荳莢螟核多角體病毒非宿主細胞基因傳送系統開發之評估

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摘 要

目前已知加州苜蓿夜蛾核多角體病毒及家蠶核多角體病毒被廣泛地運用在昆蟲細胞或哺乳動物細胞之中，桿狀病毒除可用來當作載體傳送基因生產外源蛋白外，還可用於防治蟲害是一個不影響自然環境的生物殺蟲劑。近年，由台灣大學王重雄教授實驗室所建立的新興桿狀病毒-荳莢螟核多角體病毒及其細胞株，並於2006年時成功地完成基因解序，因荳莢螟核多角體病毒在親緣鑑定分析上與加州苜蓿夜蛾核多角體病毒及家蠶核多角體病毒關係相近。本實驗主要進行荳莢螟核多角體的非宿主細胞感染研究、特定基因時序性的表現並評估發展成為新興之桿狀病毒非寄主細胞表現載體系統之可能性。首先，使用病毒直接感染荳莢螟細胞株和吉普賽舞蛾細胞株及哺乳動物細胞株，結果顯示，使用10MOI的病毒液感染荳莢螟細胞株時，ie-1基因可於2小時表現，但在吉普賽舞蛾細胞株中，則需延遲至第10天才會表現，當MOI提高到100時，其基因大量被表現的時序性可縮短至2天，此外，在感染荳莢螟核多角體病毒的人類胚胎腎細胞 (HEK293) 和人類肝癌細胞株 (HepG2) 與未感染病毒的細胞株相比，也有將近14倍的表現量。第二，IE-1是早期ie-1基因的產物，且ie-1基因在暫時性表現分析中具有強轉錄作用的活性因子，藉由西方墨點法和螢光分析系統可知ie-1可被傳送至哺乳動物細胞中且有表現效率，由實驗結果可知荳莢螟核多角體病毒ie-1可被送至人類胚胎腎細胞中且傳送效率較人類肺腺癌細胞株 (CL1-0) 為佳，實驗結果証明，荳莢螟核多角體病毒在適當的條件下可以主動感染其他非寄主細胞，其中包括吉普賽舞蛾、人類胚胎腎細胞、人類肺腺癌細胞、人類肝癌細胞，但其傳送效率會因不同的細胞株而有所差異，因此，荳莢螟核多角體病毒的確具有開發成為基因傳送載體之潛力。

關鍵詞 : 荳莢螟核多角體病毒 病毒表現載體系統 立即早期基因1

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