

RESEARCH ARTICLE

# Effect of spraying with chitosan and whey on the content of nutrients and active compounds in 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 agricultural seasons (2022 and 2023) on *Duranta* plants, to know the effect of spraying different levels of chitosan at levels (0, 100, 200) mg L<sup>-1</sup> and whey, which are (0, 75, 150) ml L<sup>-1</sup>, on the content of nutrients and active compounds of *Duranta* plant leaves. The study followed the design of complete randomized sectors for factorial experiments with two factors of spraying chitosan and whey, with three concentrations for each, with three replicates for the treatment, so that the number of experimental units became 27 experimental units. The least significant difference (LSD) test was used at a significance level of 0.05) to compare the averages. The results show that the plants sprayed with chitosan at a concentration of 200 mg L<sup>-1</sup> were significantly excelled and gave the highest nitrogen content in the leaves, which amounted to (3.070 and 3.483) %, phosphorus (0.260 and 0.286) % and potassium (2.486 and 2.742) %. The leaf content of active compounds increased when treated with chitosan at a concentration of 200 mg L<sup>-1</sup>, as the phenols content in the leaves reached (215.359 and 378.491) mg g<sup>-1</sup> and flavonoids reached (20.257 and 19.426) mg 100 g<sup>-1</sup>, respectively, for both seasons of the study. The plants that were sprayed with whey protein at a concentration of 150 ml L<sup>-1</sup> were significantly superior in giving the highest content of nutrients in their leaves, as the nitrogen content reached (3.439 and 3.769) %, phosphorus reached (0.269 and 0.300) % and potassium reached (2.596 and 2.906) %. The content of the leaves of the plant also increased. *Duranta* is one of the active compounds when sprayed with high concentration of whey, as the content of phenols reached (223.177 and 374.827) mg g<sup>-1</sup> and flavonoids (21.232 and 20.271) mg 100 g<sup>-1</sup> in the leaves respectively for both seasons of the study.

## Keywords

chitosan; *Duranta*; flavonoids; phenols; whey

## Introduction

*Duranta* plants are one of the most important branches of ornamental plants, which are beautiful and famous shrubs found all over the world and are usually used as plant hedges (1). *Duranta* has several names, the most important of which are the golden dewdrop, the flower of heaven, the whisper of angels, pigeon berries and the Brazilian flower of heaven (2). In addition to the importance of the *Duranta* plant as an ornamental plant, it is one of the most important medicinal plants, due to its content of active substances that have