

Rattling Bugs Away: The potential Antibacterial Properties of *Crotalus Mictlantecuhtli* against *Staphylococcus aureus* and *Escherichia coli*

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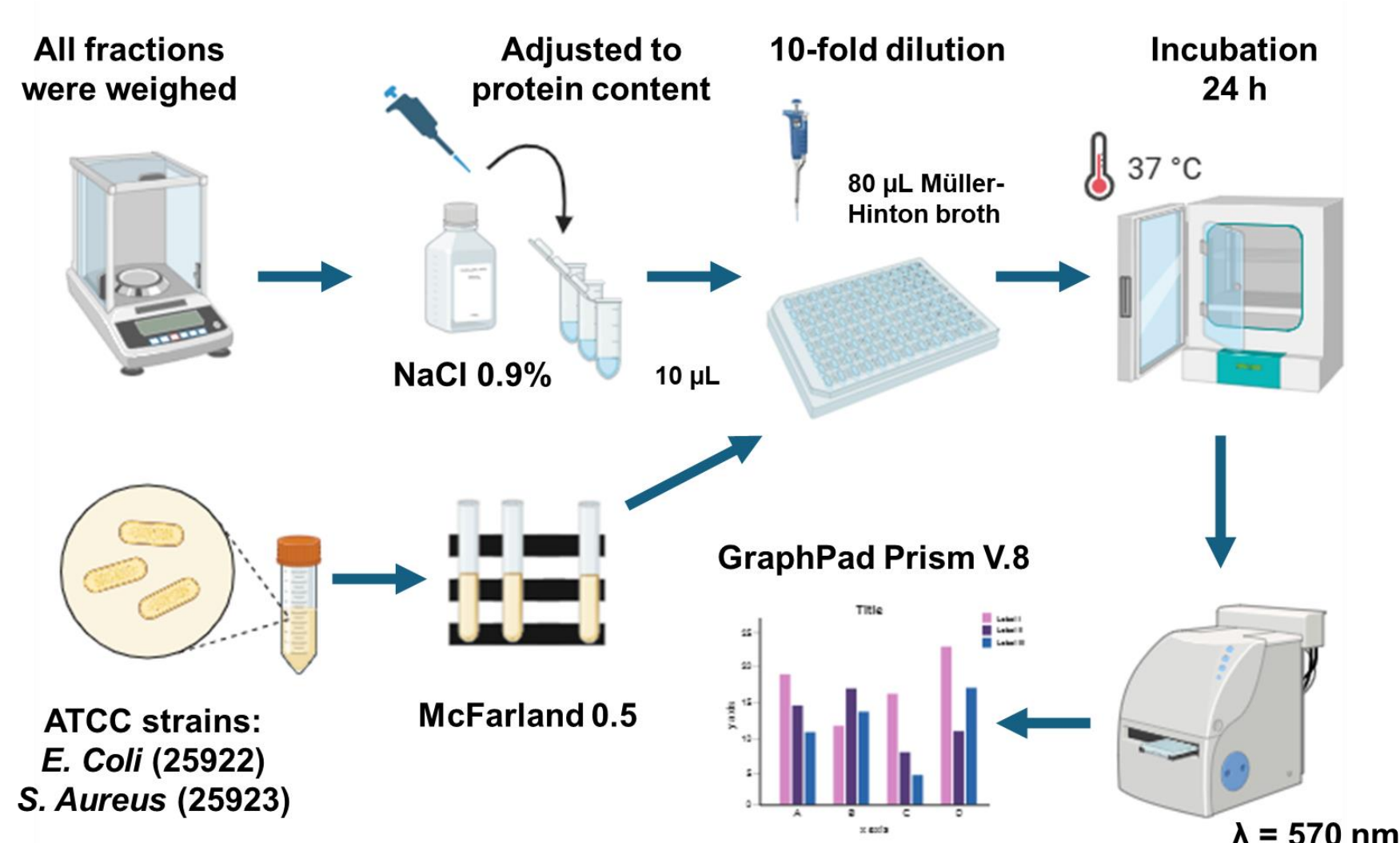
INTRODUCTION & AIM

