

ABSTRACT

THESIS: Multi-stressor effects of endocrine disrupting compounds on *Physa acuta*

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Endocrine disrupting compounds (EDCs) are ubiquitous in freshwater ecosystems due to point and non-point pollution. In freshwater ecosystems, these compounds occur as contaminant mixtures. Although concentrations measured (ng/L) are generally below expected levels for acute effects, the potential for adverse effects associated with chronic exposure are not well understood. Further, organismal response to multiple contaminants simultaneously has not been explored. This research quantified chronic effects of multiple EDCs on the freshwater snail *Physa acuta* over 24 days of exposure to assess how the number of contaminants may influence survival, growth, reproduction, movement, and shell strength. Overall, *P. acuta* responses to EDC mixtures were different than responses to single EDC exposure. Specifically, *P. acuta* exposed to five EDCs had lower survival than *P. acuta* exposed to fewer EDCs. Fecundity of *P. acuta* exposed to an EDC mixture was lower than fecundity of *P. acuta* exposed to single EDCs. These data highlight the importance of contaminant interactions on aquatic organisms and suggest the potential for adverse effects cannot be assessed using individual contaminant responses. Since human pharmaceutical use is expected to continue to increase, it is important to understand how EDCs may affect freshwater ecosystems.