

POTENTIAL USE OF THE JELLYFISH *ACROMITUS FLAGELLATUS* VENOM AS A BIOINSECTICIDE AGAINST RICE WEEVIL, *SITOPHILUS ORYZAE* (L.) (COLEOPTERA: CURCULIONIDAE)

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Dense aggregations of jellyfish are known as jellyfish blooms. A remarkable increase in jellyfish blooms has recently been reported around the world. Despite their adverse effects, the benefits of jellyfish have been reported in many industries, including agriculture. Given this background, the potency of jellyfish *Acromitus flagellatus* venom against *Sitophilus oryzae* was investigated in this study for stored-product protection. Venom was extracted from frozen marginal lappets of *A. flagellatus* into a phosphate buffer, and three concentrations (100%, 75%, and 50%) were prepared. Cohorts of mixed-sex, 4-7 days *S. oryzae* adults selected from ongoing cultures were used for the experiments under ambient laboratory conditions. The effect of *A. flagellatus* venom on *S. oryzae* was investigated for repellent, insecticidal, and anti-feedant activities. Biochemical responses of *S. oryzae* on jellyfish venom were tested using enzyme assays where adult insects (n=100) were exposed to three different venom concentrations via the topical application and kept at room temperature for 48 hours. After exposure, reduced glutathione (GSH), oxidized glutathione (GSSG), catalase activity, and peroxidase activity of *S. oryzae* were assessed. *Acromitus flagellatus* venom extract reported >95% repellency and toxicity against *S. oryzae* at the highest concentration upon 48 and 72 hours of exposure, respectively (p<0.05). Poor feeding of *S. oryzae* on treated flour disks at the highest concentration resulted in reduced growth and survival than the control. GSH activity of *S. oryzae* was significantly inhibited by jellyfish venom at 48 hours of exposure period (p<0.05). Although a significant increment of GSSG content and peroxidase activity was reported in exposed rice weevils (p<0.05), changes in catalase activity were not significant (p>0.05). The results of this preliminary study reveal the potential of using *A. flagellatus* as a bio-insecticide for stored product protection, however, further studies are recommended to bring this to a commercial scale.

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