十字花料黑腐菌之熱穩定苯丙胺酸氫化? : 基因選殖與酵素活性分析

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摘 要

現今醫學對於帕金森氏症 (Parkinson ’ s disease) 的治療使用化學合成的 L-dopa 當做治療藥物，在經過一段時間的治療，會產生 許多的副作用，而科學界對於帕金森氏症的研究著重於基因療法 (Gene Therapy) 和幹細胞的研究，希望能夠重建腦內 Aromatic amino acid decarboxylase (AADC) 酵素的量或是重建腦內黑質區 (substantia nigra) 的細胞，但是都仍屬於動物實驗的階段，所以在此過渡期，天然合成的 L-dopa 變為一個可以替代的方向。L-dopa 是由 phenylalanine 被 苯丙胺酸氫化? (phenylalanine hydroxylase) 轉換成 tyrosine，再被酪胺酸氫化? (tyrosine hydroxylase) 轉換成 L-dopa。本實驗針對來自十字花科黑腐菌 (Xanthomonas campestris pv. campestris 17) 的 phenylalanine hydroxylase 作一系列的研究，研究它的最適反應條件以及是否帶有 tyrosine hydroxylase 的活性，研究結果發現此蛋白質的 ORF (open reading frame) 全長 891 bp，轉譯成蛋白質一共是由 296 個胺基酸所組成，蛋白質分子量大小約為 33 kDa，為一胞內酵素，最適反應 pH 為 6.8，最適反應溫度為 50 ℃，並且是一個需要二價鐵離子的酵素，對於其他金屬離子沒有依賴，此酵素並不帶有 tyrosine hydroxylase 及 tryptophan hydroxylase 的活性。

關鍵詞 : 帕金森氏症

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