



STUDY BIOLOGICAL ACTIVITY OF EXTRACT ACTIVE SUBSTANCES OF ORANGE LEAVES IN CONTROL OF BLACK STEM DISEASE OF GRAPE PLANTS

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Article history:	Abstract:
<p>Received: 4th June 2023 Accepted: 4th July 2023 Published: 4th August 2023</p>	<p>This study was conducted in the medicinal and aromatic plants unit laboratories at the College of Agriculture, University of Basrah, to investigate the effect of using orange leaf extract on controlling the blackening of the stem disease of grapes. A number of grape trees infected with stem blackening disease were selected by alcoholic extract of orange leaves at concentrations (0, 100, 200, 300 ml l⁻¹). The alcoholic extract content of orange leaves of the active substances was estimated by GC-MS using a gas chromatograph coupled with mass spectrometry. The components were identified using the National Institute of Measurement and Technology (NIST) database by comparing the resulting spectrum of the unknown component with the known stored components in the NIST library. The detection showed the presence of 8 compounds in orange leaves, and the highest peak area of the extract was at 2.25 minutes for n-Hexane, and the lowest peak area was at 17.07 minutes for Copaene. The compound Ethyl Acetate appeared at 2.61 minutes with an area of 19.77 and Tetradecane at 19.47 with an area of 0.54. The different compounds varied in the time of their appearance, and the appearance of these eight compounds did not recur in different periods. The results of the study also showed that the treatment of orange leaf extract with a concentration of 300 ml l⁻¹ recorded the highest percentage of response to extract, amounting to 70.94%, the highest percentage of the carbohydrate content of leaves amounted to 28.24%, the lowest percentage of phenols amounted to 0.65%, and the highest percentage of leaves content of chlorophyll amounted to 17.83.</p>

Keywords: Biological activity; extract of active substances; orange; black stem; grape.

INTERACTION

Grape *Vitis vinifera* L. is a temperate zone fruit tree in the blueberry family. It is believed that the original home of the grape plant is the region between the southern Black Sea and the Caspian Sea, and all known grape varieties originated from it, and then its cultivation spread to the rest of the world (Perl and Eshdat, 1998). In Iraq, its cultivation dates back to the fifth millennium BC, when it was intercropped with date palm trees and other fruit trees (Al-Rawi and Al-Douri, 2000). Grapefruits are characterized by nutritional and economic importance, as they constitute an important part of human food, and eating them is necessary because they are rich in sugars, vitamins, organic acids, fats, proteins, fibers, minerals, and calories (Al-Saeedi, 2000).

Citrus fruits belong to the Rutaceae family, one of the evergreen fruit trees. It is believed that the original home of citrus is the tropics and subtropics in Southeast Asia (Agha *et al.*, 1991). Trees and the quantity of annual production, and even in terms of the quality of the fruits and the content of its leaves of active gradients (Al-Khafaji *et al.*, 1990). Some studies have indicated that the active substances extracted from plants give better results than the same substance manufactured by chemical methods, which may be accompanied by toxic side effects, which indicates the possibility of the active substances in the secondary compounds contributing to enhancing the effective role of a plant (Ngegba *et al.*, 2018).

Black leg disease is one of the most common bacterial diseases, and its danger increases in wet areas. The cause of this disease is the bacterium *Erwinia Carotovora Atroseptica*. Infection with the black leg occurs in all stages of plant growth, especially when excessive irrigation, as the causative bacteria live in the soil and plant residues for a period not exceeding three months at a temperature of up to 2 c (Wach, 2009).