

Effect of spraying benzyl adenine and chitosan on some chemical traits and Oil quantity in the leaves of *Duranta erecta* L

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Abstract

The experiment was conducted in lathhouse of the Department of Horticulture and Landscape Engineering, College of Agriculture, University of Basra during the two agricultural seasons (2022 and 2023) on *Duranta* plants, for the purpose of knowing the effect of spraying with benzyl adenine at three concentrations of 0, 75, and 150 mg L⁻¹ and chitosan at three concentrations of 0, 100, and 200. mg L⁻¹ on some chemical traits of *Duranta* leaves. The research was conducted following a completely randomized design for factorial experiments, using two agents: benzyl adenine and chitosan, with three concentrations of each and three repetitions of the treatment, so that the number of experimental units reached 27 experimental units. The least significant difference (L.S.D.) test was used. At a level of significance (0.05) to compare the means, the results showed that the plants sprayed with benzyl adenine at a concentration of 150 mg L⁻¹ were significantly superior in increasing the leaves' total content of chlorophyll pigment, reaching (131.757 and 146.044) mg 100 g⁻¹, and also increasing the leaves' content of carbohydrates. The total solutes amounted to (164,421 and 217,067) mg L⁻¹, and the total carotenoids content of the leaves amounted to (14,850 and 20,263) mg L⁻¹ and the amount of oil in the leaves amounted to (0.1197, 0.1252) g, and its percentage was (1.1967, 1.2524)%, respectively, for both seasons of the study. Also, chitosan at a concentration of 200 mg L⁻¹ gave the highest total chlorophyll content in the leaves. The total soluble carbohydrate content was (179,677 and 212,413) mg 100 g⁻¹, and the total carotenoids content of the leaves was (15,008 and 20,827) mg 100 g⁻¹, respectively, for both seasons.

Keywords: benzyl adenine, chitosan, *duranta*, chlorophyll, total soluble carbohydrates, carotenoids, Oil quantity

Introduction

Duranta erecta L. is one of the evergreen shrubs belonging to the Verbenaceae family. It is native to the Americas. It is widely grown as an ornamental plant and also used as a hedge plant. The *Duranta* plant is of great importance due to the diversity of its traits and uses, as it is considered an important tree. It has economic and medicinal value, as it is

used as an antiseptic, anti-inflammatory, antimicrobial, and pain reliever. The *Duranta* plant is also characterized by containing many vital compounds such as alkaloids, flavonoids, and glycosides, which contribute to its therapeutic benefits (8). Therefore, this plant is considered dual-purpose. On the one hand, it is considered an ornamental plant, and on