the glass coverslip than the plastic one, indicating that the substrate material influences sensitivity of the monitoring system. In the presence of potassium cyanide as a toxicant, the number of cells retained on the glass coverslip decreased in a concentration-dependent manner. These results show that the improved chamber is efficient enough to be of practical use in our monitoring system. Further studies are needed to examine the response of *R. contractilis* to various toxic substances.