



Journal

J. Biol. Chem.
Environ. Sci., 2017,
Vol. 12(4): 585-615
<http://biochemv.blogspot.com.eg/>

EXOGENOUSLY APPLIED PROLINE ALLEVIATES SALINITY STRESS ON *CARUM* *CARVI* L. PLANTS

Mona H. Hegazy *, **Wessam M. Serag**
El-Din Abdel Fattah**
and K.M.K.El Tobgy, **

**Pharmaceutical Branch, National Research Center,
Dokki, Giza, Egypt.*

***Medicinal and Aromatic Plants Research
Department, Horticulture Research Institute (A.R.C.,
Giza, Egypt.*

ABSTRACT

Salinity is one of the important abiotic stresses that often lined with other major abiotic stresses as drought, heat, and oxidative stress ...etc. Thus, it is one of the main problems affecting agricultural production. In this study, pots experiment was conducted using irrigation water differed in their salinity levels (control, 1500, 2500 and 3500ppm NaCl) to investigate the effect of exogenous applied proline at rate of 0, 100, 200 or 300 ppm on vegetative growth, yield and chemical composition of Caraway (*Carum carvi* L.). Results indicates that, saline water irrigation caused a decline in all growth parameters (plant height, no. of branches, fresh and dry weights), yield characters (no. of umbels/plant, weight of seeds/plant and seed index), essential oil constituents and chemical composition of plant (nitrogen, potassium and K/Na ratio). As expected, sodium, chloride and proline contents were higher in plants grown under saline conditions compared to untreated plants. However, exogenous applied proline alleviated the bad effects of salinity stress. The mean values of Carvone (major compound) in the essential oil showed gradual increase due to increasing proline. The highest values obtained from applied proline at 300 ppm, while the lowest ones resulted from 3500 ppm NaCl alone.

Key words: Caraway, osmotic stress, proline, salinity, Na⁺, Cl⁻, K⁺.