

IDENTIFICATION AND ISOLATION OF THE INSECTICIDAL COMPOUNDS FROM *ROBINIA PSEUDOACACIA* L. (FABACEAE)

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ABSTRACT

Bioassay guided fractionation of the *Robinia pseudoacacia* ethanol leaf crude extract using Liquid-Solid Chromatography through silica gel and Sephadex columns had led to the determination of the most effective fractions and separation of most important compounds. Gas Chromatography and Mass Spectrometry (GC-MS) screening of *R. pseudoacacia* ethanol leaf crude extract and two of the effective fractions were conducted. GC-MS screening of *R. pseudoacacia* showed fourteen compounds in the crude extract with different percent, among these: pentanoic acid 2-ethyl-methyl ester with 10.65%, linolenic acid with 9.77%, phytol with 8.87%, sterols such as beta sitosterol with 6.77% and other compounds. ¹H NMR, ¹³C NMR and mass spectral data revealed the presence of luteolin (3',4',5,7- tetrahydroxyflavone) and acacetin -7-O-glycoside. These results indicated the potential of *R. pseudoacacia* ethanol leaf extract as a promising aphicide for controlling GPA.

KEYWORDS:

Robinia pseudo acacia, Bio fractionation, Aphicidal activity, *Myzus persica*

INTRODUCTION

Myzus persicae (Sulzer) (1776) (Homoptera: Aphididae), the green peach aphid (GPA) is the most economic aphid crop pest all over the world [1]. The GPA is an outstanding in distribution infesting major hosts such as beans, sugar beets, sugar cane, brassicas, potatoes, tobacco and citrus [2]. *M. persicae* causes direct injury to crops which is apparent on many crops, estimated at over 875 plant species including a number of vegetable crops and stonefruits. The direct injury includes curling and distortion of new foliage at the growing points and retarded growth of young peach shoots [3]. Severe infestation by GPA causes injury by removing large volumes of sap from plants and depriving them of nutrients. This aphid also causes indirect damage by the production

of sugary honeydew on the leaves, making them susceptible to sooty molds, *Fumago vagans* Pers. which reduces leaves quality and also become susceptible to sun scaled [4]. The GPA is also one of the most important vectors of several viruses that causes series of losses in tobacco and other crops [5, 40, 41]. This species behaves as a pest, because of its distribution, mechanisms of plant damage, life cycle, host range, capacity of disperse and ability to evolve resistance to insecticides [6, 40, 41]. Resistance in GPA has been reported to 74 insecticides from various chemical groups as organochlorines, organophosphates, carbamates, neonicotinoids, and pyrethroids [7]. It has been reported in Jordan that, the GPA has developed resistance to the commonly used insecticides from organophosphates and carbamates, particularly, in Jerash district and Jordan Valley regions [8].

Plants synthesize a wide range of chemicals for defense against colonization by insects and other herbivores [9]. Six thousands plant species have been screened over the years and more than 2500 plant species belonging to 235 families possessed biological activity against various categories of pests [10]. Some plant extracts are toxic to aphids [11, 40, 41]. Different types of secondary metabolites produced by plants which are believed to be the core in the natural plant defense, such as monoterpenes, sesquiterpene lactons and triterpenes have been already commercialized [12]. The (Black locust), *Robinia pseudoacacia* (Fabaceae) is a member of the subfamily Papilionoidae, which is a North American genus of the deciduous trees and shrubs. It is a perennial plant; medium sized and may reach 25m. *R. pseudoacacia* is acquiring increasing spread in the European continent and is considered as an invasive species and listed as the most dangerous invasive species because of its ability to spread quickly and its high growth rate forming mono-dominant forests [13]. It had allelopathic effect due to robinetin, myricetin and quercetin [14].