Title Laboratoryassessment of toxic activity of purified peptides extracted from chickpea seeds to two strains of the rice weevil *Sitophilus oryzae* (L.) (Coleoptera: Curculionidae)

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Citation Journal of Stored Products Research,Volume 45, Issue 4, October 2009, Pages 261–266

Keywords Chickpea; Antinutritional compound; Peptides; Purified extract; Artificial kernel toxicity test; *Sitophilus oryzae*

Abstract

Several peptides with entomotoxic properties were extracted from seeds of different chickpea varieties, by either aqueous or alcoholic phase extraction. The extracts were purified by anion-exchange chromatography followed by membrane dialysis. The toxicity of the purified extracts was tested on two different strains of the rice weevil, *Sitophilus oryzae*: a French strain feeding only on cereal grain and sensitive to pea phytotoxins (*SS* strain) and a Chinese strain naturally breeding on split pea (*RS* strain). The toxic activity of the different fractions isolated from the purified extracts was evaluated by the 'artificial kernel method', incorporating the fraction into a reconstituted ('artificial') kernel made from whole wheat flour. The toxicity of the fractions was assessed by determining the mortality of young adults of each *S. oryzae* strain after 7 and 14 d feeding. With the more toxic acidic fraction incorporated into the artificial kernel, the mortality rate of *SS* strain weevils was 83% and 100% after 7 and 14 d feeding, respectively. With all the alcoholic fractions, mortality of the *SS* strain remained very low. With *RS* strain weevils, mortality was negligible after 7 d or 14 d feeding on any peptide fraction of the extracts.