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• 計畫中文名稱	大蒜在組織細胞內對麩氨基硫轉移酵素的調節機轉		
• 計畫英文名稱	Regulation of Glutathione S-Transferase by Garlic in Tissue Cultured Cells		
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• 中文關鍵字	大蒜；有機硫化物；麩氨基硫轉移酵素；賓主共棲化合物化謝酵素；轉錄調控		
• 英文關鍵字	Garlic；Organosulfide；Glutathione S-transferase (GST)；Xenobiotic metabolizing enzyme；Transcriptional regulation		
• 中文摘要	很多研究指出大蒜及其中所富含的有機硫化合物成分(Organosulfur compounds)可降低癌症的發生率。大蒜抑制癌症的可能機轉之一是藉由改變肝臟內解毒酵素(Drug metabolizing enzymes)的活性,例如麩胺基硫轉移酵素(GST,glutathione S-transferase)。本研究乃使用小老鼠肝癌細胞為實驗模型來探討大蒜中之有機硫化合物成分,Diallyl sulfide(DAS)對 GST 的影響以及其可能機轉。結果顯示,在 5mM DAS 處理 16、24 和 48 小時後,小老鼠肝癌細胞 GST 的酵素活性有顯著增加的現象。且此酵素活性亦隨著 DAS 濃度(0.5、1 和 5mM)的增加而增加。利用 SDS-PAGE 電泳和 Western blot 方法分析 GST 的三種酵素異構物(Isoenzymes):GST-.alpha.、GST-.mu.和 GST-.pi.蛋白質,發現三種酵素異構物的蛋白質含量皆有隨 DAS 濃度增加而增加的趨勢,但並無統計上差異。由此可知,DAS 可誘導 Hepa-1 細胞之 GST 酵素活性,而這可能是因為增加了其相對的總蛋白質表現之故。推論可能進一步增強生物體的解毒功能而達到抑制癌症的發生。		
• 英文摘要	Many studies have demonstrated that garlic and its organosulfur compounds can protect against various kinds of cancer and chemically induced toxicity. Modification of the expression of drug metabolizing enzymes such as glutathione S-transferase (GST) is thought to be one of the mechanisms of the anticarcinogenic effect of garlic. To obtain further insight on the induction of the GST enzyme and on the anticarcinogenic action of garlic, we have used a cultured cell system to study the effect of diallyl sulfide (DAS), an organosulfur compound derived from garlic, on the induction of GST. When murine hepatoma cell line, Hepa-1c1c7 (Hepa-1), was treated with 5mM DAS, the GST enzyme activity increased significantly after 16, 24 and 48 h treatment, and the activity increased with increasing DAS concentrations. Furthermore, Western blotting analysis revealed that three GST proteins, GST-.alpha., GST-.mu. and GST-.pi., tended to increase with increasing DAS concentrations. In summary, the		

results suggest that GST enzyme activity can be enhanced by DAS in Hepa-1 cells, and the increased expression of the GST proteins may contribute to the augmentation of the corresponding enzyme activity. The increased GST activity may explain, at least in part, the anticarcinogenic effect of garlic.