

ACARICIDE-MEDIATED SUPPRESSION OF *PANONYCHUS CITRI* (MCGREGOR) (ACARI: TETRANYCHIDAE) IN PEAR ORCHARDS IN JAPAN

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ABSTRACT - Population density of the citrus red mite, *Panonychus citri* (McGregor), in Japanese pear orchards remained low until mid-August, even after inoculation of pear leaves with a considerable number of adult female *P. citri* from May onwards. This raised the possibility that pear leaves contain a natural compound that suppresses an increase of *P. citri* populations. The rate of development from larva to adult was significantly lower on leaves collected in July than on leaves collected earlier or later, in several years. The population suppression was caused by molting deterrent activity and ovicidal activity, according to our close observation in the laboratory. To clarify whether a natural pear compound caused this molting deterrence, a methanol crude extract of pear leaves was isolated and added to a newly developed artificial diet, consisting of sodium caseinate, sucrose, levulose, glucose and inositol. The compound extracted from pear leaves resulted in the molting deterrence as observed on pear leaves. Based on infrared and NMR spectral analysis, the compound extracted from pear leaves closely resembled the synthetic acaricide hexythiazox. Furthermore, the LC₅₀ values of the compound extracted from pear leaves for ovicidal activity of *P. citri* eggs and for deterrence of molting to protonymphs were similar to those of hexythiazox. These results strongly suggest that the molting deterrent extracted from pear leaves was in fact hexythiazox, an acaricide in use on pear trees, rather than a natural product. This suggestion becomes even stronger, considering that the molting deterrence was observed in a hexythiazox-spray year, but not in a non-spray year.

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