



拟南芥CBF1与植物对低温和干旱的抗性

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对冷驯化过程中基因表达差异的认识，使抗冻基因（COR）的克隆及其功能的分析成为研究冷驯化过程的主要目标。在拟南芥和其它抗冻植物中，分离了许多COR基因，这些基因对植物抗冻起着非常重要的作用。在拟南芥COR调控的研究中，发现了CBF转录因子的基因家族，其中CBF1能调控一组COR基因的表达。近年来，在冷敏植物如番茄和玉米中也发现了CBF类似基因，拟南芥CBF1基因在转基因番茄中的过量表达提高了植株的抗寒和抗旱性。这一研究结果展示了拟南芥CBF1类似基因的应用可能为冷敏植物抗寒和抗旱性的品种改良提供一条新的途径。Abstract: Since it was established that the alteration in gene expression occur during cold acclimation, a major goal in cold acclimation research has been to identify cold-responsive genes and to determine whether they play roles in freezing tolerance. Many cold-regulated genes (COR) were isolated and characterized in Arabidopsis and other cold tolerant plant species. Studies on regulation of COR in Arabidopsis have resulted in the discovery of a family of transcriptional activators, of which, CBF1, a member of the gene family, controls expression of a battery of COR in Arabidopsis and other cold tolerant plant species. During recent years, CBF-like genes were found in the genomes of chilling-sensitive plant species such as tomato and maize. Over-expression of Arabidopsis CBF1 confers elevated tolerance to chilling and drought stresses in transgenic tomato. These results promote our effort to identify and characterize CBF-like genes to improve tolerance of chilling-sensitive plant species to chilling and drought stresses.

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