| | |
|---|---|
| • 系統編號 | RC8901-0148 |
| • 計畫中文名稱 | 蘭陽盆地居民飲水砷與其它元素暴露量對癌症發生危險性協同作用之研究 |
| • 計畫英文名稱 | A Study on the Synergistic Interactions between Arsenic and Other Elements in Well Water on the Development of Various Cancers among Residents in Lanyang Basin |
| • 主管機關 | 行政院國家科學委員會 |
| • 計畫編號 | NSC88-2314-B038-102 |
| • 執行機構 | 台北醫學院公共衛生系 |
| • 本期期間 | 8708 ~ 8807 |
| • 報告頁數 | 0 頁 |
| • 使用語言 | 中文 |
| • 研究人員 | 邱弘毅；許光宏 Chiou, Hung-Yi；Hsu, Kuang-Hung |
| • 中文關鍵字 | 砷；井水；致癌機轉；蘭陽盆地；烏腳病；協同因子 |
| • 英文關鍵字 | Arsenic；Well water；Carcinogenesis；Lanyang basin；Blackfoot disease；Cofactor |
| • 中文摘要 | 爲評估蘭陽盆地居民飲水砷暴露與癌症發生危險性的相關性,是否受到井水其他元素的協同、修飾或頡頏作用,以進一步確認砷的致癌性。本研究針對蘭陽盆地礁溪、壯圍、五結、冬山四鄉 2,253 位居民研究世代,每個家戶所採集的 1,349 口井水樣本,進行砷(As)、鋅(Zn)、鈉(Na)、鈣(Ca)、銅(Cu)、鐵(Fe)、錳(Mn)、鎂(Mg)、鉻(Cr)、鍶(Sr)、鋇(Ba)、鎘(Cd)、鈹(Be)及硼(B)等 14 種微量元素的分析。分析方法採感應耦合電漿原子發射光譜分析法(Inductively Coupled Plasma-Atomic Emission Spectrometry,ICP-AES),其中 As 具揮發性元素,並將輔以氫發生器進行分析。研究對象癌症發生情形的獲得,將透過身分證字號、性別、出生年月日,與全國死亡檔、癌症發生檔、重大傷病給付檔等資料庫連結、比對,追蹤問卷家戶訪視以及四鄉戶政事務所死亡診斷書的影印等方式獲得。井水中 14 種元素 As、Zn、Na、Cu、Fe、Mn、Mg、Cr、Sr、Ba、Cd、Be、B 等的濃度(平均值.plmin.標準誤)(ug/L)依序分別爲 237.6.plmin.9.4、99.8.plmin.11.0、44359.0.plmin.1619.6、17740.8.plmin.334.4、247.6.plmin.3.5、648.5.plmin.37.3、124.2.plmin.5.1、16538.7.plmin.770.8、473.5.plmin.19.8、249.9.plmin.5.7、43.2.plmin.0.8、32.0.plmin.0.7、0.5.plmin.0.02、347.3.plmin.4.1。其中 Ca、Fe、Cr 及 Ba 的對數轉換濃度與 As 呈顯著正相關而 Mn、Mg 及 Be 則與 As 呈負相關。當調整年齡、性別、抽菸、喝酒的作用後,Mn 及 Cu 的暴露對全癌症的罹患具有保護作用,然而此一保護作用並未與 As 的致癌性具交互作用。 |
| • 英文摘要 | In order to evaluate the various elements exposure from drinking well water among residents in Lanyang Basin located in the northeastern arseniasis-endemic area in Taiwan, a total of 1349 well water samples were collected randomly from study area to examine concentration of arsenic (As), zinc (Zn), chromium (Cr), sodium (Na), manganese (Mn), iron (Fe), beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), boron (B), copper (Cu), and |

cadmium (Cd). Inductively coupled plasma-atomic emission spectrophotometry (ICP-AES) was used to determine Zn, Cr, Na, Mn, Fe, Be, Mg, Ca, Sr, Ba, B, Cu, and Cd; As were examined by ICP-AES with hydride generation. A total of 2253 residents whose household well water was collected were interviewed personally based on a structured questionnaire. Information obtained from the interview included duration and volume of well water consumption. The cumulative exposure level of each study subject to various elements was derived from concentration of each element in well water of the household, duration of drinking well water and volume of well water consumption. The mean.plmin.standard error (ug/L) of concentration of these elements in well water were 237.6.plmin.9.4, 99.8.plmin.11.0, 44359.0.plmin.1619.6, 17740.8.plmin.334.4, 247.6.plmin.3.5, 648.5.plmin.37.3, 124.2.plmin.5.1, 16538.7.plmin.770.8, 473.5.plmin.19.8, 249.9.plmin.5.7, 43.2.plmin.0.8, 32.0.plmin.0.7, 0.5.plmin.0.02, 347.3.plmin.4.1 for As, Zn, Na, Cu, Fe, Mn, Mg, Cr, Sr, Ba, Cd, Be, and B, respectively. The concentrations of these elements in well water, except arsenic, were significantly different between four study townships in Lanyang Basin. The log transformed concentrations of Ca, Fe, Cr and Ba were positively correlated with As significantly, While, the significantly negative correlation were observed between Mn, Mg and Be, and As. Compared with low Mn and Cu exposed group, those who drank well water contained high concentration of Mn and Cu had significant low risk of all cancer sites combined after adjustment for age, sex, cigarette smoking, and alcohol drinking. However, there were no synergistic interaction between exposure to Mn, Cu, and As on the development of all cancer sites combined.