Fourth Article (Considered single- Common with another outside the specialization- Published

Article title	**Response of *Calendula officinalis* L. Plants to Foliar Application of Gibberellic Acid and Mixture of Some Micronutrients**
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Abstract

The present work was carried out in the Experimental Farm of Faculty of Agriculture, Fayoum University, in two successive seasons 2010/2011 and 2011/2012. This work aimed to investigate the effect of gibberellic acid and mixture of some micronutrients (Mn, Zn and Fe), as well as, their interaction on growth, flowering, chemical constituents and anatomical structure of *Calendula officinalis* L. plants. The obtained results clearly showed that increasing gibberellic acid concentration produced the highest significant or insignificant increasing in plant height, branches number and fresh weight of herb, as well as, number of inflorescences/plant, inflorescence diameter and inflorescences fresh weights/plant compared with control plants, in both seasons. Relationship between GA3 applied and leaves or flowers macro and micronutrients contents was positive and so total carbohydrates and pigments in leaves and flowers. Foliar application of micronutrients mixtures at the highest concentration 400 ppm produced the highest significant records of the above-mentioned vegetative or flowering traits. Pronounced enhancing influences on leaf and flower N, P, K, Mn, Zn, Fe, total carbohydrates and pigments were obvious as a consequence of spraying micronutrients mixtures at any concentration compared with control plants. The interaction of micronutrients mixtures and GA3 concentrations seemed to reflect some positive significant effects on vegetative, flowering and chemical composition compared with untreated plants. Generally, spraying micronutrients mixtures at 200 or 400 ppm combined with GA3 at 400 ppm was remarked in this respect. Anatomical properties of main stem were investigated and the highest increase in stem section diameter was recorded at the interaction of 400 ppm GA3 and 200 ppm of mixture of micronutrients.