Testing Plant Extracts Barringtonia asiatica and Derris malaccensis as Alternative Population Control Methods for the Crown-of-Thorns Seastar (Acanthaster planci)

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This experiment was conducted to determine whether Barringtonia asiatica or Derris malaccensis plant extracts were able to kill the crown-of-thorns seastar (Acanthaster planci). The experiment was conducted using four treatments – no injection (negative control), sodium bisulfate (positive control), Barringtonia asiatica extract, and Derris malaccensis extract. A total of eighteen seastars were tested. Negative and positive control treatments were tested against four and plant extract treatments were tested against five. Treatments were applied by injecting 100 mL of each respective treatment into each of the fourteen seastars. Water quality was maintained by changing the salt water with fresh salt water from the ocean every two hours, and aerators were used to ensure sufficient dissolved oxygen. The number of seastars alive was recorded every two hours over a fourteen-hour period. It was hypothesized that both plant extracts would kill the seastars within fourteen hours and that the D. malaccensis extract would be more effective. Both plant extracts proved to be as effective as the positive control, however none of the three treatments were proved to be significantly different amongst each other through statistical analysis. The results supported the first hypothesis, but not the second.

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