

鈣依賴蛋白質激酶之上游激酶 在誘導哺乳類MEL血球細胞分化過程扮演腳色

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摘要

蛋白質激酶 (protein kinase) 參與許多細胞內反應，其功能包含訊息傳遞、細胞週期調控、細胞分裂及細胞分化，如果因發生突變或是調控失當，而影響蛋白質激酶活性，便有機會造成癌症的生成。癌症細胞是一群脫離正常循環控制的細胞，其失去了進行終點分化以及正常細胞調控分裂增生之能力，這些細胞有一些不正常的基因表現存在，而這些基因表現會控制著抑制細胞進行分化過程或促進細胞分裂的途徑。本研究選用小鼠白血癌細胞 (murine erythroleukemia cell, MEL cell) 作為細胞模式，利用誘導劑HMBA及hemin誘導細胞進行分化，兩種誘導劑均可提高B-血紅素之產量。本論文利用保守區域PCR擴增法，探討細胞分化的過程中蛋白質激酶之變化。本研究發現未經誘導分化之MEL細胞中，具有蛋白質激酶C theta (protein kinase C theta, PKC theta) 及活化有絲分裂蛋白質激酶3 (mitogen activated protein kinase 3, Mapk3) 參與調控，而在MEL細胞誘導分化的過程中有鈣依賴蛋白質激酶 β (Ca²⁺/CaM-dependent protein kinase kinase beta, CaMKK B) 參與調控 (CaMKK B可活化鈣依賴蛋白質激酶 或)；此外，重組鈣依賴蛋白質激酶 β (CaMKK B) 序列與基因庫CaMKK B序列比對後發現其具有差異性，基因庫序列定名為CaMKK B-a (NM_145358)，其含有1626 base氨基酸轉譯區，而新發現之序列為CaMKK B-b，其含有1496 base氨基酸轉譯區 (1324~1452 base消失)。CaMK 在誘導分化細胞中有較高表現量，而CaMK 則在未誘導及hemin誘導細胞較多，因此推論CaMKK B可能經由活化CaMK 達到誘導血紅素表現。

關鍵詞：分化作用；蛋白質激酶

目錄

封面內頁 簽名頁 授權書.....	iii	中文摘要.....	iv	英文摘要.....	v
要.....	vi	誌謝.....	vii	目錄.....	viii
圖目錄.....	xii	第一章 文獻回顧	1	1.1 細胞週期進行與癌症	1
1.1.1 小鼠白血癌細胞株與誘導分化作用	5	1.3 蛋白質激酶與腫瘤生成	13	1.3.1 蛋白質激酶	13
1.3.2 蛋白質激酶於腫瘤生成中扮演之角色	14	1.4 鈣依賴蛋白質激酶	14	1.4.1 鈣離子與攜鈣素	14
1.4.2 鈣依賴蛋白質激酶	17	1.4.3 鈣依賴蛋白質激酶之上游激酶	18	1.5 研究動機與目的	19
1.6 試驗流程	20	第二章 研究方法	23	2.1 材料	23
2.2 方法	29	2.3.1 誘導MEL細胞分化作用	29	2.3.1.1 DMEM培養液之配製	29
2.3.1.2 誘導劑HMBA及Hemin之配製	29	2.3.1.3 細胞培養	30	2.3.1.4 誘導劑HMBA誘導細胞分化作用	30
2.3.1.5 誘導劑hemin誘導細胞分化作用	30	2.3.1.6 判定細胞分化之聯苯胺染色法	30	2.3.2 RNA萃取與cDNA製備	31
2.3.2.1 RNA萃取	31	2.3.2.2 反轉錄聚合鏈鎖反應	32	2.3.2.3 洋菜膠膠體電泳	33
2.3.3 蛋白質激酶放大分析反應	33	2.3.3.1 引子標定放射性同位素	33	2.3.3.2 圓柱製作與純化標示放射性同位素之引子	34
2.3.3.3 Degenerate聚合鏈鎖反應	34	2.3.3.4 8%聚丙烯醯胺凝膠	35	2.3.3.5 洗出 (Elution)	35
Phenol/CHCl ₃ 萃取作用與沉澱作用	35	2.3.3.6 限制切割反應	36	2.3.3.7 Adaptor製備	36
2.3.3.8 接合聚合鏈鎖反應	37	2.3.3.9 核酸片段選殖	38	2.3.4 轉形作用 (Transformation) 於質體選殖.....	38
2.3.4.1 勝任細胞製備	38	2.3.4.2 細菌熱休克轉形作用	39	2.3.4.3 質體DNA小量製備	39
2.3.5 以聚合鏈鎖反應分析定序之蛋白質激酶於MEL細胞內之表現及其誘導細胞分化之調控機制....	40	2.3.5.1 鈣依賴蛋白質激酶之上游激酶、鈣依賴蛋白質激酶及鈣依賴蛋白質激酶之表現.....	40	2.3.5.2 MEL血球細胞及小鼠腦部組織表現鈣依賴蛋白質激酶之上游激酶之部分序列聚合鏈鎖反應.....	41
2.3.5.3 自體抑制區域刪除之鈣依賴蛋白質激酶之上游激酶及鈣依賴蛋白質激酶之聚合鏈鎖反應.....	41	2.3.5.4 Site-directed mutagenesis	42	第三章 結果	44
3.1 誘導MEL細胞分化作用	44	3.1.1 誘導MEL細胞分化作用之條件	44	3.1.2 MEL細胞內血紅素之表現	49
3.2 誘導MEL細胞分化作用中蛋白質激酶之表現	52	3.2.1 MEL細胞內蛋白質激酶之表現	52	3.2.2 分析誘導MEL細胞分化作用中蛋白質激酶之表現	54
3.3 鈣依賴蛋白質激酶之上游激酶在MEL細胞誘導分化作用中之調控機制	59	3.3.1 鈣依賴蛋白質激酶之上游激酶在MEL細胞內之表現情形	59	3.3.2 鈣依賴蛋白質激酶及鈣依賴蛋白質激酶在MEL細胞內之表現情形	62
3.3.3 鈣依賴蛋白質激酶之上游激酶表現於MEL血球細胞及小鼠腦部組織之表現序列	67	3.4 鈣依賴蛋白質激酶之上游激酶在MEL細胞誘導分化作用中扮演之角色	72	3.4.1 放大分析重組鈣依賴蛋白質激酶之上游激酶之兩組型態	72
3.4.2 放大分析重組鈣依賴蛋白質激酶之兩組型態	78	第四章 討論	86	4.1 誘導MEL細胞分化作用	86
4.2 誘導MEL細胞分化作用中蛋白質激酶之表現	87	4.3 鈣依賴蛋白質激酶之上游激酶在MEL細胞誘導分化作用中之調控機制	88	第五章 結論	91
參考文獻	92	附錄.....	104	圖目錄	圖1. 細胞週期
圖2. 細胞週期中，pRB磷酸化與E2F之活化對G1期的調控	4	圖3. 血球細胞之終點分化成熟	9	圖4. 成熟紅血球	10
圖5. 巨核細胞	10	圖6. 誘導劑HMBA結構圖	11	圖7. 誘導劑hemin結構圖	11
圖8. 去磷酸抑制劑 (Okadaic acid) 及adenyl cyclase activator (Forskolin) 調節MEL細胞進行增生及分化作用	12	圖9. 鈣離子/攜鈣素複合物結			

