• 系統編號	RC9103-0064
• 計畫中文名稱	空氣污染物及砷所起人體健效應及相關生物檢體庫建立之流行病學研究計畫(III)
• 計畫英文名稱	Epidemiologic Sudy on Halth Effects Induced by Air Pollutants and Arsenic and Establishment of Biospecimen Bank (III)
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC89-2318-B038-006-M51
• 執行機構	台北醫學院公共衛生系
• 本期期間	8908 ~ 9007
• 報告頁數	23 頁
• 使用語言	英文
• 研究人員	邱弘毅 Chiou, Hung-Yi
• 中文關鍵字	流行病學；空氣汙染物；砷；生物檢體庫；健康效應
• 英文關鍵字	Epidemiology；Air pollutant；Arsenic；Biospecimen bank；Health effect
• 中文摘要	爲探討飲水砷與麩胺基硫轉移酵素 M1、T1 及 P1 (GSTM1、T1、P1)基因多型性對頸動脈粥狀硬化的危險性。本研究共選取 605 位蘭陽盆地居民參加體檢，以結構式問卷標準化家戶訪視，以獲得研究資料包括菸、酒、飲水史及家族疾病史。火焰式原子吸光譜儀加氫化器，用來測定井水砷濃度。PCR-RFLP 用來判定 GSTM1、T1 及 P1 的基因型。頸動脈粥狀硬化係由神經內科醫師判定。邏輯斯蒂複迴歸分析用以計算年齡、性別調整之危險對比值及其百分之九十五信賴區間。具有 GSTM1 無效基因者，隨著飲水砷濃度增加，與罹患頸動脈粥狀硬化的危險性呈現劑量效應關係，其年齡性別調整之危險對比值，飲水砷濃度介於 50.1-99.9mg/L 和>=100mg/L 兩組分別爲 2.7 及 3.3。對於飲用水砷濃度屬於兩組的研究對象，具 GST1 無效基因者，年齡性別調整之危險對比值分別爲 5.3 及 3.6，均達統計顯著水準。而對於具 GSTP1 W/V 或 V/V 基因型者，年齡性別調整之危險對比值分別爲 4.1 和 3.2。結論：本研究顯示具有 GSTM1、T1 無效基因型，以及 GSTP1 W/V 或 M/V 基因型者與飲水砷濃度的增加，會使其罹患頸動脈粥狀硬化的危險性顯著增加。
• 英文摘要	In order to evaluate the synergistic effects of arsenic exposure through drinking water and genetic polymorphisms of GST M1, T1, and P1 on the risk of carotid atherosclerosis, a total of 605 residents in Lanyang Basin were recruited as study subjects. A standardized personal interview based on a structured questionnaire was carried out to obtained study informations including duration of well water consumption as well as personal and family history of hypertension, diabetes and cerebrovascular disease. Hydride generator combined with flame atomic absorption spectrometry was used to determine arsenic concentration. PCR-RFLP was used for genotyping GSTM1, T1 and P1. Carotid atherosclerosis was diagnosed by medical doctor based on data of intimal-medial thickness (IMT) of arterial wall and plaque score. Logistic regression analysis was used to estimate age-sex-adjusted odds ratio and 95 %

confidence interval. A significant dose-response relationship was observed between arsenic concentration in well water and risk of carotid atherosclerosis among study subjects with null genotype of GSTM1, T1, and P1. The age-sex-adjusted odds ratios of carotid atherosclerosis were 2.7 and 3.3 for arsenic concentrations in well water of 50.1-99.9 and ≧100 μg/L. Significant odds ratios of carotid atherosclerosis for study subjects with null-genotype of GST T1 were 5.3 and 3.6. Study subjects with W/V or V/V genotype of GSTP1 had 4.1 and 3.2 fold risks for the development of carotid atherosclerosis. In conclusion, a significant effect on the risk of carotid atherosclerosis were observed among study subjects with arsenic exposure and with null genotype of GSTM1, T1 and genotypes of W/V and V/V of GSTP1.