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RHODNIUS PROLIXUS IMPAIRS TRYPANOSOMA CRUZI GROWTH THROUGH COLD-SEEKING BEHAVIORAL THERMOREGULATION

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Chagas disease, caused by the protozoan parasite *Trypanosoma cruzi*, is the main neglected vector borne illness in terms of public health burden in Latin America, affecting ca. 8 million people. It is transmitted by kissing bugs of the Triatominae sub-family, and mainly by *Rhodnius prolixus* and *Triatoma infestans* (Hemiptera: Reduviidae) in South America. Temperature is the main abiotic factor impacting the life and ecology of insects as they are ectotherms. However, *R. prolixus* plays an active role in mediating the effects of temperature through its thermopreference and its ability to select shelters based on thermal cues, behaviorally thermoregulating. Crucially, the interplay between *T. cruzi* infection and thermopreference in *R.prolixus* remains unexplored. In our project we investigated the effects of infection by *T. cruzi* on the thermopreference of *R. prolixus*. To do so we recorded the position of infected and uninfected individuals in a temperature gradient at 6 different times of day over the period from blood feeding up to two weeks after molting. Additionally, we compared the evolution of parasite load between insects allowed to select their environmental temperature and individuals maintained at a fixed temperature, providing insights into the interaction between behavioral thermoregulation and infection dynamics. We demonstrated that *R. prolixus* seeks colder temperatures (22.39 ± 0.05 ºC) when infected by *T. cruzi* compared to their uninfected counterparts (which preferred 23.40 ± 0.07 ºC), a behavior called behavioral anapyrexia. This reaction led to a diminution of parasite load when compared to individuals maintained at 26ºC, and to a higher proportion of insects which cleared the infection. These results highlight the importance of considering the behavior of the insect when investigating the interaction between triatomines and *T. cruzi*.

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