抗多重病毒之轉基因西瓜構築及溫室抗病評估

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摘 要

台灣瓜類栽培面積廣大且種類繁多，其中以西瓜為大宗。此作物受西瓜銀斑病毒(Watermelon silver mottle virus ; WSMoV)、矮南瓜黃化病毒(Zucchini yellow mosaic virus, ZYMV)及木瓜輪點病毒西瓜系統(Papaya ringspot virus Type-W, PRSV-W)之危害，造成嚴重損害，由於缺乏抗病材料，傳統方法對於此三種病毒的防治迄無良方，本研究乃利用遺傳工程方法構築具WSMoV 病毒之核鞘蛋白、 ZYMV及PRSV-W病毒之鞘蛋白轉基因西瓜，預期能得到抗病毒的栽培品系。我們以pBI121-ZYMV-PRSV-Cp當作載體，接入不同大小WSMoV核鞘蛋白基因片段分別為203 bp、384 bp及650 bp，利用農桿菌轉殖入菸草中，經溫室接種分析，以650 bp片段之抗病效果最好。因此以pBI121-ZYMV-PRSV -Cp-WSMoV-Np-650 (ZWP-650)為載體，以西瓜子葉為材料，進行農桿菌基因轉殖法，選出13個轉基因株系。PCR偵測，均可在轉基因株系內偵測到相關條帶。溫室接種分析，已有3個轉基因株系對於ZYMV及PRSV-W之病毒具有極佳抗性，並利用間接-酵素連結免疫分析法、西方點漬法及反轉錄?-聚合?鏈鎖反應都沒有偵測到這兩種病毒的表現。在反轉錄?-聚合?鏈鎖反應中發現具有抗性之植株未接種前，可測得基因mRNA表現；接種後基因mRNA明顯消失或呈現明顯減少之狀態，因此推測其可能是由病毒誘導之基因沉寂所造成。

關鍵詞 : 農桿菌 ; 轉基因植物 ; 病毒抗性 ; 溫室評估

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