Medicines & Healthcare products Regulatory Agency

NIBSC Confidence in Biological Medicines

WHO International Standard
1st WHO International Standard for JC virus DNA
NIBSC code: 14/114
Instructions for use
(Version 3.0, Dated 20/08/2021)

1. INTENDED USE

The 1st WHO International Standard for JC virus (JCV), NIBSC code 14/114, is intended for the standardisation of nucleic amplification technique-based assays for JCV. It should be used primarily for the calibration of secondary and/or in-house working standards. The material has been evaluated in a worldwide collaborative study involving 23 laboratories using a range of JCV NAT-based assays, and was subsequently established by the World Health Organisation Expert Committee on Biological Standardization (ECBS) in October 2015. Details of the prepartion and value assignment are available in document WHO/BS/2015.2259 [1]. Further evaluation post-establishment is provided [2].

2. CAUTION

This preparation is not for administration to humans or animals in the human food chain.

The preparation contains material of human origin, and either the final product or the source materials, from which it is derived, have been tested and found negative for HBsAg, anti-HIV and HCV RNA. As with all materials of biological origin, this preparation should be regarded as potentially hazardous to health. It should be used and discarded according to your own laboratory's safety procedures. Such safety procedures should include the wearing of protective gloves and avoiding the generation of aerosols. Care should be exercised in opening ampoules or vials, to avoid cuts.

3. UNITAGE

This material has been assigned a concentration of 7.0 log10 International Units (IU) per vial when reconstituted in 1 mL of nuclease-free water, based on the results of a worldwide collaborative study.
Uncertainty: the assigned untiage does not carry an uncertainty associated with its calibrartion. The uncertainty may therefore be considered to be the variance of the vial content which was determined to be +/- 0.33%.

4. CONTENTS

Country of origin of biological material: United Kingdom.

The reference preparation comprises of lyohilised whole virus of JCV 1A. Each vial contains the lyophilised equivalent of 1 mL of JCV in 10mM Tris-HCl pH 7.4, 2% FBS, 2% D-(+)-Trehalose dehydrate, 1mM EDTA. The Fetal Bovine Serum was purchased from BioSera (catalogue #: S1700, Batch # S06027S1700) and was of Australia Origin.

5. STORAGE

Vials of lyophilised material should be stored at -20^{0}C. This material has not been assessed for in use stability of reconstituted material. Reconstituted material should not be stored without in house validation studies performed by the end user.
Please note: because of the inherent stability of lyophilized material, NIBSC may ship these materials at ambient temperature.

6. DIRECTIONS FOR OPENING

Vials have a screw cap; an internal stopper may also be present. The cap should be removed by turning anti-clockwise. Care should be taken to prevent loss of the contents. Please note: If a stopper is present on removal of the cap, the stopper should remain in the vial or be removed with the cap.

7. USE OF MATERIAL

No attempt should be made to weigh out any portion of the freeze-dried material prior to reconstitution
The material should be reconstituted with 1.0 mL of deionized, nuclease-free molecular-grade water and left for a minimum of 20 minutes with occasional agitation before use. The reconstituted material has a final concentration of 7.0 Log10 IU/mL.

The material is designed to be used in conjunction with the extraction step of the NAT procedure.

The International Standard should be used to calibrate secondary reference materials, for example, by determining the equivalent concentration of secondary reference reagent being calibrated, against the International Standard, in parallel. The secondary reference reagent can then be assigned a concentration in IU. Once reconstituted, the International Standard should be diluted in the matrix routinely used within the laboratory for clinical diagnosis of JCV DNA, the diluted material should be extracted prior to JCV DNA measurement.

8. STABILITY

Reference materials are held at NIBSC within assured, temperature-controlled storage facilities. Reference Materials should be stored on receipt as indicated on the label. This material has under gone accelerated thermal degradation studies, data has been reviewed and approved by the WHO Expert Committee on Biological Standardisation and concluded with data to date this material is stable. Real time stability studies are on going.

NIBSC follows the policy of WHO with respect to its reference materials.

