

研究报告

化学诱抗剂诱导黄瓜抗盐性及其机理

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摘要 在200 mmol·L⁻¹ NaCl胁迫条件下, 采用根际注射结合叶面喷洒的诱导方法探讨了不同浓度水杨酸、油菜素内酯、壳聚糖、亚精胺4种化学诱抗剂对黄瓜幼苗生长及其生理生化特性的影响. 结果表明, 4种化学诱抗剂在适宜浓度范围内, 显著地降低了黄瓜幼苗的盐害指数和死苗率, 以油菜素内酯0.01 mg·L⁻¹降低幅度最大, 比对照分别降低了63.0%和75.0%; 显著地促进了超氧化物歧化酶、过氧化物酶、过氧化氢酶等保护酶活性, 从而显著降低了丙二醛含量和电解质渗出率, 干重含水量显著升高; 促进了幼苗的形态建成, 植株茎粗、展开叶数及壮苗指数显著提高, 壮苗指数以壳聚糖150 mg·L⁻¹最大, 比对照提高了30.9%. 说明施用适宜浓度的化学诱抗剂可以诱导黄瓜幼苗的抗盐能力, 减缓盐害症状. 综合作用效果依次为: 油菜素内酯0.005~0.05 mg·L⁻¹、亚精胺150~200 mg·L⁻¹、壳聚糖100~200 mg·L⁻¹和水杨酸50~150 mg·L⁻¹.

关键词 [黄瓜](#) [盐胁迫](#) [化学诱抗剂](#)

分类号

Salt resistance and its mechanism of cucumber under effects of exogenous chemical activators

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Abstract

With root injection and foliar spray, this paper studied the effects of different concentrations salicylic acid, brassinolide, chitosan and spermidine on the growth, morphogenesis, and physiological and biochemical characters of cucumber (*Cucumis sativus* L.) seedlings under 200 mmol·L⁻¹ NaCl stress. The results showed that at proper concentrations, these four exogenous chemical activators could markedly decrease the salt stress index and mortality of cucumber seedlings, and the decrement induced by 0.01 mg·L⁻¹ brassinolide was the largest, being 63.0% and 75.0%, respectively. The activities of superoxide dismutase (SOD), peroxidase (POD) and catalase (CAT) increased significantly, resulting in a marked decrease of malondialdehyde (MDA) content and electrolyte leakage. The dry weight water content and morphogenesis of cucumber seedlings improved, and the stem diameter, leaf number, and healthy index increased significantly. All of these suggested that exogenous chemical activators at proper concentrations could induce the salt resistance of cucumber, and mitigate the damage degree of salt stress. The salt resistance effect of test exogenous chemical activators decreased in the sequence of 0.005~0.05 mg·L⁻¹ brassinolide, 150~250 mg·L⁻¹ spermidine, 100~200 mg·L⁻¹ chitosan, and 50~150 mg·L⁻¹ salicylic acid.

Key words [Cucumber](#) [Salt stress](#) [Chemical activator](#)

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