

## Studies on the Conjugative Effects of Pesticides and Salinity on Brackish Water Zooplankton

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### Summary

Neonicotinoid pesticides are widely used around the world, but have been shown to affect non-target organisms. After being applied to rice fields, these pesticides can run off into rivers and eventually reach estuaries. However, although many studies to date have focused on freshwater organisms, few studies have examined the effects of pesticides on organisms in brackish water. In brackish ecosystems, zooplankton consume primary producers and serve as food for fish, thereby supporting the ecosystem. Therefore, we experimentally investigated the effects of salinity and imidacloprid, the most common neonicotinoid, on *Sinocalanus tenellus*, a common copepod zooplankton in brackish water. The results showed that both imidacloprid exposure and salinity changes significantly reduced the survival of *S. tenellus*. However, the effect of salinity changes was much greater than that of imidacloprid exposure. In fact, the survival rate of *S. tenellus* was only slightly altered at the concentration of imidacloprid found in nature at any salinities. These results do not support a previous study that highlighted the adverse effects of imidacloprid in brackish ecosystems. Rather, the present study suggests that changes in salinity are a much more important factor causing changes in brackish water ecosystems. Note that this study only evaluated the effects of imidacloprid at short-term exposures. Therefore, it will be necessary in the future to test whether zooplankton species such as *S. tenellus* are indeed less susceptible to imidacloprid when exposed for longer periods of time.