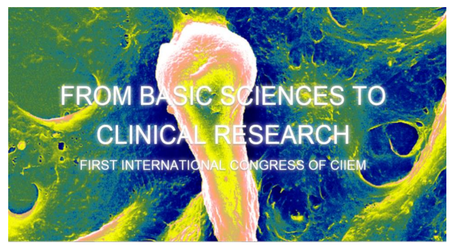
In vitro preliminary hemolytic studies of toxins from jellyfish *Catostylus tagi*



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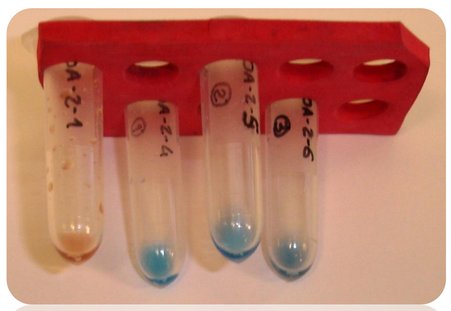
Introduction

Cnidarians are venomous and poisonous animals although its dangerousness varies widely within the phylum, the scyphozoans being usually the least toxic. Yet, due to the toxins that jellyfish may release in the bathers, several beaches have been closed worldwide in the last years [1]. On the other hand, marine toxins are now regarded as promising compounds in human therapeutics [2]. *Catostylus tagi* is a Rhizostomeae scyphozoan native of the Portuguese coast that occurs abundantly in summertime. As far as we know, no toxicological data is available for *C. tagi.* In this work we performed a study on its hemolytic activity *in vitro.*

Methods

Specimens of *C. tagi* were collected in the estuary of Tagus river and immediately transported to Egas Moniz Lab where the oral arms were excised manually and treated according to Xiao *et al* [2] before storage at −70 ºC.

The opening of nematocysts followed Wiebring *et al* [3], no more than two hours before the hemolytic assay.



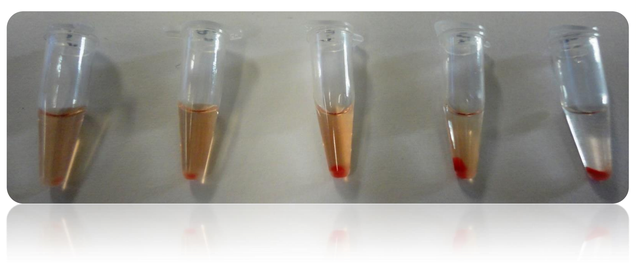


Figure 1. Left opened nematocytes. Right: hemolytic action of C. tagi on erythrocytes

Results and Discussion

The individual IC_{50} results of toxin from nematocyst of *C. tagi* varied from 2.5 to 3.5 µg/mL. The estimated IC_{50} by average results was 4.0 µg/mL (Figure 1). The present findings have the same magnitude of the hemolytic activity reported for other Atlantic scyphozoans like *Pelagia noctiluca*, 0.1 µg/mL, and *Cassiopea xamachana*, 7.0 µg/mL [6].