Mexico is the country with the highest diversity of rattlesnakes worldwide, and their venom represents a valuable source of molecules with biomedical potential. Documented bioactivities include antiproliferative, analgesic and microbicide properties. Following that, the World Health Organization considers antibiotic resistance as a global threat. Therefore, studying alternatives to these drugs is imperative. The Veracruz neotropical rattlesnake (*Crotalus mictlantecuhtli*) is an endemic species from Central Mexico whose venom has been characterized before, but with no reports of antibacterial properties, to the best of our knowledge.

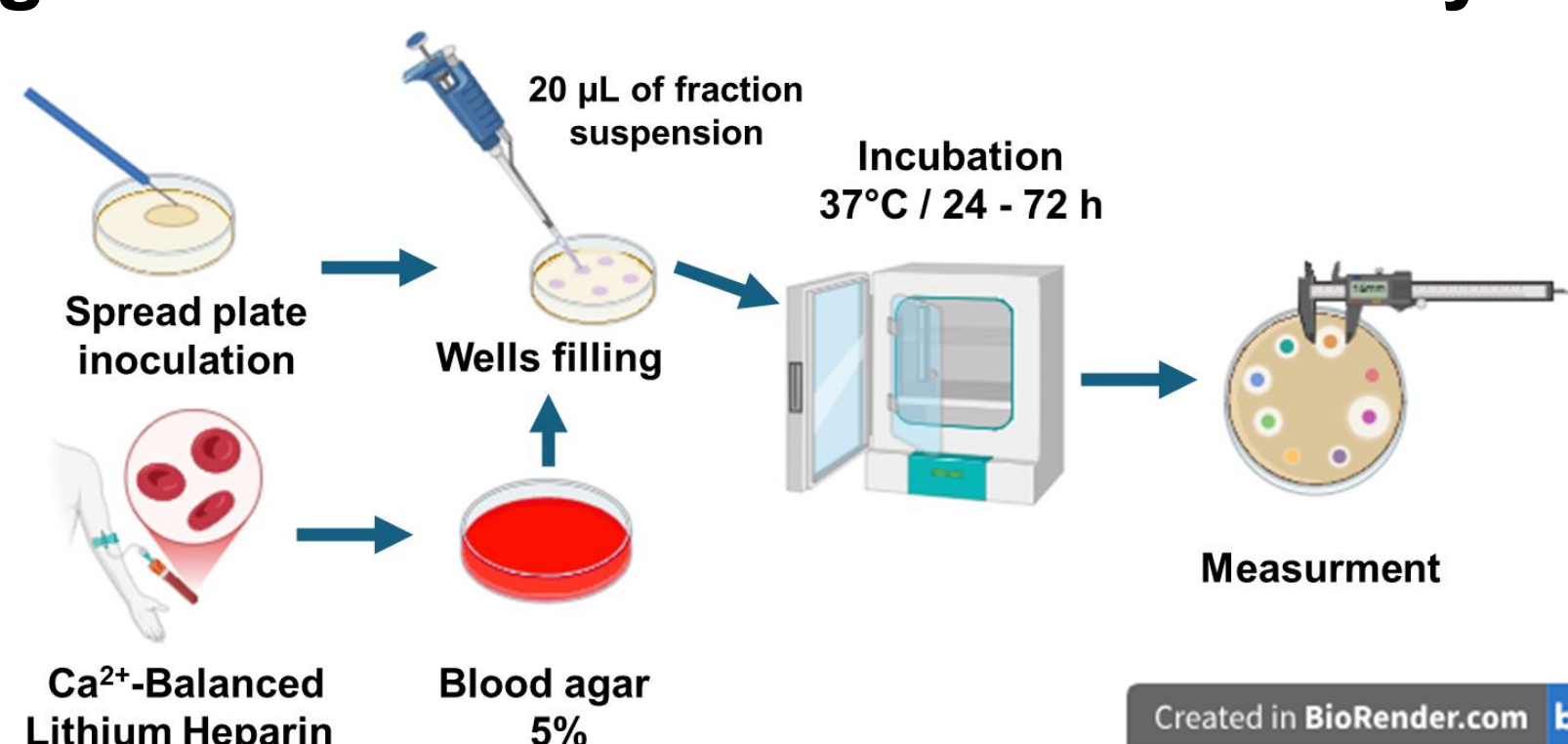
Thus, this research aimed to evaluate the antibacterial activity of *Crotalus mictlantecuhtli* venom fractions against bacteria of public health interest.

