

Influence of the combination of stress factors on immune functions in *Caiman latirostris* (Preliminary Results)

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Abstract: Exposure to factors like pathogens, toxic substances, food restriction, climatic events factors such as extreme temperatures, drought, etc. are some of the stressful situations that *Caiman latirostris* populations could face. In this context, the ability to mount an effective immune response, as well as its regulation after exposure to any of these stressful situations, are very important in the life history of these organisms. Previous studies have indicated that artificial constant high temperatures appeared to be beneficial, individuals exposed to heat treatment ($37 \pm 1^\circ\text{C}$) grew more, showed better body condition, and higher levels of natural antibodies. However, stress factors in the wild are not found alone. In the present study, we evaluated the effect of 8-weeks exposure to treatments of combinations of potentials environmental factors (food restriction + high temperature: FT, glyphosate + high temperature: GT, and control) and then they were challenged with bacterial (B) or saline solution (SF). Growth (weight, TL and SVL), immunological investment (white blood cells counts, natural antibody levels, complement system activity) and corticosterone levels of juveniles *C. latirostris* (10-month-old) were measured. FT treatment showed the lower growth and corticosterone levels related to caimans of GT+B and control groups, whereas those caimans exposed to GT+B had higher lymphocyte and eosinophil counts than control. Additionally, animals exposed to GT+B had higher activity of the complement system than control. In this study, we also identified and calculated certain broad-snouted caiman immune-related genes expression (TNF- α and IL-6) and they have depicted different patterns during B infection in both treatments. Our results suggest that *C. latirostris* juveniles are able to tolerate combined environmental factors without compromise immune system activity.

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