

Studying the Response of *Anethum graveolens* L. to the Stress of Salinity and Foliar Spray with *Alhagi Maurorum* Aqueous Extract



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Abstract:

Background: Weed infestation and salinity are both biotic and abiotic stresses that are highly present in the Basrah governorate in Iraq and widely influence crop growth

Methods: The present work was conducted to evaluate the effect of salinity at (0, 6, 12 dS/m) and aqueous extract of *Alhagi maurorum* at (0, 3 g/L) on growth and biochemical parameters as well as phytochemicals of Dill plant *Anethum graveolens* L.

Results: Results revealed that growth parameters and photopigment content increased with salinity at 12 dS/m and reduced with *Alhagi maurorum* aqueous extract. Besides that, carbohydrate content was reduced with both stresses, and proline content increased with *Alhagi maurorum* aqueous extract. GC-MS chromatogram of *Anethum graveolens* methanolic extract displayed high alteration in phytochemicals quantity post salinity and camelthorn extract treatments.

Conclusion: Current work inferred that the Dill plant has high tolerance properties to salinity contrary to weed infestation stress. Stresses combination declined growth parameters and reduced metabolite content of Dill plants.

Keywords: Biotic stress, Abiotic stress, *Anethum graveolens*, Growth traits, Biochemical traits, Phytochemicals.

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1. INTRODUCTION

Soil salinity is a major global issue in the world due to its massive adverse impact on agricultural productivity and sustainability. In Iraq, irrigation with salt water is considered a major source of salt increase in the soil [1]. The rising of water salinity, especially in the southern of Iraq and specifically in Basrah is due to industrial and urban waste discharge in the water bodies, low rainfall, and high evapotranspiration [2]. In addition, the elevation of the salt tide in the Shatt Al-Arab River (the main source of water in Basrah) owing to the mismanagement of water

resources and the aquatic policy of neighboring countries exacerbated the problem extent [3]. The last evaluation study for Shatt Al-Arab water reported that it is not suitable for drinking and irrigation [4]. Plants can be divided into two categories that are related to salinity tolerance: glycophytes and halophytes. Glycophytes are extremely sensitive to soil salinity and could be included in a majority of plant life and all major crops; halophytes are salt tolerant and often grow in salty environments. The effectiveness of salt stress can be identified in two main ways: osmotic stress and ionic toxicity. The stress and