

**Title** Effectiveness of essential oils of medicinal plants against stored product mite, *Suidasia pontifica* oudemans

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#### Abstract

Acaricidal activity of essential oils obtained from 28 selected medicinal plants against stored product mite, *Suidasia pontifica* Oudemans, was investigated using the dry film method. The bioassay was conducted in a glass tube, 0.4 cm in diameter, 3 cm long covered with fine nylon mesh on both ends. In preliminary tests, 1.0% (53  $\mu\text{g cm}^{-2}$ ) of various essential oils and 95% ethanol used as control were evaluated. Each glass tube was treated internally with 20  $\mu\text{l}$  essential oils. Observations were made at 24 h after treatment and the number of dead mites was recorded. At the dose of 1.0%, essential oils of clove (*Syzygium aromaticum*), cinnamon (*Cinnamomum bejolghota*), myrtle grass (*Acorus calamus*), betel vine (*Piper betle*), and turmeric (*Curcuma longa*) were highly toxic to *S. pontifica* with more than 70% mite mortality observed at 24 h. Dry film effect of essential oils at various concentrations (0, 0.05, 0.1, 0.5, 1.0 and 1.5% equaling to 0, 2.65, 5.3, 26.5, 53 and 79.5  $\mu\text{g cm}^{-2}$ , respectively) resulting in mite mortality observed at 24 h was used to establish LD<sub>50</sub> values. Based upon 24 h LD<sub>50</sub> values, the essential oil of cinnamon (fresh leaf) was the most toxic to the mite with high activity at 24.05  $\mu\text{g cm}^{-2}$ , followed by essential oils of clove (dried bud), myrtle grass, cinnamon (dried bark), clove (fresh leaf), turmeric and betel vine at 24.28, 28.34, 30.89, 33.67, 38.09 and 41.76  $\mu\text{g cm}^{-2}$ , respectively.