Title Effect of *Pisum sativum* fractions on the mortality and progeny production of nine stored-grain beetles

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Abstract

Yellow field pea (*Pisum sativum* L.) fractions that were mainly protein (50%), fibre (90%) or starch (85%) were obtained from a commercial pea mill and mixed with wheat kernels or wheat flour. Based on the mortality and the number of offspring produced, protein-rich pea flour was more toxic than fibre, which was more toxic than starch. For the protein-rich pea flour mixed with wheat kernels, the most sensitive insects were *Sitophilus oryzae* (L.), *Sitophilus zeamais* Motschulsky and *Sitophilus granarius* (L.), followed by *Cryptolestes ferrugineus* (Stephens) which was more sensitive than *Tribolium castaneum* (Herbst) and *Rhyzopertha dominica* (F.). For the protein-rich pea flour mixed with wheat flour, *Cryptolestes pusillus* (Schönherr) was most sensitive, followed by *C. turcicus* (Grouvelle) and *T. confusum* (Jacquelin du Val), with *T. castaneum* being the most resistant. Although protein-rich pea flour did not kill adults to a great extent when mixed with flour, it reduced offspring production significantly. Again *C. pusillus* was the most sensitive, followed by *T. confusum,* with *T. castaneum* offspring being the most resistant. The insecticidal activity of pea fractions decreased after treated wheat kernels were held at 30 °C, 70% r.h. for 8 months. The potential of using pea fractions to control stored-product insects is discussed.