

## عنوان مقاله:

Changes of glutamine and asparagine content in cucumber seedlings in response to nitrate stress

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## خلاصه مقاله:

Nitrogen fertilizer application rates in intensive agricultural systems have increased dramatically in recent years, especially in protected vegetable production systems. This excessive use of nitrogen fertilizer has resulted in soil secondary salinity, which has become a significant environmental stress for crops such as cucumber, in the protected farmlands. It is thus necessary to illuminate how crops respond to nitrate stress. The objective of this work was to investigate the influence of three nitrate levels of 14 (CK), 56 (T-1), and 140 (T-2) mmol L<sup>-1</sup> on glutamine and asparagine content in the roots, stems, and leaves of cucumber (*Cucumis sativus* L. cv. Xintaimici) seedlings grown in hydroponic culture. The results showed that glutamine content in the roots, stems, and leaves of T-1 was a little higher than CK. In the roots, stems and leaves of T-2, glutamine content dramatically decreased over treatment course, and at 12 d decreased by 76%, 46% and 68%, respectively, with respect to CK. Asparagine content in the roots, stems, and leaves of T-1 was not significantly different from CK, whereas, in the roots, stems, and leaves of T-2 seedlings asparagine content decreased significantly. At 12 d, asparagine content in the roots, stems, and leaves of T-2 decreased by 78%, 60% and 74%, respectively, with respect to CK. This evidence indicates that the underlying mechanism of nitrate stress might be different from other abiotic ones such as salt stress and drought, which often stimulate the synthesis of amides

## کلمات کلیدی:

Asparagine, Cucumber, Glutamine, Hydroponic culture, Nitrate

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