



Approved by General Administration of Quality Supervision,
Inspection and Quarantine of the People's Republic of China

GBW09115

Certificate of Certified Reference Material

Arsenic Species in Freeze-dry Human Urine CRM

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Sample Number:

Date of Certification:

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This certified reference material is designed and prepared mainly for guaranteeing the accuracy and coincidence of results in monitoring the quality of clinic and environment, especially for arsenic poisoning and arseniasis. It is intended for use in evaluating the determining accuracy of arsenic speciation in water and body fluid, as well as for calibrating analytical instruments. It is also served as a working standard and a quality control standard.

1. Sample Preparation

The human urine for this certified reference material was collected from the persons who live in the high arsenic underground water area. Then the fresh urine was mixed in the mixing vessel → packed into glass bottle → freeze-dry in -35℃ for 44 hours → ⁶⁰Co radioactive ray destroying the bacteria → preserved in low temperature and dry place.

2. Traceability and Analytical Method

The property values were co-certified by six laboratories using two accurate methods with different principles. The statistic average values were used as certified values. The GBW08666 Arsenious Acid Solution (As^{III}) CRM, the GBW08668 Monomethylarsonic Acid (MMA) Solution CRM and the GBW08669 Dimethylarsinic Acid Solution (DMA) CRM were used as the calibration standards.

Laboratory	Analytical Method
National Institute of Metrology	High Performance Liquid Chromatography - Inductively Coupled Plasma-Mass Spectrometry (HPLC-ICP-MS)
Beijing Centers for Diseases Control and Prevention	
Tianjin Entry-Exit Inspection and Quarantine Bureau	
Agilent Tech. Co. Laboratory (Shang Hai)	
The Ministry of Health, Beijing Hospital	High Performance Liquid Chromatography - Atomic Fluorescence Spectrometry (HPLC-AFS)
Jitian Instrument Company	

3. Certified Value and Uncertainty

Arsenic Species	Certified Value (n mol /bottle)	Uncertainty (k=2) (n mol /bottle)	Resolving in 5.00mL water, Concentration (n mol/mL, k=2)
As ^{III}	0.758	0.016	0.152±0.003
MMA	1.03	0.08	0.206±0.016
DMA	4.3	0.3	0.86±0.06

4. Homogeneity and Stability Assessment

The evaluation of homogeneity was made on the basis of random sampling and analyzing the concentration of As^{III}, MMA and DMA in sample by HPLC-ICP-MS method. The results show that the sample is homogeneous.

The evaluation of stability was made by analysis the concentration of As^{III}, MMA and DMA by HPLC-ICP-MS for one year. The results are satisfactory. The expiration date of the material is 2012-11-1.

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5. Package Storage and Usage

The certified reference material should be kept in the clean, dark and cool place. Inject 5.00mL pure water into the bottle and shake the bottle before using.



STATEMENT

1. The CRM is limited to the use of scientific research and analytical measurement. NIM is not responsible for any loss caused by improper use and storage of the CRM by the customer. Any compensate can only cover CRM itself.
2. Please check the status of reference materials as soon as the sample arriving. The certificate is only valid with the whole file and special stamp for NIM RM distribution. Please keep the integrity of the certificate.
3. If more information related to the use of the CRM is needed, please contact the technical enquiries section.

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