METHOD

Minimal Inhibitory Concentration (MIC)



Agar well diffusion and indirect hemolysis



RESULTS & DISCUSSION

Fractions 1, 3, and 4 of the venom did not differ significantly from the gentamicin control at concentrations below 1 µg/µL for *E. coli* and *S. aureus* ($P > 0.05$). However, only fraction 1 showed concordant results with the agar well diffusion assay. The MIC assay showed that 10 µg/µL dose inhibited $> 50\%$ of *S. aureus* growth compared with untreated controls (Figure 1). In addition, it exhibited an inhibition halo of 14 mm for *S. aureus* and 0.7 mm for *E. coli*, while α -Hemolysis was observed in blood agar.

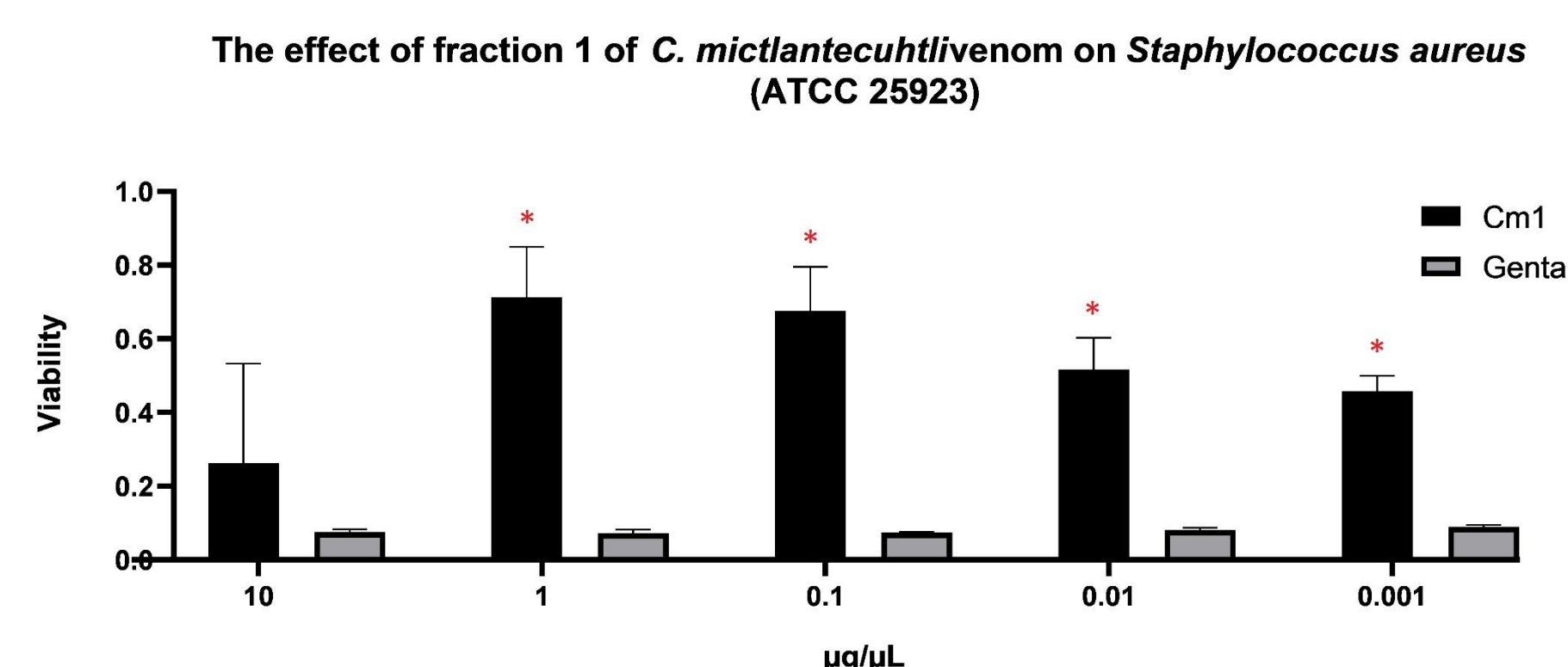


Fig 1. Effect of fraction I of *C. mictlantecuhtli* venom on *S. aureus* (25923). *Statistical significance $P < 0.05$ with Šidák's multiple comparison test.

