

Abstract

Fenugreek is a legume cultivated for its medicinal value, especially in arid and semi-arid regions, where soil salinity is an increasing problem. In fact, salinity is one of the major environmental factors limiting plant growth and productivity. Plant hormones are known to play vital roles in the ability of the plants to acclimatize to varying environments by mediating growth, development, and nutrient allocation. Thus, to gain insights about the role of plant hormones in the growth responses of salinized fenugreek plants (*Trigonella foenum-graecum* L.), a medium-term experiment was conducted under moderate (100 mM NaCl) and high (200 mM NaCl) salinity levels. Results showed that moderate, but especially high salinity stress, impaired shoot growth, total leaf area and leaf number. Salinity also provoked a reduction in relative water content, stomatal conductance and photosynthesis-related pigments, but, surprisingly, photosynthetic rate increased in the leaves of fenugreek plants. Na accumulated in the leaves, particularly at high salinity levels, while most mineral nutrients decreased. Furthermore, important changes in the main hormone classes were observed, associated to growth reduction under salinity. The active cytokinin form, *trans*-zeatin, and active cytokinin and gibberellin concentrations decreased with salinity in the leaves of fenugreek plants, whereas the ethylene precursor, 1-aminocyclopropane-1-carboxylic acid, accumulated in the roots of fenugreek plants, especially at high salinity levels. Importantly, leaf abscisic acid concentrations increased under salinity, which could limit leaf transpiration to adapt growth to the stressful conditions. Therefore, plant hormones seem to play a critical role in the growth responses of fenugreek plants under salinity stress and they could have potential interest in salt tolerance programmes for this species.