Modulation of inflammatory response by a heparin analogue isolated from *Goniopsis cruentata* crab in experimental model of sepsis

Bezerra, I. L. 1,3; Morais, I. C. M. 1; Azevedo, F. M. 1; Cavalcante, R.S. 1; Silva, M. M.C. 1; Luz, J. R. D. 1; Souza-jr, A.A. 1,2; Chavante, S. F. 1; Andrade, G. P. V. 1

1 Departamento de Bioquímica, UFRN, RN, Brazil; 2 Instituto Federal do Rio Grande do Norte (IFRN), Parnamirim, RN, Brazil; 3 Departamento de Bioquímica e Biologia Molecular, UFPR, Brazil.

**INTRODUCTION:** The exaggerated inflammatory response may contribute to the development of serious inflammatory diseases such as sepsis. Researchers have shown that heparin, a glycosaminoglycan used as an anticoagulant drug, also possesses a high ability to inhibit systemic inflammation. However, the clinical use of heparin is limited by hemorrhagic complications. Therefore, heparin analogs that have similar pharmacological properties, but reduced side effects, have been widely studied in marine invertebrates. Recently, an analogue of heparin isolated from *Goniopsis cruentata* (cCTH) containing a peculiar structure showed anti-inflammatory activity in a model of peritonitis induced by sodium thioglycollate and low hemorrhagic risk.

**OBJECTIVES:** This work aimed to expand the study of the modulation of inflammatory response by cCTH in Cecal Ligation and Puncture-induced sepsis model (CLP) in Swiss mice. **MATERIAL AND METHODS:** The best dose (10μg/kg) of the anti-inflammatory response of cCTH and heparin in a model of peritonitis was used to evaluate the effect of such compounds on the model of sepsis. Sepsis was induced by CLP. The Swiss mice groups were treated with cCTH (10mg / kg), mammalian heparin (10mg / kg) or diclofenac sodium (7mg / kg), and their effects assessed after 6 hours. After, the blood was collected for white blood cell count, measurements of creatinine and liver aminotransferases by commercial kits, removed the liver to histopathology and survival test with the same procedure given. **RESULTS:** The results showed that heparin and cCTH reduced above 80% of cellular infiltration and contributed to organ dysfunction protection, with histopathology, and liver aminotransferases and creatinine levels practically unchanged. **CONCLUSION:** Therefore, these results suggest that cCTH can be an interesting molecule with great potential for research of new therapeutic agents for the treatment of inflammatory diseases such as sepsis.

Keywords: sepsis, heparin, marine organisms.