

## Bioefficacy of aqueous extracts of *Withania somnifera* (Dunal) against *Tribolium castaneum* (Herbst) and *Callosobruchus chinensis* (L.)

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### Abstract

Red flour beetle, *Tribolium castaneum* and Pulse beetle, *Callosobruchus chinensis* are major pests on stored commodities. Recently, attention has been paid towards exploitation of medicinal plants in pest management strategies as an alternative for synthetics. The present investigation was carried out to evaluate the grain protectant efficacy of *Withania somnifera*, despite its excellent pharmacological activity against both pests following completely randomized design. The aqueous extract of *W. somnifera* was applied to the substrates at five concentrations (20, 40, 60, 80 and 100%) as treatments and replicated five times. Adults of *T. castaneum* and *C. chinensis* were exposed to treated rice and green grams respectively. Rice grain weight loss (GWL) by *T. castaneum* after 7, 30 and 60 days and percentage damage on green gram by *C. chinensis* after seven days were calculated. The results revealed that the extract was effective in dose dependant manner for both pests when compare to control. Minimum GWL by *T. castaneum* as observed in 30 and 60 days after treatment (DAT) were  $0.7 \pm 0.12$  and  $3.17 \pm 0.47$  % respectively. There was significant difference noticed among concentrations at 30 DAT. GWL was increased with time due to loss of efficacy. Damage percentage of *C. chinensis* exhibited an indirect relationship with the concentration. The sets treated with 100% of extracts recorded lowest damage ( $3.36 \pm 1.31\%$ ) while control was  $14.24 \pm 2.07$  %. This study suggests that *W. somnifera* extracts were effective and it can be incorporate into the integrated stored pest management.