

## NaCl胁迫对嫁接番茄根系质膜和液泡膜ATP酶活性的影响

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## Effects of NaCl stress on ATPase activities of root plasma and tonoplast membranes in grafted tomato seedlings

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**摘要** 在NaCl胁迫下, 对番茄嫁接苗和自根苗的根系活力、根系质膜H<sup>+</sup>-ATPase、液泡膜H<sup>+</sup>-ATPase和H<sup>+</sup>-PPase、质膜和液泡膜Ca<sup>2+</sup>-ATPase、质膜氧化还原系统活性进行了比较。结果表明, 胁迫条件下, 嫁接苗根系活力显著高于自根苗。胁迫前期, 嫁接苗根系质膜H<sup>+</sup>-ATPase活性、液泡膜H<sup>+</sup>-ATPase和H<sup>+</sup>-PPase活性、质膜和液泡膜Ca<sup>2+</sup>-ATPase活性、质膜NADH氧化速率和Fe(CN)<sub>6</sub><sup>3-</sup>还原速率被显著诱导; 自根苗根系液泡膜H<sup>+</sup>-ATPase、H<sup>+</sup>-PPase和Ca<sup>2+</sup>-ATPase活性、质膜NADH氧化速率和Fe(CN)<sub>6</sub><sup>3-</sup>还原速率被显著诱导。胁迫后期, 嫁接苗和自根苗根系各项指标均被显著抑制, 但嫁接苗各指标受抑制时间较自根苗晚, 且数值上均显著高于自根苗。表明嫁接苗比自根苗具有较强的耐盐性。

**关键词:** 嫁接番茄 NaCl胁迫 根系活力 ATP酶 质膜氧化还原系统 嫁接番茄 NaCl胁迫 根系活力 ATP酶 质膜氧化还原系统

Abstract:

The effects of NaCl stress on root vigor, H<sup>+</sup>-ATPase activities of plasma membrane and tonoplast membrane, H<sup>+</sup>-PPase activities of tonoplast membrane, Ca<sup>2+</sup>-ATPase activities of plasma membrane and tonoplast membrane, plasma membrane redox system in roots of grafted and own-root tomato (*Lycopersicon esculentum* Mill.) seedlings were investigated. Results showed that root vigor of grafted seedlings was significantly higher than that of own-root seedlings during the whole stage of stress. In the early stage of stress, H<sup>+</sup>-ATPase activities of plasma membrane and tonoplast membrane, H<sup>+</sup>-PPase activities of tonoplast membrane, Ca<sup>2+</sup>-ATPase activities of plasma membrane and tonoplast membrane, NADH oxidation rate, Fe(CN)<sub>6</sub><sup>3-</sup> reduction rate in roots of grafted seedling were significantly increased, H<sup>+</sup>-ATPase, H<sup>+</sup>-PPase and Ca<sup>2+</sup>-ATPase activities of tonoplast membrane, NADH oxidation rate, Fe(CN)<sub>6</sub><sup>3-</sup> reduction rate of own-root seedling roots were significantly increased as well. In the late stage of stress, the activities of all indices of both grafted and own-root seedlings were inhibited, but the inhibition of grafted seedlings was later and significantly lighter than those of own-root seedlings during the whole stage of stress. All these results indicated that the tolerance of grafted tomato seedlings to NaCl stress was stronger than that of own-root seedlings.

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