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Antifeedant Activity of Plant Extracts on the Spongy Moth (Lymantria dispar) Larvae

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Abstract : The protection of forests is a national interest and of strategic importance in every country. The spongy moth (Lymantria dispar) is a damaging invasive pest that can weaken and destroy trees by defoliating them. Chemical pesticides commonly used to protect forests against spongy moths not only have a negative impact on terrestrial and aquatic organisms/ecosystems but also often fail to provide significant protection. Therefore, many eco-friendly alternatives have been considered. Within this research, a new biopesticide was developed based on the method of nanoencapsulation of plant extracts in a biopolymer matrix, which provides a slow release of the active components during a substantial time period. The antifeedant activity of plant extracts of common (Fraxinus excelsior L.), manna (F. ornus L.) ash tree, and the tree of heaven Ailanthus altissima (Mill.) was tested on the spongy moth (Lymantria dispar L, 1758) larvae. To test the antifeedant activity of these compounds, the choice and non-choice tests in laboratory conditions for different plant extract concentrations (0.01, 0.1, 0.5, and 1 % v/v) were carried out. In both cases, the best results showed formulations based on the tree of heaven and common ash for the concentration of 1%, with deterioration indices of 163 and 132, respectively. The main benefit of these formulations is their versatility, effectiveness, prolonged effect, and because they are completely environmentally acceptable. Therefore, they can be considered for suppression of the spongy moth in forest ecosystems.

Keywords : Ailanthus altissima (Mill.), Fraxinus excelsior L., encapsulation, Lymantria dispar
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