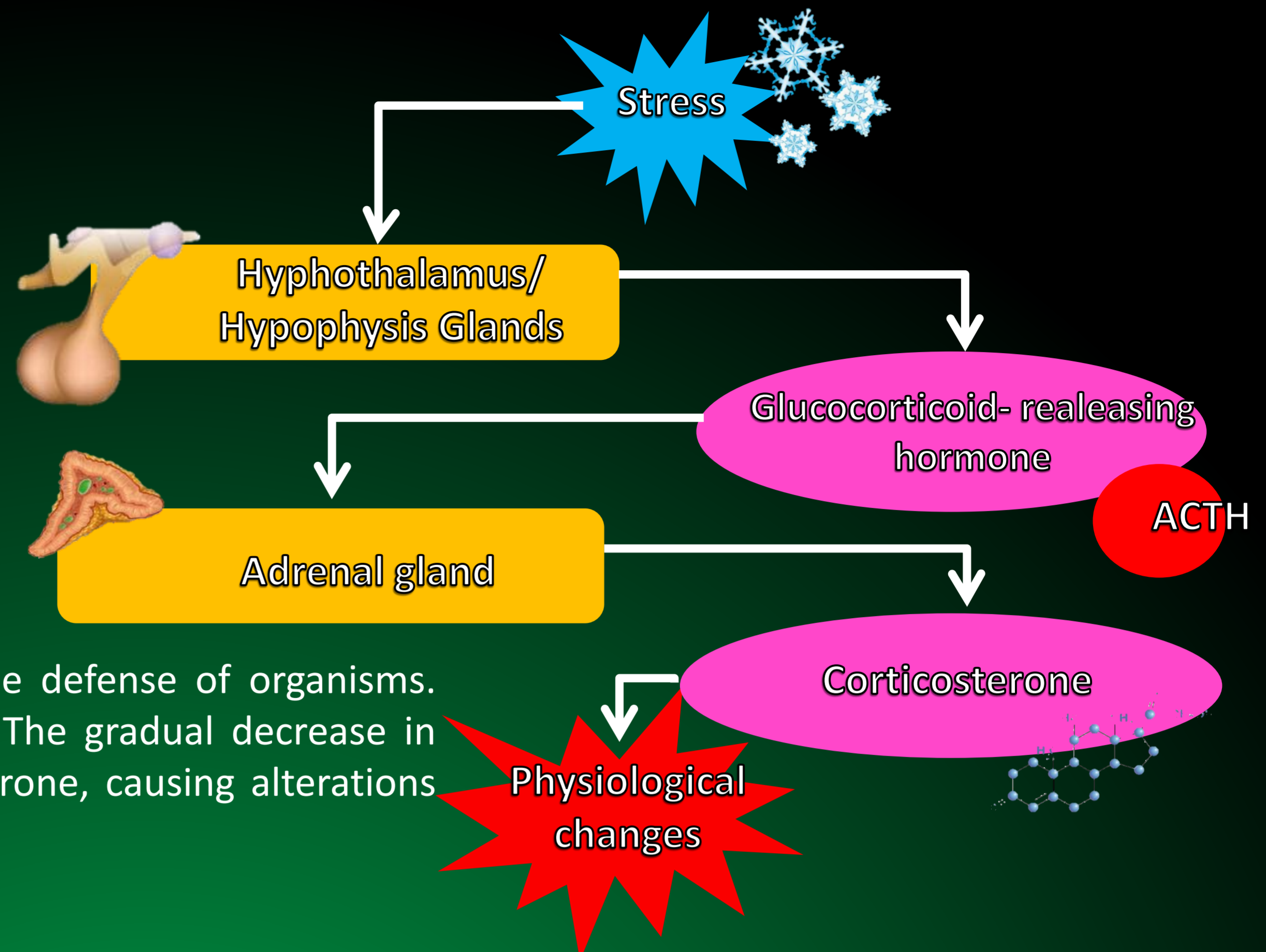


Corticosterone concentration at different temperatures and its consequences on *Caiman latirostris* immune system

Introduction

Changes in ambient temperature constitute a decisive factor that may compromise survival in reptiles. To deal with these changes, many species modify their physiological processes. One mechanism that controls these changes is the secretion of corticosterone by the pituitary gland, which plays an important role in maintaining homeostasis during stressful situations. Previous studies reported that corticosterone changes are related to changes in the immune system. Therefore, if we consider low temperatures as a stressor, these could modify corticosterone secretion and even modify the mechanisms responsible for the defense of organisms. Consequently, we propose the following hypothesis: The gradual decrease in temperature modifies the concentration of corticosterone, causing alterations in the immunological parameters in *Caiman latirostris*.



Materials and methods

Six hatchlings and six juveniles of *C. latirostris* were exposed consecutively to 4 different temperatures: 24°C, 17°C, 10°C and 4°C for a period of 24 hours each treatment. After 24-hour of exposure, blood samples were taken from each individual measuring corticosterone concentration, total and differential white blood cell count, natural antibody titers and complement system activity from the samples. Due to the lack of data normality, information were analyzed by Friedman test to evaluate the effect of temperatures in hatchlings and juveniles of *C. latirostris*.

