Reference Material Institute for Clinical Chemistry Standards (ReCCS)

Certified Reference Material for Measurement of HbA_{1c}

JCCRM 423-10b

Certificate of Analysis

■Intended use

NGSP numbers are used in clinical practice in Japan.
This Certified Reference Material (CRM) is primarily intended for use in the 3 points check over the calibration curve , whereas 5 points check are given by a higher order materials (JDS Lot 5, JDS Lot2).
In Japan NGSP numbers are kept traceable to the NGSP CPRL by ASRL # 1 , a network laboratory of NGSP by using the calibrator JCCAL SC.
This material was produced and certified by ReCCS, of which values were determined by ASRL #1.

■Preparation

This CRM was prepared as follows: Erythrocytes were separated by centrifuging human whole blood free of abnormal hemoglobin, and then washed and hemolysed. Next, through the use of a high-speed centrifuge, erythrocyte ghost membranes were removed, and after adding a carbonate buffer solution, the resulting solution was dialyzed. The dialyzed solution was divided into smaller portions and stored in liquid nitrogen (As a result, this reference material does not contain plasma components). In order to avoid the use of preservatives, only sterilized tools were used, and to ensure storage stability, the material was lyophilized.

■Specifications

Configuration:	Lyophilized
HbA_{1c} levels:	Three concentration levels ranging from 5 to 10%
Contents:	A single set of this CRM consists of 6 vials of lyophilized material (2 vials for each of the 3 concentration levels)

■Storage after purchasing

1. This CRM is shipped cooled with ice packs. Upon receipt, make sure that the inner ice packs are cool.

   This CRM is unusable if inner ice is not effective upon receipt.

2. Upon receipt, a case containing this CRM should be taken out and immediately be placed in a freezer where temperature variation is minimal.

■Expiration date

This CRM expiring date is 12 months after the date of your (end user's)receipt, stored in a freezer (-20℃~-40℃)
3 months , stored in a refrigerator (+2 ~ 8℃)

■Instructions for Use

1 .Remove glass vials of this material from a freezer. Allow them at room temperature in an upright position. Tap the vial lightly to collect the content at the bottom. Take off the aluminum cap. Use caution since it can be very sharp.

2. Remove the rubber stopper. Add **0.2 ml of purified water** with a micropipette or a syringe. Securely place the rubber stopper back on the vial and gently turn the vial up side down 10 times to mix the content. Let stand for approximately 5 minutes to allow the content to perfectly dissolve.

3. After being dissolved in purified water, total hemoglobin concentration level should be approximately 13g/dL with a total volume of 0.25 ml. If not, increase or decrease the water.
IMPORTANT NOTE 1: Never leave this reference material at room temperature for more than 5 hours after dissolving it in 0.2 ml of water.
The product cannot be re-frozen for later use after being dissolved.

4. Before taking measurements, dilute the product to the appropriate total hemoglobin concentration level by using the diluting fluid specified in the instruction for the reagent used to measure HbAlc. The diluted preparation solution is unstable and cannot be stored for later use.
IMPORTANT NOTE 2: The stability of the diluted reference material is subject to the diluting fluid.

■Precautions for use

This CRM is intended to be used for in-vitro diagnostic use only. This raw materials used for the preparation of this CRM were shown to be non-reactive for HBs antigen, HCV antibodies and HIV antibodies, but this never rule out of its infectivity. Never touch the material with hurt hands. Handle this product as a biohazardous material capable of transmitting infectious disease and take necessary precautions just as like working with ay biological samples at Biosafety level 2 in microbiological and biomedical laboratories.

In-Vitro Use Only

■Certified values and uncertainties

The certified HbA1c values (NGSP units: %)[1)] and uncertainties [2)]in JCCRM 423-10b are as follows:

Lot No.	NGSP values (%)
JCCRM 423-10b M	5.59±0.14
JCCRM 423-10b H	7.70±0.19
JCCRM 423-10b HH	10.57±0.25

