Effectiveness of low pressure to control azuki bean weevil, *Calosobruchus chinensis* (L.) (Col: Bruchidae)

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DOI: xx.xxxx/xxx.2014.xxx.xxx.xxx

Abstract

In this research, eggs (0-24, 24-48, 48-72, and 72-96 h old), larvae (20 d old) (including egg stage), pupae (28 d old) (including egg stage) and adults (0-24 h) of *Callosobruchus chinensis* were exposed to 88.8 mbar low pressure (2% oxygen) for different exposure times and the mortality rates were determined. All experiments were carried out at 25ºC temperature and 75% relative humidity. Experiments were carried out in vacuum chambers of 28.32 L (Labconco Vacuum Desiccators, Model 55300) capacity. Vacuum levels during each exposure periods were recorded with vacuum data logger (Hobo Pressure Logger Model HPA-0015). Time-mortality data were subjected to probit analyses, and LT_{50} values were calculated. According to the results; total mortality for 0-24, 24-48, 48-72 old eggs were found at 144 h exposure at 25ºC; at the same conditions total mortality for 72-96 h old eggs was found at 144 h exposure. LT_{50} values for 0-24, 24-48, 48-72, 72-96 h old eggs were calculated to be 22.33, 78.49, 73.98, and 30.72 h, respectively. For the larvae of *C. chinensis*; total mortality was found at 480 h exposure at 25ºC; at the same conditions LT50 values was calculated to be 228.29 h. For the stage of pupae, total mortality was found at 432 h exposure at 25ºC; at the same conditions LT_{50} values was calculated to be 91.99 h. For the adult stage, total mortality was found at 192 h exposure at 25ºC; at the same conditions LT_{50} values was calculated to be 51.86 h.

Keywords: *Callosobruchus chinensis*, vacuum, LT_{50}