國立臺灣大學技術行銷表

臺大案號:09T-100601

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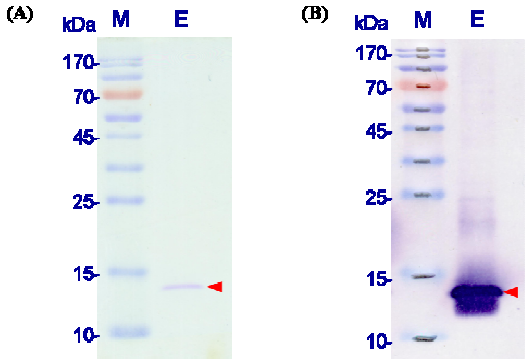
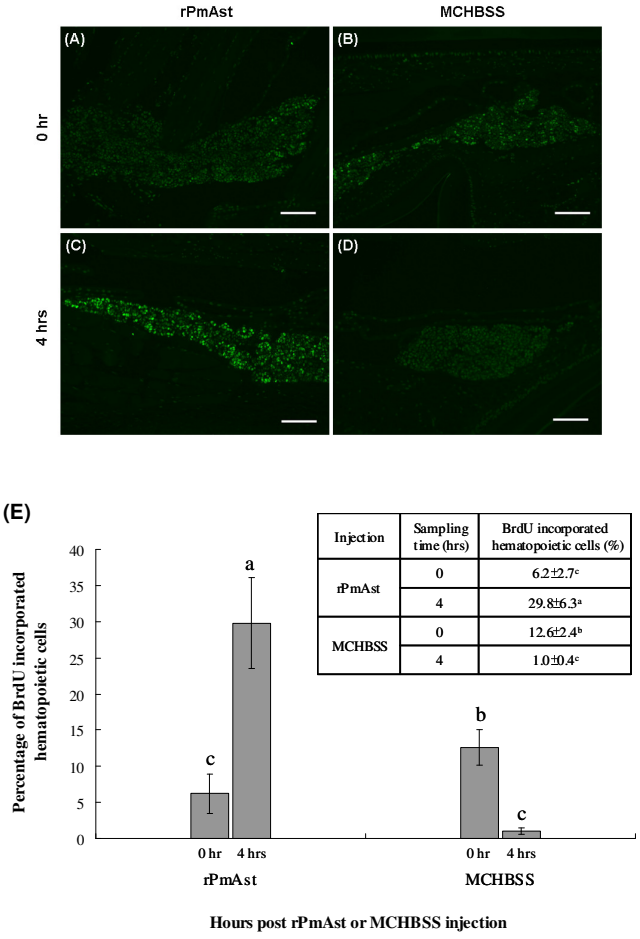
產品/技術名稱	有兩種: 1. 草蝦造血激素 astakine 基因質體 2. 草蝦造血激素 astakine 重組蛋白
發明人/單位	1. 宋延齡 教授 動物學研究所、生命科學系 2. 蕭君儀 動物學研究所
產品/技術說明	1. 選殖並定性草蝦造血激素 astakine cDNA，全長 1,509bp，ORF 375bp。 2. 利用昆蟲細胞-桿狀病毒表現系統合成草蝦造血激素 astakine 重組蛋白(rPmAst)，分子量 11,295Da。 3. 注射 rPmAst，可促進草蝦造血組織細胞增生
應用範圍	1. astakine 基因質體：可生物合成 astakine 重組蛋白 2. astakine 重組蛋白：可培養草蝦造血組織細胞
產品/技術優勢	1. 目前無任何蝦類細胞株，供研究發展用 2. 草蝦造血激素是培養穩定蝦類細胞株的重要因子 3. 本產品是目前唯一被證實可促使草蝦造血組織細胞增生的細胞激素
市場潛力	草蝦造血激素重組蛋白有益於建立蝦類細胞株
產品/技術 智財權保護方式	以專門技術知識保護

圖片

(已公開之成果可提供圖片)



圖一、(A)以 SDS-PAGE 及 Coomassie blue 染色分析經 Ni-NTA agarose 純化所得的草蝦 astakine 重組蛋白，箭頭所指為目標產物，分子量約 12 kDa 的蛋白質條帶。(B)以 Western blot 分析純化所得產物，並以 anti-6×His tag antibodies 辨認到目標產物條帶(箭頭所指處)。



Injection	Sampling time (hrs)	BrdU incorporated hematopoietic cells (%)
rPmAst	0	6.2±2.7[c]
	4	29.8±6.3[a]
MCHBSS	0	12.6±2.4[b]
	4	1.0±0.4[c]

