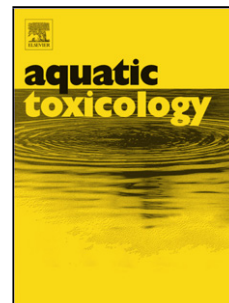


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Authors: Adam M. Simpson, Punidan D. Jeyasingh, Jason B. Belden



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Assessment of biochemical mechanisms of tolerance to chlorpyrifos in ancient and contemporary
Daphnia pulicaria genotypes

*Adam M. Simpson^{a,b}, Punidan D. Jeyasingh^a, and Jason B. Belden^a

Affiliations: ^a Oklahoma State University, Stillwater, OK 74078

^b Penn State Erie, The Behrend College, Erie, PA 16563

*Corresponding Author – ams1122@psu.edu

Present Address: 4701 College Drive, PSU Behrend, Erie, PA 16563

Highlights

- A “resurrected” population of *Daphnia pulicaria* is examined.
- The mechanisms of tolerance to chlorpyrifos are evaluated using biochemical assays.
- Phase I biotransformation is largely responsible for the variation in sensitivity.
- Resurrection ecology is useful for examining microevolutionary shifts in physiology.

ABSTRACT

The evolution of tolerance to environmental contaminants in non-target taxa has been largely studied by comparing extant populations experiencing contrasting exposure. Previous research has demonstrated that “resurrected” genotypes from a population of *Daphnia pulicaria* express temporal variation in sensitivity to the insecticide chlorpyrifos. Ancient genotypes (1301-1646 A.D.) were on average more sensitive to this chemical compared to the contemporary genotypes (1967-1977 A.D.). To determine the physiological mechanisms of tolerance, a series of biochemical assays was performed on three ancient and three contemporary genotypes; these six genotypes exhibited the most sensitive and most tolerant phenotypes within the population,

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