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The toxicity of bean flour (*Phaseolus vulgaris*) to stored-product mites (Acari: Acaridida)

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[fulltext]

Legume proteins were shown to have insecticidal activity against stored-product pests. Grain enriched by bean (*Phaseolus vulgaris*) flour inhibits the growth of stored-product mites. In this study, we tested the toxicity of bean flour to storage mites under optimal conditions for their population growth (i.e. rearing diet, temperature: 25?C and humidity optimum: 85% RH). Bean flour was added to the diet in one of eight concentrations: 0, 0.01, 0.1, 0.5, 1, 2.5, 5, 10%). The population growth of *Tyrophagus putrescentiae*, *Acarus siro* and *Aleuroglyphus ovatus* initiating from a density of 50 mites per 0.2 g of diet was recorded for 21 days. The enrichment of grain with bean flour suppressed the population growth of the tested species. These differed in their sensitivity to bean flour. Population growth was decreased to 50% in comparison to the control (rC_{50}) by the bean flour concentration of 0.02% in *T. putrescentiae*, 0.04% in *A. siro*, and by 4.87% in *A. ovatus*. The concentration of 5% bean flour in diets kept populations of *A. siro* and *T. putrescentiae* at the initial level. The results are discussed in the context of applying bean flour in the integrated control of stored-product mites.

Keywords:
botanical acaricides; mite; storage; grain; food safety

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