

4-7. Acaricidal Activity of Phenylpropenes Identified in *Cinnamomum cassia* Bark against *Tyrophagus putrescentiae* (Acari: Acaridae)

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The acaricidal activity of materials derived from the bark of *Cinnamomum cassia* Blume against the cheese mite, *Tyrophagus putrescentiae* Schrank, was examined using direct contact application and fumigation methods and compared with that of the commercially available compounds (cinnamyl alcohol, cinnamic acid, and cinnamic acid methyl ester). The biologically active constituents of the *Cinnamomum* bark were characterized as the phenylpropenes (*E*)-cinnamaldehyde and salicylaldehyde by spectroscopic analysis. Responses varied with compound and dose. In a fabric test, salicylaldehyde at $6.4 \mu\text{g}/\text{cm}^2$ gave 92% mortality against *T. putrescentiae* adults but the acaricidal activity was significantly decreased at $3.2 \mu\text{g}/\text{cm}^2$. At $50.9 \mu\text{g}/\text{cm}^2$, (*E*)-cinnamaldehyde and cinnamic acid methyl ester caused 100% mortality, whereas about 30% mortality was observed with cinnamic acid and cinnamyl alcohol. In a fumigation test, (*E*)-cinnamaldehyde and salicylaldehyde were much more effective in closed containers than in open ones, indicating that the acaricidal activity of the compounds was largely attributable to fumigant action.

These naturally occurring *Cinnamomum* bark-derived compounds merit further study as potential cheese mite-control agents or as lead compounds.