構及功能 16	圖10. 實驗流程圖.....	22	圖11. TA cloning所使用之載體與選殖位置圖譜	27
圖12. pMEP4, 哺乳類誘導性載體圖譜	28	圖13. 誘導劑HMBA及hemin對於MEL細胞生長曲線之影響	46	圖14. 細胞數對HMBA誘導MEL細胞血球分化之影響
47	圖15. 細胞數及誘導期間對hemin誘導MEL細胞分化之影響	48	圖16. MEL細胞內?-血紅素mRNA之差異性表現	50
圖17. MEL細胞內?-血紅素表現之差異.....	51	圖18. 利用保守區域PCR擴增MEL細胞中蛋白質激酶?	53	圖19. 擴增之PTK/PSK cDNA片段經Mbo 限制?分解之電泳分析圖
55	圖20. 在誘導MEL細胞分化作用中蛋白質激酶?經Mbo 限制? 酵素作用後, 差異片段定序之結果	56	圖21. 擴增之PTK/PSK cDNA片段經Nla 限制?分解之電泳分析圖	57
圖22. 在誘導MEL細胞分化作用中蛋白質激酶?經Nla 限制? 酵素作用後, 差異片段定序之結果	58	圖23. 鈣依賴蛋白質激酶?-上游激酶?b在MEL細胞內之表現	60	圖24. 鈣依賴蛋白質激酶?-上游激酶?b在MEL細胞、HMBA及hemin處理之MEL細胞內表現之差異.....
61	圖25. 鈣依賴蛋白質激酶? 在MEL細胞內之表現	63	圖26. 鈣依賴蛋白質激酶? 在MEL細胞內表現之差異	64
圖27. 鈣依賴蛋白質激酶? 在MEL細胞內之表現	65	圖28. 鈣依賴蛋白質激酶? 在MEL細胞內表現之差異	66	圖29. 基因庫之鈣依賴蛋白質激酶?-上游激酶?b(CaMKKb)序列與重組鈣依賴蛋白質激酶?-上游激酶?b (CaMKKb) 序列之比對
68	圖30. 兩種型態鈣依賴蛋白質激酶?-上游激酶?b(CaMKKb)在 MEL細胞中表現	69	圖31. 鈣依賴蛋白質激酶?-上游激酶?ba在MEL細胞、HMBA及hemin處理之MEL細胞內表現之差異.....	70
圖32. 鈣依賴蛋白質激酶?-上游激酶?bb在MEL細胞、HMBA及hemin處理之MEL細胞內表現之差異.....	71	圖33. 不具有自體抑制區域之鈣依賴蛋白質激酶?-上游激酶?b之片段 (CaMKK1-433)	74	圖34. 基因庫CaMKK1-433序列與不具有自體抑制區域之重組鈣 依賴蛋白質激酶?-上游激酶?b序列 (CaMKK1-433) 之比對
75	圖35. 鈣依賴蛋白質激酶?-上游激酶?b (CaMKKb) 之點突變 PCR片段	76	圖36. 鈣依賴蛋白質激酶?-上游激酶?b之點突變PCR擴增全長片段 (CaMKK1478D mutant)	77
圖37. 基因庫之鈣依賴蛋白質激酶? (CaMK) 序列與重組 鈣依賴蛋白質激酶? (CaMK) 序列做一比對	80	圖38. 不具有自體抑制區域之鈣依賴蛋白質激酶? 之片段....	81	圖39. 基因庫CaMK 1-293序列與不具有自體抑制區域之重組 鈣依賴蛋白質激酶? 序列 (CaMK 1-293) 之比對
82	圖40. 鈣依賴蛋白質激酶? (CaMK) 之點突變PCR片段.....	83	圖41. 鈣依賴蛋白質激酶? 之點突變PCR擴增全長片段.....	84
圖42. 基因庫鈣依賴蛋白質激酶? (CaMK) 序列與不具有 磷酸化作用能力之重組鈣依賴蛋白質激酶? 序列之比對.....	85			

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