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**SALINITY EFFECTS ON PHOTOSYNTHESIS PARAMETERS AND
ANTICANCER COMPONENTS IN *ANDROGRAPHIS PANICULATA***

Daryush Talei^{1,*}, Alireza Valdiani²

¹Medicinal Plants Research Center, Shahed University, Tehran, Iran

²Department of Biochemistry, Faculty of Biotechnology and Biomolecular Sciences, University Putra Malaysia, 43400 UPM Serdang, Selangor DE, Malaysia
E-mail: D.talei@shahed.ac.ir

Andrographis paniculata known as Naein-e Havandi in Iran is a medicinal herb in the family Acanthaceae. The leaves of the mature plant contain abundant diterpinoids of medicinal properties [1]. Salinity causes the adverse effects in all biochemical and physiological processes [2]. The present study aimed to investigate the salinity effects on photosynthesis parameters and phytochemical components in 12 accessions of *Andrographis paniculata* to illustrate their impacts on genetic variation of the plant's population and photosynthesis parameters and phytochemical components. For this purpose, a total of 12 accessions of *A. paniculata* at mature stage (70-day old) were grown in different salinity levels (0, 4, 8, 12 and 16dSm⁻¹) on sand medium. After 30 days salinity exposure and before flowering, the photosynthesis parameters, total dry weight and andrographolide content were measured. The variance analysis indicated that salinity levels significantly affected the photosynthesis parameters, total dry weight (TDW), total crude extract (TCE) and andrographolide content (AG) in *A. paniculata* (p<0.01). The interaction of salinity × accession was significant in terms of chlorophyll-b, net photosynthetic rate (NPR), stomata conductance (COND) and AG content. After four weeks salt exposure time, a significant decrease in growth was apparent in all accessions. The concentration of 16 dSm⁻¹ NaCl significantly reduced the dry weight by 62.80% compared to the control. The plant at 12 dSm⁻¹ reached relatively higher AG content; however, the photosynthesis parameters were significantly reduced. Analysis of variance showed high significant differences (P≤0.01) among the accessions in terms of photosynthesis parameters and AG content. The concentration of the AG in *A. paniculata* varied from 1.39% (11329) to 2.04% (11339), with mean value of 1.61%. Generally, plants produce secondary metabolites in nature as defense mechanisms under different environmental stresses. In this regard, our results indicated that AG content was positively correlated with the substrate concentration of salt. The broad-sense heritability (h²) of NPR was the highest (0.97), as well as AG content (0.90), while the h² of TCE was the lowest (0.71). In agreement with the reports of Talei et al. [2], the findings of this study indicated that the high heritability of NPR and AG can be considered the direct criterion indicators in the next breeding programs to develop salt-tolerant varieties in *A. Paniculata*.

References

[1] Valdiani A., Mihdzar AK., Tan SG., Talei D., Puad MA., Nikzad S. *Mol Biol Rep.* **2012**, *39*, 5409-5424.