

Abstract

Development of biological reference material for proficiency test program – Urinary total arsenic

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Object: This study is to develop new urine reference material to enhance analytical ability of laboratories in industrial health by applying this material for proficiency test on analysis of markers of exposure to arsenic.

Method: Urine samples of 3 concentration levels including criteria of exposure of arsenic were prepared. In addition to arsenic metal ion, monomethylarsonic acid, dimethylarsinic acid and arsenobetaine was added to make similar condition of real urine sample. Stability test for 90 days at 4 different temperatures and homogeneity test were performed for these samples. Analytical method used was graphite-AAS.

Result: Prepared samples showed good recovery of total arsenic in the range of 97 – 103% after 30 days at room temperature. All samples were homogeneous at confidence level of 95%, so they were adequate for application as reference materials for quality assurance program.

Conclusion: The stability and homogeneity of arsenic in urine reference materials were confirmed. These samples will be utilized as reference samples for Korean quality assurance program for proficiency test of analytical ability of labs working in industrial health.

Key word: Arsenic, stability, homogeneity, proficiency test, reference material