WHO International Standard
Acellular Pertussis Vaccine 1st IS
NIBSC code: JNIH-3
Instructions for use
(Version 9.0, Dated 09/04/2013)

1. INTENDED USE
JNIH-3 is a freeze-dried two components (PT, FHA) acellular pertussis vaccine manufactured by the Biken Kanonji Institute, Japan. The freeze-dried ampoules were originally held by the Statens Serum Institut (SSI), Copenhagen, Denmark and subsequently transferred to NIBSC. On behalf of WHO and in collaboration with members from NID, Japan, NICPBP, China and KFDA, South Korea, a collaborative study for the establishment of JNIH-3 as a common standard for acellular pertussis vaccine in the modified intra-cerebral challenge assay (MICA, modified Kendrick test) was organized by NIBSC in 2006. Fourteen laboratories performed MICA in the study. The results of this study show that using JNIH-3 as a standard would improve inter-laboratory agreement in potency estimates for acellular pertussis vaccine formulations. This study did not show significant dissimilarity between JNIH-3 and the various acellular pertussis vaccine formulations included, irrespective of the differences in acellular pertussis components. Available data indicates that JNIH-3 is sufficiently stable to serve as an international standard. In 2008, on the basis of the results of this study (WHO/BS/08.2086), preparation JNIH-3 has been established as the First International Standard for Acellular Pertussis Vaccine for use in the MICA and other protective bioassays.

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

The material is not of human or bovine origin. 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
34 IU per ampoule.

4. CONTENTS
Country of origin of biological material: Japan.
Each ampoule of JNIH-3 (Japanese National Institute of Health) contains one ml of a co-purified two component acellular pertussis vaccine absorbed onto aluminium phosphate, manufactured by the Biken Kanonji Institute in Japan in 1984. At the time of preparation each ampoule was found to contain a mean of 27.25 mg dry materials:

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein nitrogen</td>
<td>15.0 µg PN</td>
</tr>
<tr>
<td>Filamentous Haemagglutinin (FHA)</td>
<td>7.5 µg PN</td>
</tr>
<tr>
<td>Pertussis Toxin (PT)</td>
<td>7.7 µg PN</td>
</tr>
<tr>
<td>Haemacell</td>
<td>20.0 mg</td>
</tr>
<tr>
<td>Aluminium</td>
<td>0.2 mg</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>&lt;15 µg</td>
</tr>
<tr>
<td>Thiomersal</td>
<td>0.1 mg</td>
</tr>
</tbody>
</table>

5. STORAGE
Unopened ampoules should be stored at -20°C.

Please note: because of the inherent stability of lyophilized material, NIBSC may ship these materials at ambient temperature.

6. DIRECTIONS FOR OPENING
DIN ampoules have an ‘easy-open’ coloured stress point, where the narrow ampoule stem joins the wider ampoule body. Tap the ampoule gently to collect the material at the bottom (labeled) end. Ensure that the disposable ampoule safety breaker provided is pushed down on the stem of the ampoule and against the shoulder of the ampoule body. Hold the body of the ampoule in one hand and the disposable ampoule breaker covering the ampoule stem between the thumb and first finger of the other hand. Apply a bending force to open the ampoule at the coloured stress point, primarily using the hand holding the plastic collar. Care should be taken to avoid cuts and projectile glass fragments that might enter the eyes, for example, by the use of suitable gloves and an eye shield. Take care that no material is lost from the ampoule and no glass falls into the ampoule. Within the ampoule is dry nitrogen gas at slightly less than atmospheric pressure. A new disposable ampoule breaker is provided with each DIN ampoule.

7. USE OF MATERIAL
No attempt should be made to weigh out any portion of the freeze dried powder prior to reconstitution. Ampoules of JNIH-3 should be reconstituted in sterile saline and used according to laboratories own methodology. It is not recommended to store the reconstituted material under any conditions, if it is not used in the same day.

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. It is the policy of WHO not to assign an expiry date to their International Reference Materials. Users who have any data supporting any change in the characteristics of this material are encouraged to contact NIBSC.

9. REFERENCES
3) JG Kreeftenberg Collaborative study on the candidate reference materials JNIH-3, JNIH-4, JNIH-5 for the assay of acellular pertussis vaccines. WHO BS/88.1586

10. ACKNOWLEDGEMENTS
Grateful acknowledgement is made to Dr Paul Matejtschuk (NIBSC) for moisture and oxygen determinations for JNIH-3.

11. FURTHER INFORMATION
Further information can be obtained as follows;
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

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

<table>
<thead>
<tr>
<th>Physical and Chemical properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical appearance: Freeze dried powder</td>
<td>Corrosive: No</td>
</tr>
<tr>
<td>Stable: Yes</td>
<td>Oxidising: No</td>
</tr>
<tr>
<td>Hygroscopic: No</td>
<td>Irritant: No</td>
</tr>
<tr>
<td>Flammable: No</td>
<td>Handling: See caution, Section 2</td>
</tr>
<tr>
<td>Other (specify): Contains material of biological origin.</td>
<td></td>
</tr>
</tbody>
</table>

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 |

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*: Japan

* Defined as the country where the goods have been produced and/or sufficiently processed to be classified as originating from the country of supply, for example a change of state such as freeze-drying.

Net weight: 0.5 - 1.0 g

Toxicity Statement: Non-toxic

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_biolrefstandardsrev2004.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.