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**EFFECTS OF SALT STRESS ON THE PIGMENT CONTENT OF
MEDICINAL PLANT LEMON BALM (*MELISSA OFFICINALIS* L.)**

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Melissa officinalis L. belongs to the family Lamiaceae and is one of the important medicinal plant species in central and southern Europe and in Asia. Due to the essential oil components of lemon balm, it is used in the Iranian traditional medicine for treatment of many diseases [1]. Essential oils are currently used as pharmaceuticals in medicine and pharmacology as anti-tumor, anti-bacterial, antimicrobial, antihistaminic, antispasmodic and antioxidant agents [2]. Salinity causes adverse effects in all biochemical and physiological processes of plants [3]. Chlorophyll *a*, chlorophyll *b* and carotenoid are main photosynthetic pigments and they play important role in photosynthesis. The present study aimed to investigate the effects of salinity on the photosynthetic pigments in *M. officinalis* plants. In this regard, an experiment was carried out based on randomized complete block design with four salinity levels (0, 3, 6, 9 dSm⁻¹) and three replicates. The results indicated that increasing the salinity level led to decrease in the chlorophyll *a* content with the highest decrease at 9 dSm⁻¹ salinity level. With increasing salinity level to 9 dSm⁻¹, a decrease of 19.53% was observed in chlorophyll *a* content, as compared to control. At 3 and 6 dSm⁻¹ salinity levels, the chlorophyll *b* and carotenoid contents were increased. The highest increases in chlorophyll *b* (28.59%) and carotenoid (13.77%) contents were recorded at 3dSm⁻¹, as compared to control. With increasing in salinity level from 6 to 9 dSm⁻¹, chlorophyll and carotenoid contents decreased with the values of 13.03% and 24.04%, respectively, as compared to control. As compared to the control group, a 7.23% increase and a 24.68% decrease was obtained in total chlorophyll content of the treated plants with 3 and 9 dSm⁻¹ salinity levels, respectively. Chlorophyll *a/b* ratio reduced in different salinity levels and the greatest decrease (22.09%) was observed in plants treated by 3 dSm⁻¹ levels of salinity, as compared to control. In agreement with the report of Khorshidi et al., the findings of this study supported the suggestion that salinity causes significant decrease in the chlorophylls and carotenoids contents of the *M. officinalis* plants. Pigments system reduction is attributed to a salt induced weakening of protein-pigment-lipid complex or increased chlorophyllase enzyme activity.

References

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