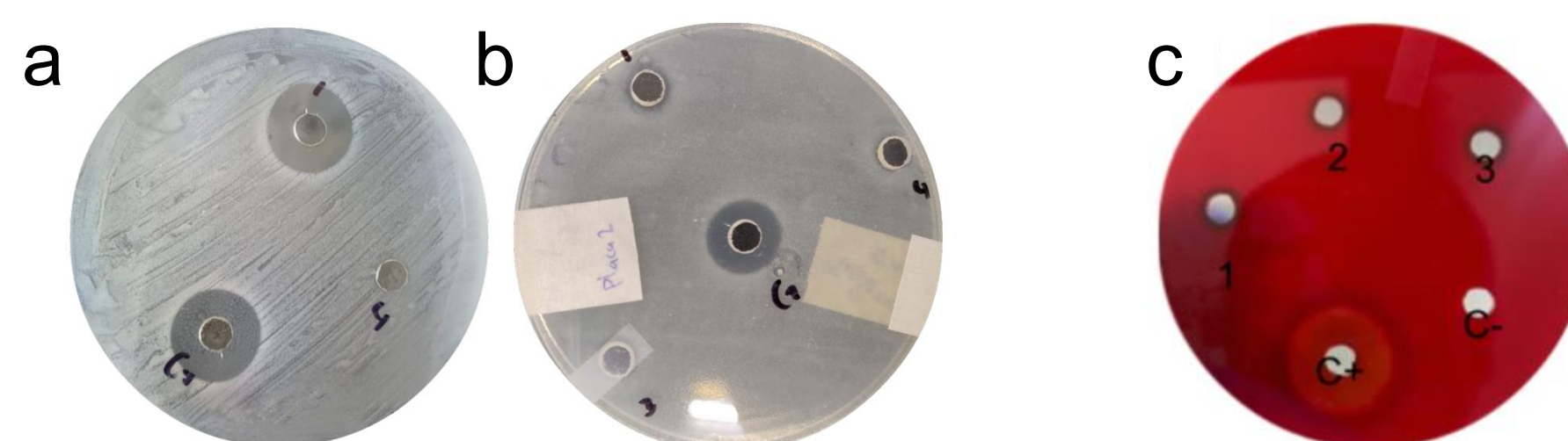


Fig 2. a. Indirect hemolysis assay with fraction I of *C. mictlantecuhtli* venom in 5% blood agar. The numbers correspond to biological replicates. C+: Triton X-100 (Positive control). C-: Negative control (0.9% NaCl). b. Agar well diffusion with Müller-Hinton after 24 h tested on *S. aureus*, and c. tested on *E. coli*. G: Gentamicin (Positive control)

CONCLUSION

The venom of *C. mictlantecuhtli* contains proteins of medical interest that exhibit antimicrobial properties. Specially fraction I showed promising results; therefore, it is imperative to continue studying it.

FUTURE WORK / REFERENCES



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