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**INFLUENCE OF CALCIUM NITRATE ON THE CHANGE OF
MORPHOLOGICAL CHARACTERISTICS AND MUCILAGE CONTENT
OF BORAGE**

Hoda Shams¹, Heshmat Omidi^{1,*}, Mehdi Seifshandi²

¹Agriculture College, Shahed University, Tehran, Iran

²Academic Center for Education, Culture & Research, Institute of Medicinal Plant Research,
Karaj, Iran

E-mail: heshmatomidi@yahoo.com

Borage (*Borago officinalis* L.) is an herbaceous annual plant which contains high percentages of gamma linolenic acid in the seed oil. The aerial part of borage contains mucilage and the other secondary metabolites [1,2]. Calcium one of the essential nutrients for plants, has been observed to play a major role in the initiation of many signal transduction processes in higher plant cells, polar growth, movements and hormone regulated growth and development [3]. The main aim of the study was to determine the effect of calcium nitrate on morphological traits, mucilage content and swelling index on borage. The experiment was performed in a completely randomized block design with three replicates. The treatments were three concentrations of calcium nitrate (5, 10, 15 mM) and control which sprayed on aerial parts of plant at onset of flowering and seed set stages.

The results showed that various concentrations of calcium nitrate had a significant effect ($p < 0.05$) on calcium concentration in the plant tissues. The highest amount of calcium in plant tissues was observed at the calcium nitrate 15 mM. The plant height ($p < 0.01$), leaf number, total Ash, seed yield, mucilage percentage and swelling index values, in the aerial parts of the plants were significantly ($p < 0.05$) affected by the application of different concentrations of calcium nitrate, but had no significant effect on the insoluble acid ash content, leaf width and leaf length. The highest plant height, leaf number, total ash and seed yield were observed when 15 mM of calcium nitrate was applied, whereas the highest mucilage percentage and swelling index values were observed with 5 mM of calcium nitrate. A 15 mM concentration of calcium nitrate had a stronger beneficial effect than the other treatments with respect to the majority of the measured properties of borage.

References

- [1] Shams, H.; Naghdibadi, H.A.; Omidi, H.; Rezazadeh, S.H.; Sorooshzadeh, A.; Sahandi, M. *Journal of medicinal plants*. **2009**, 8(32), 138-144.
- [2] Seifshandi, M.; Sorooshzadeh, A.; Rezazadeh, S.H.; Naghdibadi, H.A. *Journal of Medicinal Plants Research*. **2011**, 5(2), 171-175.
- [3] Chao, Liu.; Bofu, Pan.; Weiqian, C.; Yun, Lu.; Liang, C.; Xiaoqing, L.; Fashui, H. *Biol Trace Elem Res*. **2008**, 121, 266-275.