Results

Corticosterone: Corticosterone concentration showed significant variation for both juveniles ($P=0.0016$) and hatchlings ($P=0.0021$). It increased in temperature by 10°C in juveniles and fluctuated between 17°C, 10°C and 4°C in hatchlings.

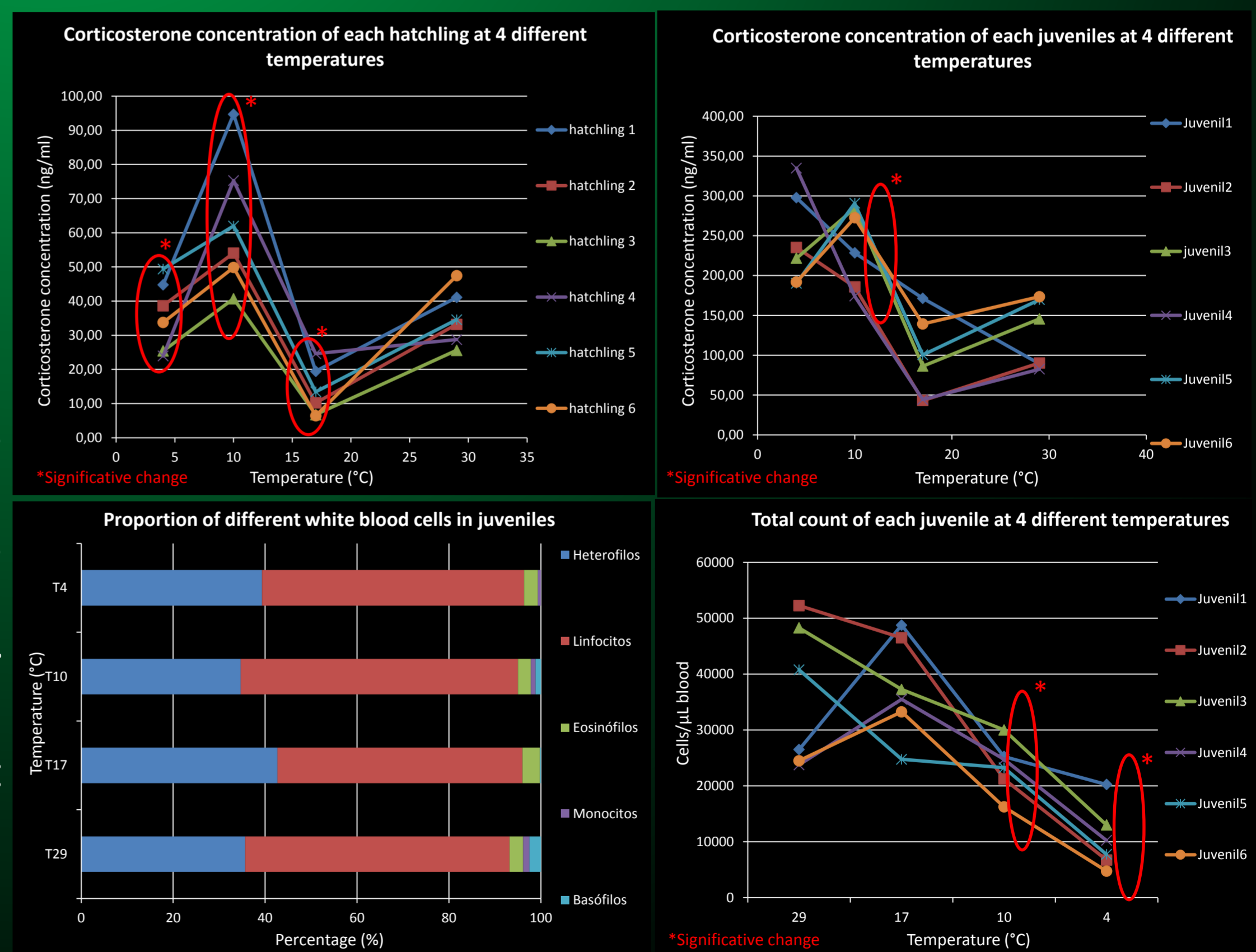
Differential Count: There were no significant differences in the proportions of white blood cells in hatchlings group. However, juveniles showed significant changes in the proportion of monocytes ($P=0.043$) at 4°C and 17°C.

Total Count: Significant white blood cells differences were recorded only in juveniles ($P=0.0021$).

Temperature treatments did not show to be a factor generating modifications in the complement system and natural antibody titers in both *C. latirostris* groups.

Conclusions

From the data obtained and analyzed, it can be observed that the concentration of corticosterone shows a variation against temperature changes in combination with some of the hematological parameters. In hatchlings corticosterone showed more frequent fluctuations compared to juveniles; this could be due to body size of juveniles that makes them less susceptible to temperature changes. Serial exposure to low temperatures does not seem to affect immune system in hatchlings and juveniles of *C. latirostris*, at least in a short period of time.



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