WHO International Standard
Parathyroid Hormone, Bovine.
NIBSC code: 82/632
Instructions for use
(Version 3.0, Dated 03/04/2008)

1. INTENDED USE
The International Standard (IS) consists of a batch of ampoules (coded 82/632) which was established at the 37th meeting of the WHO Expert Committee on Biological Standardisation in 1986.

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

The material is of bovine origin. The material is certified to be obtained from animals taken from a closed herd in the female line since 1980, in which no animal has been clinically suspected of having BSE & which has not been fed rations containing ruminant derived protein during that period.

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
Each ampoule of the IS contains 39 International Units (by definition).

4. CONTENTS
Country of origin of biological material: United Kingdom.

Each ampoule of the IS contains the residue after freeze-drying of a solution which contained:-

Bovine parathyroid hormone preparation approx. 15ug
Mannitol approx. 2mg

And pure dry nitrogen at slightly less than atmospheric pressure

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
Tap the ampoule gently to collect the material at the bottom (labelled) end. Ensure ampoule is scored all round the narrow part of the neck, with a diamond or tungsten carbide tipped glass knife file or other suitable implement before attempting to open. Place the ampoule in the ampoule opener, positioning the score at position 'A'; shown in the diagram below. Surround the ampoule with cloth or layers of tissue paper. Grip the ampoule and holder in the hand and squeeze at point 'B'. The ampoule will snap open. Take care to avoid cuts and projectile glass fragments that enter eyes. Take care that no material is lost from the ampoule and that no glass falls into the ampoule.

![Diagram of ampoule opening device](image)

Side view of ampoule opening device containing an ampoule positioned ready to open. 'A' is the score mark and 'B' the point of applied pressure.

7. USE OF MATERIAL
For all practical purposes, each ampoule of the IS contains the same quantity of the substances listed above. Dissolve the total contents of the ampoule in a known volume of a suitable solvent (buffer at pH 3.5 or less, with carrier protein where extensive dilution is required. No attempt should be made to weigh out any portion of the freeze-dried material.

For economy in use, it is recommended that the solution be sub-divided into several small containers and stored at -40°C or below. Careful evaluation of conditions and duration of storage are required. The ampoules do not contain bacteriostat and solution of the IS should not be assumed to be sterile.

8. PREPARATION OF AMPOULES
The bulk material comprised two pooled purified preparations.

The peptide preparations were dissolved at 10mg/ml in 0.01M acetic acid and passed through a Millipore filter before dilution with 0.1% mannitol in 0.01M acetic acid for distribution into ampoules.

The mean weight of solution in each of 50 weighed ampoules was 0.20385g, range 0.2024-0.2050g, variance 0.01M acetic acid for distribution into ampoules.

Procedures for ampouling were as recommended for preparing international biological standards (ECBS, 1978). After freeze-drying, ampoules were filled with pure dry nitrogen, sealed and after testing for leaks, were stored at –20°C in the dark.

9. STABILITY
NIBSC follows the policy of WHO with respect to its reference materials. The stability of the preparation 82/632 is acceptable, based on results of bioassay of samples stored for 38 months at 20°C and 45°C which gave an estimated rate of loss of bioactivity of 0.06% per year at -20°C. It is the policy of WHO not to assign an expiry date to their international reference materials. They remain valid with the assigned potency and status until withdrawn or amended.

Reference materials are held at NIBSC within assured, temperature-controlled storage facilities. Reference Materials should be stored on receipt as indicated on the label.

10. REFERENCE

11. ACKNOWLEDGEMENTS
Grateful acknowledgements are due to Dr Henry Keutmann (Massachusetts General Hospital, Boston, USA) and Dr J.S Woodhead (University Hospital, Cardiff, UK) for contributing bovine PTH.

12. 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/standards/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

13. 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
14. 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.

15. 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): None</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Toxicological properties</th>
<th></th>
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<tbody>
<tr>
<td>Effects of inhalation:</td>
<td>Not established, avoid inhalation</td>
</tr>
<tr>
<td>Effects of ingestion:</td>
<td>Not established, avoid ingestion</td>
</tr>
<tr>
<td>Effects of skin absorption:</td>
<td>Not established, avoid contact with skin</td>
</tr>
</tbody>
</table>

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.

16. 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.

17. INFORMATION FOR CUSTOMS USE ONLY

<table>
<thead>
<tr>
<th>Country of origin for customs purposes*:</th>
<th>United Kingdom</th>
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<tbody>
<tr>
<td>* 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.</td>
<td></td>
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</tbody>
</table>

Net weight: 2mg

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_biol_efstandardsrev2004.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.