ARE BIOINSECTICIDES IN WATER SAFE FOR AMPHIBIANS? A CASE STUDY WITH VECTOBAC AND EMBRYOS OF *PHYSALAEMUS GRACILIS*

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INTRODUCTION: Synthetic insecticides are widely used in conventional agriculture worldwide, but concerns persist regarding their environmental and human health impacts. Bioinsecticides have emerged as a sustainable alternative to synthetic pesticides, with products based on *Bacillus thuringiensis*, a bacterial-derived microbial insecticide, being the most widely recognized and utilized globally. VectoBac 12AS is recommended for controlling mosquito and blackfly larvae and is applied directly to water. Anuran amphibians are considered excellent bioindicators of environmental degradation due to their high sensitivity. OBJECTIVE: To evaluate the toxicity of VectoBac 12AS on *Physalaemus gracilis* tadpoles. METHODOLOGY: *P. gracilis* spawns were collected from a lake at UFFS, and after screening for fertilized eggs, embryos were exposed for seven days to five concentrations of the bioinsecticide: 1.5, 2.5, 5, 10, and 15 µg/L. The assay used 20 embryos (developmental stage 18-21) per replicate, in quintuplicate, for each tested concentration. Survival was assessed daily, and on the third day, heart rate was measured for 60 seconds in 10 embryos from each concentration. RESULTS: The survival of *P. gracilis* decreased significantly at VectoBac 12AS concentrations of 1.5, 10, and 15 µg/L ($F(6, 42) = 37.88$, $p < 0.0001$). Heart rate was reduced in organisms exposed to concentrations of 1.5, 5, and 15 µg/L ($F(6, 59) = 11.33$, $p < 0.0001$). CONCLUSION: The bioinsecticide induced adverse effects even at the lowest tested concentration, posing a threat to the survival of this aquatic larval stage of *P. gracilis*, which could lead to population declines. Additionally, exposure caused toxic effects on cardiac function, potentially impairing survival and species perpetuation. The use of water-applied bioinsecticides requires toxicological assessments on non-target organisms, such as amphibians, to ensure ecologically safer applications.

Keywords: biopesticide; tadpoles; ecotoxicology.