Repellence and attractiveness: the double effect of essential oils on insect pests

Stefano Bedini, Priscilla Farina, Barbara Conti
University of Pisa, Department of Agriculture, Food and Environment, Italy
e-mail address: *stefano.bedini@unipi.it*

Abstract: The long-term use of synthetic insecticides has led to negative side effects on human health, environmental pollution, and to the development of resistance in treated pests. As an alternative, essential oils (EOs), complex mixtures of volatile compounds extracted from aromatic plants, have been largely investigated. EOs have a wide range of biological activities and are used for the protection of human, food, and crops from the attack of insects. Their activities against insect have been mainly reported as insecticide, antifeedant, or repellent. In particular, in the last 30 years, a large number of reports showed the repellent effect of the EOs extracted from plants of all continents and against most of the main insect pests. Nevertheless, on the contrary, there are also some reports that indicate the EOs can act as attractants to different insect species.
In this work, we assessed the attractiveness or repellence of EOs in relation to the EOs composition and dose, and to the insect species.
The results indicated that most of the EOs tested can exert both attractive and repellent activity depending on the dose. Since EOs contain volatile substances whose concentration varies in time after the application, the implication of these results will be discussed in relation to their possible use as insect repellents or as lures for trapping.

Key words: essential oils, bioactivity, repellence, attractiveness, lures