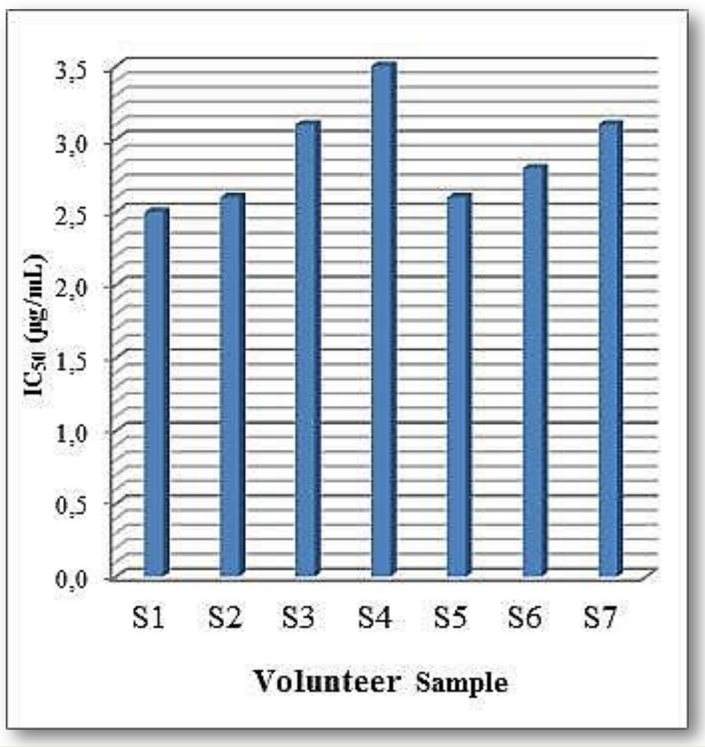
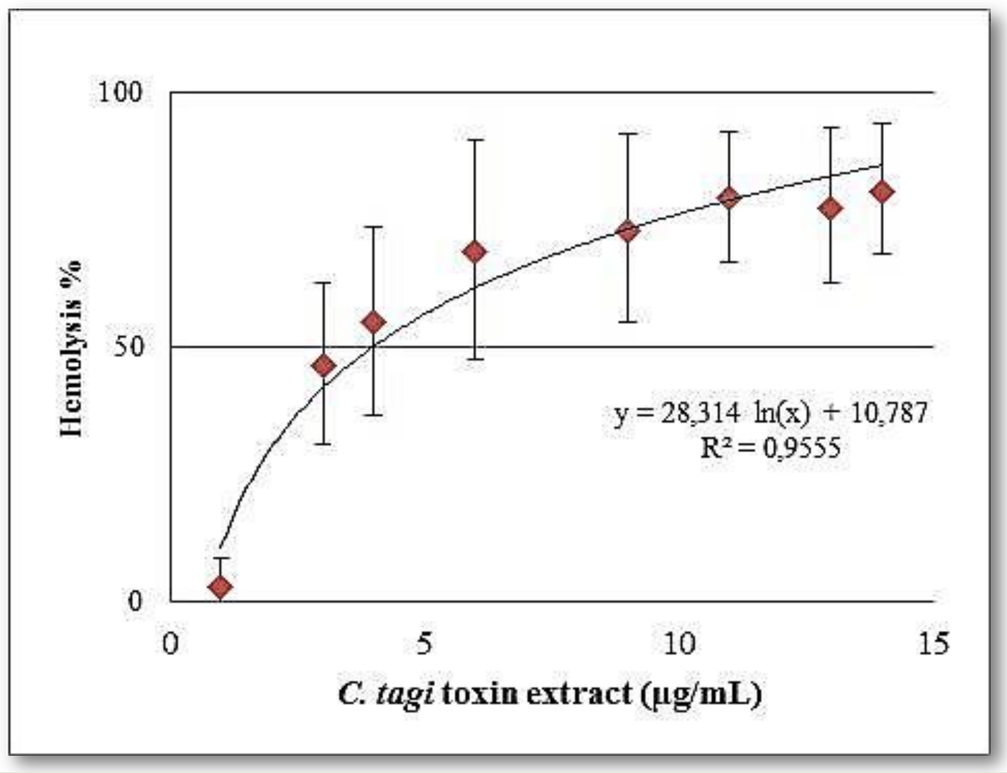


Figure 2.
Hemolytic effect of *C. tagi* toxin extract on human erythrocytes.

Left: individual IC_{50} (µg/mL) results for the volunteers.

Right: relationship between toxin concentration and % hemolysis.



Conclusion

The *in vitro* results for *C. tagi* agree with the common sense about the low danger of its *in vivo* hemolytic action. In the case of a bloom, the high toxin concentration could exacerbate the effects. Studies on other toxicological data as the cardiotoxic and neurotoxic of *C. tagi* are currently under development.

References

[1] Mariottini G. (2014) *Journal of venom research* **5**: 22.
[2] Xiao L *et al*. (2011) *Marine drugs* **9**: 526.
[3] Wiebring A *et al.* (2010) *Hydrobiologia* **645:** 203.

Acknowledgements

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