

DELLA蛋白参与拟南芥幼苗对一氧化氮逆境的抵抗

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DELLA Contribute to Tolerance to Nitric Oxide Stress in Arabidopsis Seedlings

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摘要

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摘要 DELLA蛋白是赤霉素信号途径中的一类对植物生长起抑制作用的重要蛋白质, 在拟南芥(*Arabidopsis thaliana*)基因组中已经鉴定出5个DELLA蛋白基因。目前研究发现, DELLA蛋白在抗逆中也起了重要的作用。近年来, 一氧化氮(nitric oxide, NO)的研究工作取得重要进展, 低浓度的NO能够促进植物的生长, 但在高浓度下它对植物生长起抑制作用甚至导致细胞死亡。通过外施一氧化氮供体硝普钠(sodium nitroprusside, SNP), 研究高浓度NO对拟南芥幼苗生长的影响, 发现植物体内H₂O₂积累, 幼苗死亡。通过研究

DELLA蛋白基因表达的变化及其相关突变体的表型, 证明DELLA蛋白在抵抗NO逆境中起了重要作用。研究结果揭示了DELLA蛋白与NO逆境的关系, 为今后科学指导农业生产提供了理论依据。

关键词: 细胞死亡 DELLA蛋白 一氧化氮 抗逆

Abstract: Five members of DELLAs, important plant growth repressors in the gibberellin pathway, have been described in Arabidopsis. DELLAs play an important role in stress tolerance. A low concentration of nitric oxide (NO) can promote plant growth and development, and a high concentration can inhibit plant growth, even cause cell death. We studied the effect of NO at a high concentration in Arabidopsis seedlings by treatment with the NO donor sodium nitroprusside (SNP), and the results indicate that the cell death caused by NO is correlated with H₂O₂ accumulation. Study of phenotypes of serially DELLA-deleted mutants and DELLA gene expression in response to NO revealed that DELLAs contribute greatly to tolerance to NO stress in Arabidopsis seedlings. Thus, we reveal the relationship between DELLA and NO stress in such seedlings, which can contribute to agricultural production.

Keywords: cell death DELLAs nitric oxide stress tolerance

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