



AP-12: Ecotoxicological Impacts of Glyphosate on the *Palaemon Adspersus* Shrimp: Comprehensive Analysis of Effects and Risks

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Subject description: Glyphosate (GLY) [N-(phosphonomethyl) glycine] is one of the world's most widely used agricultural herbicides with the risk of aquatic contamination. In this study, the acute toxicity of Gly in shrimp *Palaemon adspersus* (Decapoda, Palaemonidae) was assessed by estimating sublethal (LC₁₀, LC₂₅) and lethal (LC₅₀, LC₉₀) concentrations after 96-h exposure.

Objectives: In this study, the acute toxicity of Gly in shrimp *Palaemon adspersus* (Decapoda, Palaemonidae) was assessed by estimating sublethal (LC₁₀, LC₂₅) and lethal (LC₅₀, LC₉₀) concentrations after 96-h exposure.

Methods: The compound was added to the rearing water at LC₂₅ and LC₅₀-96h (as determined previously), and treatments were performed during the exposure phase (24, 48, 72 and 96-h) after which the shrimp were transferred to clean seawater and collected after the recovery period (24, 48, 72 and 96-h). Enzymatic activities were measured in shrimp heads and flesh fragments to quantify AChE, GST, and MDA activity, followed by lipid quantification.

Results and discussion: Overall, the toxicity tests showed significant variation ($p < 0.05$) in *P. adspersus* mortality rates, with a dose-response effect. The LC₁₀, LC₂₅, LC₅₀, and LC₉₀ after 96-h of exposure. During the exposure phase, two-way ANOVA revealed significant effects of Gly concentration and exposure time on all studied biomarkers.

Conclusion: It presented oxidative stress and neurotoxic effects at sublethal concentrations. This suggests that they should be carefully controlled to minimise negative impacts on non-target aquatic organisms.

Keywords: Herbicide, Glyphosate, Shrimp, Toxicity tests, Biomarker.