CYTOTOXIC AND ANTIBACTERIAL PROPERTIES OF CANE TOAD *(Rhinella marina)* BUFADIENOLIDES EXTRACT AGAINST *Bacillus cereus* AND *Pseudomonas aeruginosa*

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ABSTRACT

JULIAN, RYAN V., Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **CYTOTOXIC AND ANTIBACTERIAL PROPERTIES OF CANE TOAD *(Rhinella marina)* BUFADIENOLIDES EXTRACT AGAINST *Bacillus cereus* AND *Pseudomonas aeruginosa***

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There are approximately 4000 species of frogs and toads. The family Bufonidae is large and widespread, including 485 species of 35 genera. Furthermore, out of these species, cane toad or *Rhinella marina* is a large toxic anuran that possesses powerful toxins that can kill certain wild animals and are commonly found in the cleared tropical forests, Moreover, the toxin or poison being secreted by cane toad namely bufadienolides, cinobufagin, and bufalin show traces of having pharmacological and therapeutic significance.

Evaluation of the antibacterial properties of bufadienolides against the two pathogens was performed through disc diffusion method, which is known to be effective in determining the antibacterial property of certain extract. Meanwhile, evaluation of the cytotoxicity activity of the extract was done through brine shrimp lethality assay. Results of the study revealed that the bufadienolides extract possesses either weak or no antibacterial activity against the two test organisms.

The cane toads were collected at Science City of Munoz, Nueva Ecija; and the bufadienolides derived from the specimen was tested against *B. cereus* and *P.* aeruginosa, and the extract's cytotoxicity property was determined as well. Results of the antibacterial assay revealed that the bufadienolides extract possesses either weak or no

antibacterial activity against the two test organisms. Meanwhile, hexane negated the antibacterial property of bufadienolides by diluting its components like proteins, which are basically essential to trigger the antibacterial property of an extract. On the other hand, it is confirmed that the ability of the bufodienolides to eliminate brine shrimp nauplii depends on the amount of ppm used; the higher the ppm, the more likely the nauplii will be dead. The determination of the cytotoxicity property of bufadienolides revealed that 10000 ppm yielded the highest mortality rate for the nauplii. In relation to that, an LC_{50} of 563.323 is sufficient enough to eliminate 50% of nauplii in 24 hours of exposure.

Based on the result from the study, it can be concluded that the bufadienolides derived from cane toad *(Rhinella marina)* loses its antibacterial property over the course of time meaning that it was not able to resist the two bacteria the extract is tested upon for a long period of time. Moreover, the addition of hexane dissolved the bufadienolides but significantly reduced the antibacterial properties of the extract. The result from the cytotoxicity assay of bufadienolides implies that the poison can make a significant impact in curing certain diseases, and due to its pharmaceutical importance, it can be a potential source to treat cancer.

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