

# TOXICITY OF SIX ETHANOL PLANT EXTRACTS AGAINST THE GREEN PEACH APHID *MYZUS PERSICAE* SULZER (HOMOPTERA: APHIDIDAE)

Hanna M. Madanat<sup>1</sup>, Tawfiq M. Al Antary<sup>2</sup> and Musa H. Abu Zarqa<sup>3</sup>

<sup>1</sup>Ph.D student at Department of Plant Protection, Faculty of Agriculture, The University of Jordan.  
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<sup>2</sup>Prof of Economic Entomology and Pesticides, Department of Plant Protection, Faculty of Agriculture, The University of Jordan, Amman, Jordan, 11942

<sup>3</sup>Prof. of Organic Chemistry, Department of Chemistry, Faculty of Science, The University of Jordan

## ABSTRACT

A study was conducted to test the aphicidal activity of the ethanol leaf extract of six plant species of the most widely spread plants in Jordan. LC50 and LC90 were calculated using SPSS program. Completely Randomized Design (CRD) evaluation experiment was conducted to test the six plant species against the green peach aphid (GPA) *Myzus persicae* which was maintained in two cultures, in the Lab and in the green house for ten generations to get a susceptible strain before conducting the bioassay. Ethanol leaf extracts were obtained by soaking and then concentrated and dried. Dipping method was used in the bioassay. Results were significantly different in the toxicity assessment and in the CRD evaluation. The LC50 for the leaf extract of *Ricinus communis* L was the lowest (553 ppm) and for *Robinia pseudoacacia* L was the second most toxic plant extract (1150 ppm) after 24 hours, while *Lantana camara* L ethanol leaf extract was the least toxic (6660 ppm). CRD evaluation showed that *Robinia pseudoacacia* had 76.46%, followed by *Ricinus communis* which had 58.6% mortality rates, respectively. On the other hand *Nerium oleander* Mill caused the least mortality rate 25.2%, compared to the negative control and the positive control (Cypermethrin) which caused 3.24% and 90.82% mortality rates after 24 hours, respectively.

## KEYWORDS:

Toxicity, Plant extract, Ethanol, Green peach aphid.

## INTRODUCTION

Environmental pollution has been considered the outcome of the intensive use of chemical pesticides, which adversely affect the human

health, disturb biological control agents, and cause pesticides resistance. Food and agricultural products quality and safety have been considered the aim of both the consumer and the producer who focused on the pesticide free products and organic farming [1]. Pest management should consider the environment and should be applied in the integrated crop management (ICM) and integrated pest management (IPM) concept, by applying economically and friendly techniques. Therefore, the use of bio pesticides has gained a lot of interest specially chemicals from plant origin which negatively affect the pests. These botanical products could be used as extracts, essential oils, or pure allelochemicals [2]. In North America and Europe, there is a public interest for long term health and the environmental effects of the synthetic pesticides and natural pesticides, both microbial and botanical. In the United States, Food Quality Protection Act of 1996 restricted the use of conventional insecticides (organophosphates and carbamates) which have been intensively used by the farmers. Therefore, alternative products favored by the Environmental Protection Agency (EPA) in the USA should be produced [3]. Moreover, insecticides resistance development in insect pests has been considered as an increasing obstacle in agriculture, forestry and public health [4].

The green peach aphid *Myzus persicae* Sulzer (Aphididae: Homoptera) is a cosmopolitan species of economic importance, extremely polyphagous, and efficient vector of plant viruses, transmitting more than 100 plant viruses. It has a wide range of genetic variations in color, life cycle, host-plant relationships and methods of resisting insecticides [5]. The green peach aphid has a striking capacity for rapid adaptation to insecticides, developing resistance to more active compounds, as it has high reproductive rate and short generation time [6]. It has been noticed that the green peach aphid has developed resistance to the commonly used