Potential of *Rosmarinus officinalis* aqueous extract in managing *Tuta absoluta* Meyrick infestations

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ABSTRACT

Tuta absoluta is the primary pest of tomatoes in its native Latin America. It was first detected in Spain in 2006 and quickly spread to Mediterranean countries, including Algeria by 2008. Medicinal plants, known for their bioactive compounds, offer a natural alternative to chemical pesticides. To promote the use of medicinal plants from the Batna region and combat tomato leaf miner, a laboratory study evaluated the efficacy of aqueous rosemary (Rosmarinus officinalis) leaf extract. Four doses (0.5%, 0.75%, 1%, and 1.5%) were tested against an untreated control and laboratory sucrose (100 ppm). The foliar treatment was applied every 15 days from 6 May to 1 July 2023 in the morning (8:00–10:00 am) using a hand sprayer for uniform coverage. Efficacy was assessed based on infestation levels, mine counts, and overall effectiveness. Mean values with standard errors were calculated for each parameter. Normality was verified using Shapiro-Wilk tests ($\alpha = 0.05$); for non-normal distributions, non-parametric Kruskal-Wallis and Dunn's tests were applied. Results showed the control group had the highest infestation (50.10 ± 5.76%) and mine count (1.72 ± 0.22). The 0.5% and 1.5% rosemary extracts significantly reduced infestation by 35.15% and 37.20%, respectively ($p < 0.05$). The study confirms that rosemary leaf extract has toxic effects on T. absoluta, making it a viable alternative to chemical pesticides, capable of replacing conventional treatments without yield loss.

Keywords: Foliar spraying, infestation rate, Rosemary, SAADA variety, tomato leaf miner.