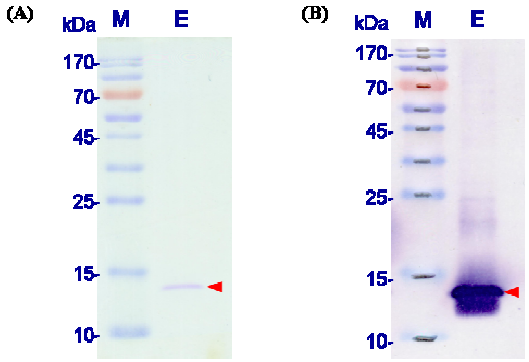
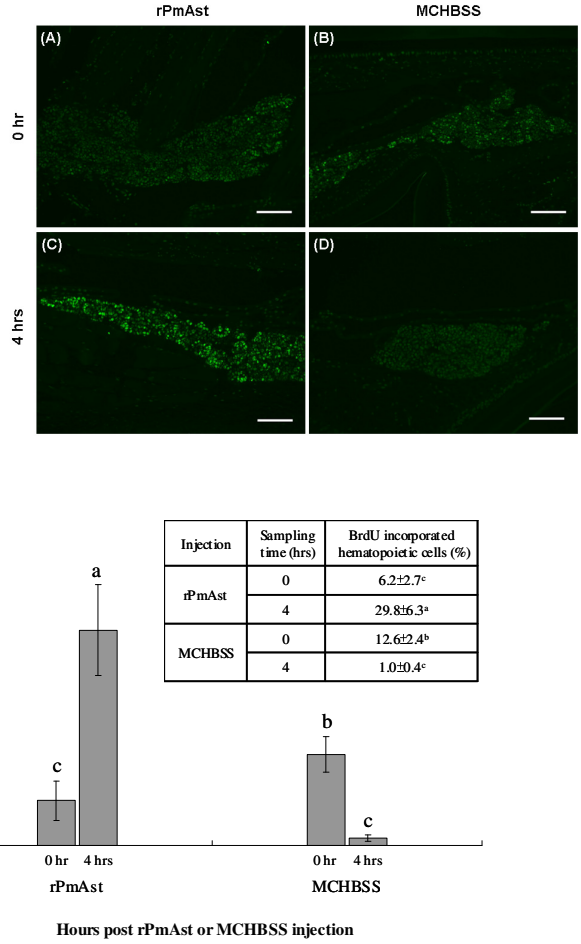
圖二、利用 BrdU 攝入法分析 astakine 重組蛋白(rPmAst)對造血組織細胞增生影響之免疫組織螢光染色，顯示經注射 rPmAst 4 小時後的草蝦，其組織切片出現較多綠螢光訊號(C)，表示造血組織細胞正進行增生作用，相較於注射生理食鹽水(MCHBSS)組，卻無法觀察到有顯著增生現象發生(B, D, E)，證實 rPmAst 具有促進造血組織細胞增生的能力，應可視為一種細胞激素。Bar length = 100 μm。

Marketing Abstract of NTU's Invention Disclosure

NTU's docket no:09T-100601

CIAC contact：Lou Wei-Chen Tel：02-33669948 e-mail：weichenlou@ntu.edu.tw

Title	There are two products: 1. Shrimp astakine cDNA plasmid. 2. Shrimp astakine recombinant protein (rPmAst)
Inventor (s)	1. Professor Yen-Ling Song, Institute of Zoology and Department of Life Science, College of Life Science 2. Chun-Yi Hsiao, Institute of Zoology
Brief Description	1. Shrimp astakine cDNA was cloned and characterized, containing 1,509 bp in full length and 375bp in ORF. 2. The rPmAst was biosynthesized using the insect cell-baculovirus expression system, 11,295Da in MW. 3. Injection of rPmAst promoted cell proliferation in hematopoietic tissues of shrimp.
Fields of Application	1. The plasmid containing shrimp astakine cDNA can be used to biosynthesize the rPmAst protein. 2. The rPmAst can be applied to establish cell culture of shrimp hematopoietic tissues.
Advantages	1. No shrimp cell lines are available for use at present, limits many studies. 2. An important factor for establishing stable culture of shrimp cells. 3. The sole shrimp cytokine promotes cell proliferation in shrimp hematopoietic tissue at present.
Market Potential	The rPmAst will be of great benefit to establishment of shrimp cell line.
IP Right(s)	Know-how

Picture	 Fig. 1. (A) SDS-PAGE of shrimp recombinant astakine (arrow head) eluted from Ni-NTA agarose and stained with Coomassie blue. (B) Western blotting of the target product was recognized by anti-6×His tag antibodies (arrow head).  Injection / Sampling time (hrs) / BrdU incorporated hematopoietic cells (%) rPmAst / 0 / 6.2±2.7[c] rPmAst / 4 / 29.8±6.3[a] MCHBSS / 0 / 12.6±2.4[b] MCHBSS / 4 / 1.0±0.4[c] Fig. 2. Immunofluorescence staining of hematopoietic tissue of shrimp injected with recombinant astakine (rPmAst) or MCHBSS using BrdU incorporation assay (A-D) and percentages of cell proliferation in each group (E). The phenomenon of abundant cell proliferation was found in hematopoietic tissue at 4 h post rPmAst injection as shown in (C), proliferating cells showed as green. Bar length=100 μm.