

研究简报

水稻不同耐冷品种碳代谢有关酶活性对冷害的响应

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摘要 测定了低温下水稻 (*Oryza sativa* L.) 品种湘糯1号 (耐冷品种) 和IR50 (冷敏感品种) 光合碳同化过程的关键酶二磷酸核酮糖羧化酶 (RuBPCase) /加氧酶(RuBPOase)、果糖-1,6-二磷酸酯酶 (FBPase) 以及糖代谢的蔗糖合酶 (SS) 和蔗糖磷酸合酶 (SPS) 活性和可溶性糖含量的变化。耐冷品种的RuBPCase、RuBPOase和羧化/加氧比以及FBPase活性受低温影响较小, 而冷敏感品种的这些参数在低温下降低。两品种的SS和SPS活性低温下均提高, 且耐冷品种的酶活性高于冷敏感品种。低温下2个品种的可溶性糖含量变化与SS和SPS活性的变化类似。水稻不同耐冷品种低温下碳代谢酶活性变化与其耐冷性相一致。

关键词 [水稻](#) [碳代谢](#) [酶](#) [冷害](#)

分类号

Responses of Enzyme Activities in Carbon Metabolism to Chilling Stress in Rice with Different Chilling Tolerance

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Abstract Two cultivars of rice (*Oryza sativa* L.), Xiangnuo 1 (chilling-tolerant) and IR50 (chilling-sensitive), were used to study the responses of enzyme activities of carbon assimilation and metabolism to chilling stress. Seedlings of rice were transferred into growth chambers for 5 days at 8°C as chilling treatment, or at 28°C as control. The results showed that the activities of RuBPCase, RuBPOase, and FBPase as well as carbonation/oxygenation ratio were less influenced in the chilling-tolerant cultivar, Xiangnuo 1, while those in the chilling-sensitive cultivar, IR50 were decreased under chilling stress. The activities of SPS and SS in both cultivars were increased under chilling stress. Higher levels of SPS and SS activity were maintained in the chilling-tolerant cultivar than in the chilling-sensitive cultivar. Moreover, the changed tendency in the levels of total soluble sugars, sucrose and fructose were similar to those of SS and SPS. The results indicated that the changes in enzyme activities of carbon assimilation and metabolism were in consistence with the differential tolerance to chilling in two cultivars.

Key words [Rice](#) [Carbon metabolism](#) [Enzymes](#) [Chilling](#)

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