



## Comparative toxicities of a wild Plant essential oil and blends of its major constituents on mortality and fecundity of spider mites (Acari: Tetranychidae)

Sabrine Attia <sup>(a,b)</sup>, Kaouthar Lebdi Grissa <sup>(a)</sup>, Zeineb Ghrabi <sup>(a)</sup>, Anne Catherine Maillieux <sup>(b)</sup>, Georges Lognay <sup>(c)</sup> and Thierry Hance <sup>(b)</sup>

<sup>(a)</sup>Laboratoire d'Entomologie-acarologie. Institut National Agronomique de Tunisie, 1082 Cité Mahrajène, Tunis, Tunisia.

<sup>(b)</sup>Earth and Life Institute, Biodiversity Research Centre, Université Catholique de Louvain, 4-5, Place croix de sud, B- 1348 Louvain-la-Neuve, Belgium.

<sup>(c)</sup>Université de Liège Gembloux Agro-Bio Tech Unité de Chimie analytique. Passage de Déportés, 2. B-5030 Gembloux, Belgique.

The phytophagous two-spotted spider mite *Tetranychus urticae* Koch is a ubiquitous species, present worldwide on a large variety of plant families [1]. Since *T. urticae* resistance to acaricides spread rapidly, biological control tactics are crucial to manage spider mite populations [2]. In this respect, plant-derived essential oil products are a good alternative as they are, in general, considered as minimum-risk pesticides [3]. In that context, laboratory experiments were conducted to assess the toxicity of essential oil of *Pteranthus dichotomus* a wild-growing plant of Tunisia on females and eggs of the two spotted spider mite *T. urticae* (Koch).

Essential oil was distilled from Fresh leaves from *P. dichotomus* and was sprayed on groups of adult females. The susceptibility of these females to *P. dichotomus* essential oil was tested. A series of dilutions were used to bracket the dose-response range. Tests proved that female mortality increased with essential oil concentration with DL<sub>50</sub> value of 75µl/l. The percentage of egg-laying inhibition is prominent with doses of 5, 10 and 20µl/l compared to control, while at the same concentrations no mortality was observed.

The analysis of *P. dichotomus* essential using GC-MS revealed presence of 10 major constituents: alpha-thujene, alpha-pinene, sabinene, Myrcene, 3-carene, ocimene, terpinene-4-ol, pulegone, eugenol and β-eudesmol. For a comprehensive evaluation of the potential of *P. dichotomus* essential oil as acaricidal, individual and blends activity of these constituents were tested against *T. urticae* female. Toxicity of blends of different components indicated significant differences among the active and inactive components, with the presence of all constituents necessary to have toxicity near to that of whole *P. dichotomus* oil. The results showed that natural oil of *P. dichotomus* and some of its constituents have potential for development as botanical acaricide, at least against *T. urticae*.

### References

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