

INTERACTIVE EFFECTS OF MICROPLASTIC CONTAMINATION AND  
TEMPERATURE STRESS ON BODY CONDITION AND THERMAL  
PHYSIOLOGY OF *Physalaemus Gracilis* TADPOLES

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**INTRODUCTION:** Microplastics (MPs) pollution has become a major concern for freshwater ecosystems due to its ubiquitous presence, high resistance and persistence in aquatic environment, and increasing global contamination trend. Simultaneously, extreme temperature events driven by climate change pose an additional threat to aquatic life. Amphibians serve as valuable bioindicators of environmental health due to their ectothermic physiology, permeable skin, aquatic larval stage, and essential ecological role in food web dynamics. **OBJECTIVE:** This study aims to evaluate the interactive effects of MPs exposure and temperature stress on morphological parameters and thermal physiology of *Physalaemus gracilis* tadpoles. **MATERIAL AND METHODS:** Tadpoles at Gosner stage 25 were randomly assigned to two temperature groups (18°C and 30°C), each divided into three subgroups (control, cellulose [60mg/L], and polyethylene microplastics [60mg/L]), and an additional control group maintained at the acclimation temperature (22°C). The experiment lasted seven days, with 30 animals per subgroup, 90 per temperature condition, and 210 in total (CEUA-UFRGS #46030). Critical thermal maximum (CT<sub>max</sub>) and minimum (CT<sub>min</sub>) assays were conducted at the end of exposure, followed by measurements of individual mass, total length (CRC) for scaled mass index (SMI) estimation, and Gosner stage identification. Additionally, five animals per treatment were analyzed and photographed using stereomicroscopy. **RESULTS AND CONCLUSION:** Optical microscopy confirmed the presence of white, uniform microparticles in the intestinal loops of MPs-exposed tadpoles, indicating ingestion and retention in the gastrointestinal tract. Total body mass, CRC, SMI and Gosner stage varied significantly with exposure type. Both cellulose and MPs exposure resulted in consistently lower values for all morphological parameters analyzed and development (Gosner) stage when compared to control groups. The control acclimation group showed higher body mass, CRC, SMI and Gosner stage than the 18°C e 30°C groups (control, cellulose, and MPs). Tadpoles at 30°C also exhibited significantly higher values of body condition than those at 18°C. While CT<sub>max</sub> remained unchanged across experimental groups, CT<sub>min</sub> increased in tadpoles maintained in 30°C. These findings highlight the significant impact of temperature and microplastic contamination on body condition, development and thermal physiology in *P. gracilis*, reinforcing amphibians' vulnerability to pollution, climate change, and their combined stressors.

Key-words: Ecotoxicology; Amphibians; Microplastics; Temperature stress.

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