轉殖阿拉伯芥表現黑麴菌葡萄糖氧化酵素以提高對低溫逆境之耐受性 = Increased tolerance to cold stress in transgenic Arabidop

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摘 要

過氧化氫，被視為啟動植物抵禦逆境的訊息傳遞角色，於植物 生理中參與多項調控機制，改變生理狀態以提高植物耐受能力。一 直以來，極端的溫度衝擊著農作物的產量，勢必影響人類糧食的供 給，其中以低溫對於植物的地區影響範圍來的廣大。本研究為了解 過氧化氫於低溫逆境所扮演的角色，是否能增加植物的耐寒表現， 為此構築以CaMV 35S 啟動子驅動下持續表現黑麴菌葡萄糖氧化? (Aspergillus niger glucose oxidase, GO) 之轉基因植物阿拉伯芥，在葡萄 糖氧化?催化下，增加內生性過氧化氫分子，探討其對植物抗低溫逆 境下之影響。本研究結果顯示，GO 轉殖株在低溫的耐受度，如存活率、滲漏率指標，相比對照組結果下，對於低溫的耐受度相對提高， 即內生性過氧化氫有助於植株的抗寒。本研究同時，以cDNA-半定量 PCR 分析相關基因表現，以討論其抗寒之分子機制。在基因表現結果 中，在內生性過氧化氫及冷馴化誘導下，對於逆境調控之基因 (ZAT12、COR15a、DREB2A)都有提升之趨勢，其提升程度表現需深入討論。

關鍵詞 : 葡萄糖氧化?、冷逆境、過氧化氫、阿拉伯芥

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