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Contact Toxicity Effects of Different Formulations of Artemisia Absinthium Extracts on Rose Aphid

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Abstract : Chemical pesticides, which are widely used in agriculture, cause problems such as soil and water pollution, reducing biodiversity and creating pest resistance. These problems have led to increased attention to alternative and more sustainable methods such as natural-based pesticides. Herbal pesticides have been developed based on essential oils or extracts from different parts of plants, such as leaves, roots, and flowers. Herbal pesticides are compatible with the environment and can be used in integrated pest management programs. Despite the many benefits, herbal pesticides, especially essential oil-based compounds, have low durability in the environment, and their production costs are high, so the use of herbal extracts with appropriate formulations is more justified in all aspects. In the current study and based on the results of previous studies, aqueous and 70% ethanolic extract of Artemisia absinthium L. was prepared by the percolation method and formulated as an emulsion and water-soluble powder. To produce powder formulation, 20% maltodextrin was used with the spray-dryer method. Different concentrations of these compounds were sprayed on bushes infected with rose aphid Macrosiphum rosae (L.). Sampling was done randomly and the percentage of aphids' mortality was checked. The results showed that the use of different concentrations of ethanolic extracts created a significant difference in the mortality rate of aphids, while water-soluble powder formulation caused less mortality. The current results showed that the extract of this plant has practical usability to control aphids, and with the appropriate formulation, it can be used as a good alternative to chemical pesticides.

Keywords : contact toxicity, formulation, extract, aphid, Artemisia absinthium.
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