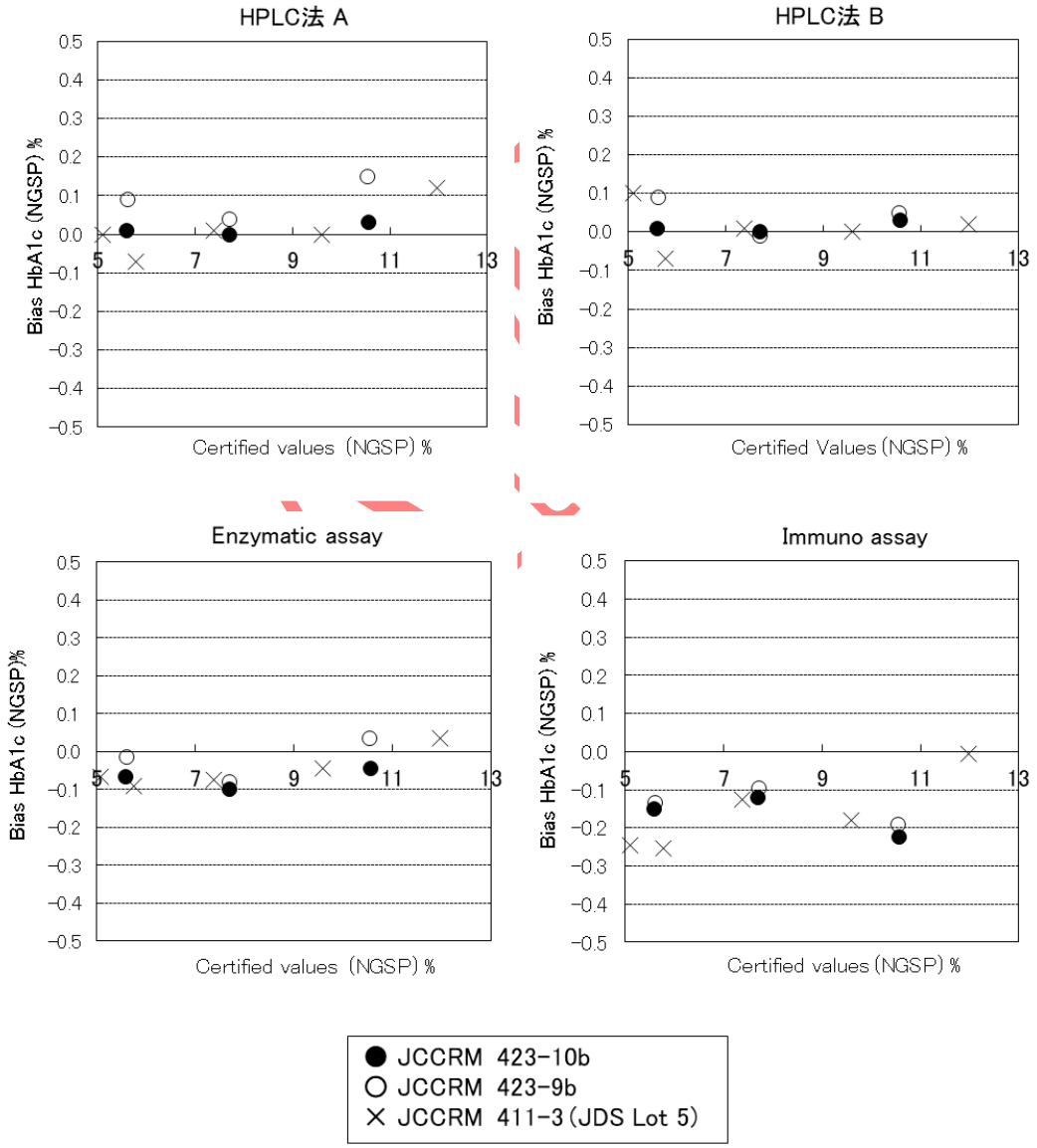
IFCC numbers corresponding to the NGSP numbers are 38, 61 and 92 mmol/mol, respectively.
These IFCC numbers were calculated according to NGSP=0.0915×IFCC+2.15 or IFCC=10.93×NGSP－23.5.
The NGSP numbers were measured by the JSCC/JDS[4,5)] DCCT Traceable KO 500 method calibrated with JCCRM 411-3 (JDS Lot5)
The expanded uncertainties (calculated with a coverage factor k＝2, corresponding to 95% confidence level) were determined according to the ISO GUM [3)]. Measurements were done by the Laboratory of ReCCS using KO500 DCCT-Traceable HPLC method.

■**Characteristics**

The characteristics[6] of this CRM are tabulated below:

Item	Specifications	Measurement method
Material	Human whole blood (n>20)	
Additives	None	
Total Hb concentration	133 g/L	ICSH method
HbF	<0.5%	KO500 method
MetHb	2~4%	Van Assendelft method
Glutathione adduct	<0.1%	KO500 method
Abnormal Hb	None	KO500 method
Plasma components	None	

These specifications were established by the Committee on Standardization of Laboratory Testing Related to Diabetes Mellitus of Japan Diabetes Society (JDS).



Agreements between Japanese primary standard JDS Lot 5 and this CRM .

	HbA1c (JDS)%* reference value	95% confidence Level
JCCRM 423-10b M	5.17	0.13
JCCRM 423-10b H	7.26	0.17
JCCRM 423-10b HH	10.10	0.19

HbA1c (JDS) Reference values and 95% confidence levels

Certification body

This CRM was certified by the Reference Material Institute for Clinical Chemistry Standards (ReCCS).
Date of certification: November 28 , 2018

■References

1) Tominaga M,et al. Hemoglobin A1c standard reference material, "Rinsyobyouri, 49(12), 1199-1204,2001
2) Certified Reference Material for Measurement of Hba1c; JCCRM 411-3 (JDS Lot5) Certificate of Analysis (MRE 4-131 (R10). Reference Material Institute for Clinical Chemistry Standards, 2015.
3) Guide to the Expression of Uncertainty in Measurement ,ISBN 92-67-10188-9, 1st Ed. ISO., Geneva, Switzerland (corrected and reprinted, 1995)
4) Committee on Diabetes Mellitus Indices, Japan Society of Clinical Chemistry: JSCC/JDS standard operating procedure for HbA1c Measurement(Vr.2.8:2009-03-06) Rinsyo Kagaku 38:163-176,2009
5) Committee on Diabetes Mellitus Indices, Japan Society of Clinical Chemistry: Guide to the establishment for HbA1c Measurement (Ver. 1.8:2006-12-20) Rinsyokagaku 36:67-73,2007
6) Rinsyokagaku, Ayumu Tani; (supplement 1) 30, 88a-89a, 2001

Provider of JCCRM 423-10b

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