9. REFERENCES

[1]. Sheila Govind, Jason Hockley, Clare Morris and the Collaborative Study Group. Collaborative Study to establish the 1st WHO International Standard for JCV DNA for nucleic acid amplification technique (NAT)-based assays. WHOECBSReport2015;WHO/BS/2015.2259.
http://www.who.int/biologicals/expert_committee/BS2259_Establishment_JCV_DNA_1st_WHO_IS.pdf?ua=1
[2] Greninger AL, Bateman AC, Atienza EE, Wendt S, Makhsous N, Jerome KR, Cook L. Copy Number Heterogeneity of JC Virus Standards. J Clin Microbiol. 2017 Mar;55(3):824-831.

10. ACKNOWLEDGEMENTS

We gratefully acknowledge all collaborative study participants. We acknowledge Dr JL Murk for the donation of JC virus.

11. FURTHER INFORMATION

Further information can be obtained as follows;
This material: enquiries@nibsc.org
WHO Biological Standards:
http://www.who.int/biologicals/en/
JCTLM Higher order reference materials:
http://www.bipm.org/en/committees/jc/jctlm/
Derivation of International Units:
http://www.nibsc.org/standardisation/international_standards.aspx
Ordering standards from NIBSC:
http://www.nibsc.org/products/ordering.aspx
NIBSC Terms & Conditions:
http://www.nibsc.org/terms_and_conditions.aspx

12. CUSTOMER FEEDBACK

Customers are encouraged to provide feedback on the suitability or use of the material provided or other aspects of our service. Please send any comments to enquiries@nibsc.org

National Institute for Biological Standards and Control,
Potters Bar, Hertfordshire, EN6 3QG. T +44 (0)1707 641000, nibsc.org
WHO International Laboratory for Biological Standards,
UK Official Medicines Control Laboratory

World Health Organization

13. CITATION

In all publications, including data sheets, in which this material is referenced, it is important that the preparation's title, its status, the NIBSC code number, and the name and address of NIBSC are cited and cited correctly.

14. MATERIAL SAFETY SHEET

Classification in accordance with Directive 2000/54/EC, Regulation (EC) No 1272/2008: Not applicable or not classified

Physical and Chemical properties			
Physical appearance: Lyophilised		Corrosive:	No
Stable:	Yes	Oxidising:	No
Hygroscopic:	No	Irritant:	No
Flammable:	No	Handling:	See caution, Section 2
Other (specify):	Contains infectious JC virus		

Toxicological properties	
Effects of inhalation:	Not established, avoid inhalation
Effects of ingestion:	Not established, avoid ingestion
Effects of skin absorption:	Not established, avoid contact with skin

Suggested First Aid	
Inhalation:	Seek medical advice
Ingestion:	Seek medical advice
Contact with eyes:	Wash with copious amounts of water. Seek medical advice
Contact with skin:	Wash thoroughly with water.

Action on Spillage and Method of Disposal
Spillage of ampoule contents should be taken up with absorbent material wetted with an appropriate disinfectant. Rinse area with an appropriate disinfectant followed by water. Absorbent materials used to treat spillage should be treated as biological waste.

15. LIABILITY AND LOSS

In the event that this document is translated into another language, the English language version shall prevail in the event of any inconsistencies between the documents.

Unless expressly stated otherwise by NIBSC, NIBSC's Standard Terms and Conditions for the Supply of Materials (available at http://www.nibsc.org/About_Us/Terms_and_Conditions.aspx or upon request by the Recipient) ("Conditions") apply to the exclusion of all other terms and are hereby incorporated into this document by reference. The Recipient's attention is drawn in particular to the provisions of clause 11 of the Conditions.

16. INFORMATION FOR CUSTOMS USE ONLY

Country of origin for customs purposes*: United Kingdom * Defined as the country where the goods have been produced and/or sufficiently processed to be classed as originating from the country of supply, for example a change of state such as freeze-drying.
Net weight: 1g
Toxicity Statement: Toxicity not assessed
Veterinary certificate or other statement if applicable**.** **Attached:** No

17. CERTIFICATE OF ANALYSIS

NIBSC does not provide a Certificate of Analysis for WHO Biological Reference Materials because they are internationally recognised primary reference materials fully described in the instructions for use.

The reference materials are established according to the WHO Recommendations for the preparation, characterization and establishment of international and other biological reference standards http://www.who.int/bloodproducts/publications/TRS932Annex2_Inter_biolefstandardsrev2004.pdf (revised 2004). They are officially endorsed by the WHO Expert Committee on Biological Standardization (ECBS) based on the report of the international collaborative study which established their suitability for the intended use.

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