

Heat acclimation associated with decreased of urinary 8-hydroxydeoxyguanosine in navy boiler tender

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The physiological effects of heat are reviewed extensively elsewhere, but there is significant and poorly documented on heat tolerance in occupational exposure. Pervious studies show that the hyperthermia has been induced reactive oxygen species and DNA damage. The aim of this study was to elucidate the association between heat acclimatization or body composition and urinary 8-hydroxydeoxyguanosine (U-8OHdG) level in navy boiler tender.

Data collections including a standardized questionnaire four repeated-measures (pre-sailing, after-sailing, per-work shift, and post-work shift) of urine sample were performed to measure the level of U-8OHdG and urinary electrolytes. The body composition of workers was provided by the body composition analyzer. The ion of sodium, potassium, and chlorine in urine and sweat was measured by electrolytic analyzer. U-8OHdG was measured by liquid chromatography with tandem mass spectrometry (LC/MS/MS). The Heat acclimation index $\Delta_{SL} Na$ and ΔNa calculated were the differences were calculated by subtracting the urinary sodium of before sealing from those of after sealing and before work shift from those of after work shift, respectively. Navy boiler tenders with better heat acclimation had a higher decreased of U-8OHdG than Navy boiler tenders with worse heat acclimation. Use of biologic markers may more accurately reflect total dose of exposure in populations. We used U-8OHdG as a biomarker to reflect the effect of health burden of DNA damage among naval personnel under environmental heat stress. U-8OHdG can be used as effective biomarker heat acclimatization in occupational medicine.