

# Urinary 8-Hydroxydeoxyguanine Levels in Urothelial

## Carcinoma Patients with Low Urinary Arsenic

### Concentrations

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摘要

#### Abstract

Arsenic is a well-documented human carcinogen and is known to cause oxidative stress in cultured cells and animals. A hospital-based case-control study was conducted to evaluate the relationship among the levels of urinary 8-hydroxydeoxyguanosine (8-OHdG), the arsenic profile, and urothelial carcinoma (UC). Urinary 8-OHdG was measured by using high-sensitivity enzyme-linked immunosorbent assay (ELISA) kits. The urinary species of inorganic arsenic and their metabolites were analyzed by high-performance liquid chromatography (HPLC) and hydride generator-atomic absorption spectrometry (HG-AAS). This study showed that the mean urinary concentration of total arsenics was significantly higher, at  $37.67 \pm 2.98$  microg/g creatinine, for UC patients than for healthy controls of  $21.10 \pm 0.79$  microg/g creatinine ( $p < 0.01$ ). Urinary 8-OHdG levels correlated with urinary total arsenic concentrations ( $r = 0.19$ ,  $p < 0.01$ ). There were significantly higher 8-OHdG levels, of  $7.48 \pm 0.97$  ng/mg creatinine in UC patients, compared to healthy controls of  $5.95 \pm 0.21$  ng/mg creatinine. Furthermore, female UC patients had higher 8-OHdG levels of  $9.22 \pm 0.75$  than those of males at  $5.76 \pm 0.25$  ng/mg creatinine ( $p < 0.01$ ). Multiple linear regression analyses revealed that high urinary 8-OHdG levels were associated with increased total arsenic concentrations, inorganic arsenite, monomethylarsonic acid (MMA), and dimethylarsenate (DMA) as well as the primary methylation index (PMI) even after adjusting for age, gender, and UC status. The results suggest that oxidative DNA damage was associated with arsenic exposure, even at low urinary level of arsenic..