西瓜銀斑病毒核鞘蛋白與矮南瓜黃化嵌紋病毒及木瓜輪點病毒西瓜系統鞘蛋白轉機因西瓜之構築

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摘 要

中文摘要 台灣全年氣候適合瓜類栽植，栽培面積廣大且種類繁多，其中以西瓜和甜瓜為大宗。病毒危害目前仍無任何化學藥劑可防治，因此常造成瓜類嚴重的經濟損失，其中以西瓜銀斑病毒 (Watermelon silver mottle virus ; WSMoV)、矮南瓜黃化嵌紋病毒(Zucchini yellow mosaic virus ; ZYMV)及木瓜輪點病毒西瓜系統(Papaya ringspot virus W type ; PRSV-W)為危害西瓜最嚴重之病毒種類。目前為止在西瓜轉基因植物研究方面上，仍無與抗病毒相關之報告，這可能與西瓜基因轉殖困難有關。本研究方向是希望建立一套適合本土西瓜栽培品種之組織培養再生與基因轉殖系統，分別構築具WSMoV 病毒之核鞘蛋白或ZYMV 及PRSV-W 病毒之鞘蛋白轉基因西瓜，期望能得到抗病毒的植株。種子經由不同天數的前處理後，將子葉切成約1.5 mm × 1.5 mm片段大小，與含nptII和不同病毒鞘蛋白基因之農桿菌進行基因轉殖，探討最適合基因轉殖之條件。結果顯示經3天的前處理，培植體癒合組織形成率達96.9 %，當培養在1.5 mg l-1 BA中芽體再生率可達42.9 %，並且發現子葉不同區域片段之再生率也不同，靠近胚軸的區域再生分化的能力較好，可高達78.9 %。目前經抗生素篩選經PCR分析結果，已確定轉殖成功有56個轉基因株系，分別為45個轉殖WSMoV 病毒之核鞘蛋白轉基因株系及11個轉殖ZYMV 及PRSV-W 病毒之鞘蛋白轉基因株系，在轉WSMoV 之核鞘蛋白基因轉基因西瓜方面，經南方點漬法及西方點漬法結果證實外來基因確實有併入染色體內並表現不同程度之蛋白，在ZYMV 及PRSV-W 鞘蛋白轉基因方面，經由南方點漬法證實外來基因確實有併入染色體內，而初步之溫室接種發現部份轉基因株系對ZYMV及PRSV-W病毒表現抗性。 關鍵字：農桿菌基因轉殖、再生、轉基因西瓜、抗病分析

關鍵詞 : 農桿菌基因轉殖 ; 再生 ; 轉基因西瓜 ; 抗病分析

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