

B411 The Effect of Osmotic Stress as an Toxicity Modifying
Factor on Euryhaline Arthropods

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Euryhaline species are more tolerant of various insecticides in iso-osmotic conditions. Two euryhaline species, *Aedes taeniorhynchus* and *Artemia* sp., were exposed to four insecticides, at two salinities, iso- and hyper-osmotic conditions. Mortality at these two osmotic conditions was observed and compared to evaluate salinity as a contributing factor to insecticide toxicity. In general, *Artemia* was more tolerant of all chemicals tested than *A. taeniorhynchus* under isosmotic conditions based on the percent mortality observed. The mortality of *Artemia* at isosmotic conditions was dependent on the length of the exposure time, but *A. taeniorhynchus* did not show time dependence. Less mortality was observed in populations of both test species at isosmotic conditions, compared to hyperosmotic conditions. *Aedes taeniorhynchus* generally showed a greater variation in tolerance to test chemicals between iso- and hyper-osmotic conditions than *Artemia*. This result indicates that higher salinity is a greater stress on *A. taeniorhynchus* than *Artemia* when they are exposed to the test insecticides at the concentration ranges tested in this study.

B412 The Influence of Fluctuating Salinity on Insecticide Tolerance
of Two Euryhaline Arthropods

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We have developed a flow-through system that enables us to expose test species to continuously changing salinity conditions. This system allowed us to obtain an insight into how susceptibility of a species to an insecticide can be affected by changing patterns of salinity. Toxicity tests using this system were conducted with two saline water species, *Aedes taeniorhynchus* (Wiedemann) (salt marsh mosquito) and *Artemia* (brine shrimp). Four insecticides, aldicarb, dimethoate, imidacloprid and tebufenozide, were studied. Mortality of both species was greater at increasing salinity (10 to 200% Artificial Sea Water, ASW) than at decreasing salinity (200 to 10% ASW). *A. taeniorhynchus* was more susceptible than *Artemia* at its LC50 concentrations with changing salinity based on mortality. Our results indicated that the change in salinity and its direction altered the susceptibility of organisms. This study clearly confirms that salinity change and its direction of change aggravate the stress on an organism experiencing exposure to toxic insecticides, so lowering the limit of insecticide tolerance of test species.