

• 系統編號	RD9009-0004		
• 計畫中文名稱	Beta-胡蘿蔔素及 Canthaxanthin 類胡蘿蔔素對大白鼠初代肝細胞之生存力及抗氧化系統之影響		
• 計畫英文名稱	Beta-Carotene and Canthaxanthin Affects the Cell Viability and Antioxidative System of Primary Rat Hepatocytes		
• 主管機關	行政院國家科學委員會	• 計畫編號	NSC89-2320-B038-035
• 執行機構	台北醫學院保健營養系		
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• 研究人員	鄭心嫻 Cheng, Hsing-Hsien		
• 中文關鍵字	β-胡蘿蔔素；斑蝥黃；抗氧化酵素；大白鼠初代肝細胞；細胞生存力		
• 英文關鍵字	β-carotene；Canthaxanthin；Antioxidative enzyme；Primary rat hepatocyte；Cell viability		
• 中文摘要	<p>採用 Wistar 品系雄性大白鼠，以兩階段膠原蛋白@@的方式分離肝細胞，培養細胞 4 小時後進行下列三階段實驗。將 β-胡蘿蔔素添加於培養液中，同時添加或不添加 0.1mM FeCl/sub 3/，培養 12 小時之後觀察細胞的生存力、脂質過氧化以及抗氧化酵素活性的改變，實驗中加入 α-tocopherol、γ etinol、canthaxantnin 或 α-carotene 以作比較。以 lactate dehydrogenase leakage (LDH leakage) 作為細胞生存力的指標；抗氧化酵素則以分析 GSH 代謝相關酵素：麩胱甘@@過氧化@@ (GSH peroxidase)、麩胱甘@@還原@@ (GSH reductase) 以及麩胱甘@@硫轉移@@ (GSH S-transferase) 活性；以 thiobarbituric acid-reactive subst ances (TBARS)分析 malondialdehyde (MDA)生成，在不添加 0.1mM FeCl/sub 3/情形下，β-胡蘿蔔素仍會降低抗氧化酵素活性，相同實驗以 canthaxanthin、retinol 或 α-carotene 代替 β-胡蘿蔔素發現抗氧化酵素活性不受影響。研究顯示 β-胡蘿蔔素對 MDA 生成沒有明顯的抑制效果。</p>		
• 英文摘要	<p>Primary rat hepatocytes were prepared from male, 8-week-old Wistar strain rats by two-step collagenase perfusion. The isolated cells were incubated in plating medium. After four-hour plating, the medium was removed and replaced by the same medium containing no fetal bovine serum (FBS). The effect ofβ-carotene were observed by measuring the activities of the antioxidative enzymes, cellular viability and the lipid peroxidation. α-tocopherol, retinol, canthaxanthin or α-carotene were added in the medium by the same protocol in contrast with β-carotene. Lactate dehydrogenase (LDH leakage) was analysed as index of cellular viability. GSH peroxidase, GSH reductase and GSH S-transferase were measured as indices of antioxidative enzymes. The analysis of thiobarbituric acid reactive</p>		

substances (TBARS) is index of malondialdehyde (MDA) production. Adding α -tocopherol or retinol into 0.1mM FeCl/sub 3/ treated cells significantly increased cellular viability. Incorporating β -carotene into non FeCl/sub 3/ treated cells, the decrease of activities of antioxidative enzymes was revealed. When canthaxanthin, retinol or α -carotene were applied instead of β -carotene, the activities of antioxidative enzymes were not different from control group. The result indicates that the addition of β -carotene had no effect on inhibition of lipid peroxidation.