蝦白點症病毒結構性蛋白 VP51A (ORF294) 特性分析

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摘 要

白點症病毒 (White spot syndrome virus, WSSV) 是一個重要的甲殼類病毒，且會造成養殖蝦類的大量死亡。蝦白點病毒本身具有約300 kbp的基因體，是一個大型的雙股DNA病毒。目前以有58個病毒的結構性蛋白質被鑑定出來，本研究主要針對其中一個由白點症病毒ORF294 (GeneBank accession no. AF440570) 所轉譯出之結構性蛋白質VP51A作進一步的探討。由快速擴增cDNA 5’/3’端基因結構分析顯示，vp51A的主要轉錄起點位於ATG上游135 bp；不具有TATA box或類似的保守性序列；加聚腺嘌呤訊號恰位於基因轉譯停止密碼TAA重疊，而加聚腺嘌呤位置則位於加聚腺嘌呤訊號下游22 bp。此vp51A在病毒感染後6小時開始進行轉錄表現，且表現量會隨著感染時間而增加。電腦程式預測指出，VP51A譯讀區第37到43胺基酸呈現一個入核訊號 (nuclear localization signal, NLS) 的保守性序列，但於Sf9細胞中進行的實驗並未證實此一預測。純化病毒顆粒的免疫電顯分析以及配合鹽度梯度處理和超高速離心分離完整病毒顆粒組成後之西方轉漬雜合反應顯示，VP51A屬於病毒envelope蛋白質。另外，VP51A的西方轉漬雜合分析的結果也發現，除了預期的53 kDa的片段大小外，尚可偵測到72 kDa以及其他小分子量蛋白質出現；相似的結果也出現在病毒感染蝦組織及昆蟲細胞表現的重組VP51A上但利用細胞外轉錄轉譯系統生產的VP51A則僅出現一條72 kDa的蛋白質；上述結果顯示VP51A可能先表現出一個大分子量的蛋白 (72 kDa) 後再經過切割形成53 kDa及其他較小分子量的蛋白質。而其他藉由蛋白質切位突變實驗及以衍生自VP51A譯讀區不同區域片段抗體的西方轉漬雜合分析顯示，其大部分切位可能位於靠近N端之區域，然而，這些不同大小的VP51A蛋白質的生理意義為何，仍須進一步探討。

關鍵詞 : 白點症病毒 ; 結構性蛋白質 ; 外套膜蛋白質

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