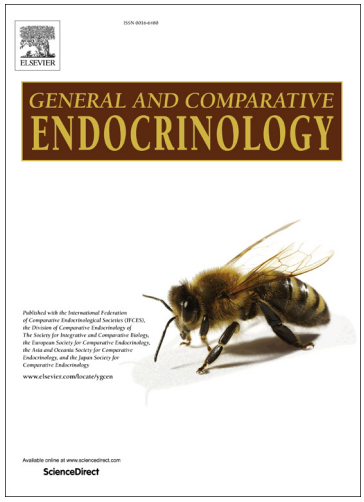

Effects of transportation, transport medium and re-housing on *Xenopus laevis* (Daudin)

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Abstract

Understanding the immediate and longer-term effects of transportation and re-housing in a laboratory species is crucial in order to refine the transfer process, enable the optimal introduction of new animals to a novel environment and to provide a sufficient acclimatisation period before usage. Whilst consideration of animal welfare in most model vertebrate species has received attention, little quantitative evidence exists for the optimal care of the common laboratory amphibian *Xenopus laevis*. Techniques for the non-invasive welfare assessment of amphibians are also limited and here a non-invasive physiological assay was developed to investigate the impacts of transportation, transport medium and re-housing on *X. laevis*. First the impacts of transportation and transport medium (water, damp sponge or damp sphagnum moss) were investigated. Transportation caused an increase in water-borne corticosterone regardless of transport medium. Frogs transported in damp sphagnum moss also had a greater decrease in body mass in comparison to frogs not transported, suggesting that this is the least suitable transport medium for *X. laevis*. Next the prolonged impacts of transportation and re-housing were investigated. Frogs were transported between research facilities with different housing protocols. Samples were collected prior to and immediately following transportation, as well as 1 day, 7 days and 35 days after re-housing. Water-borne corticosterone increased following transportation and remained high for at least 7 days, decreasing to baseline levels by 35 days. Body mass decreased following transportation and remained lower than baseline levels across the entire 35 day observation period. These findings suggest the process of transportation and re-housing is stressful in this species. Together these findings have important relevance for both improving animal welfare and ensuring optimal and efficient scientific research.