Working Standard
Corticotrophin (ACTH), Porcine, International Working Standard
NIBSC code: 74/586
Instructions for use
(Version 3.0, Dated 30/11/2007)

This material is not for in vitro diagnostic use.

1. INTENDED USE
Several batches of ampoules, including those in ampoules coded 74/586, have been prepared in a similar way and from the same material as the International Standard for Corticotrophin (ACTH), Porcine for Bioassay, to serve as an International Working Standard for use as national and laboratory standards.
The Third International Standard for Corticotrophin (coded 59/016) was established by the WHO Expert Committee on Biological Standardization in 1962 (WHO ECBS TRS 1963). It was renamed the Third International Standard for Corticotrophin, Porcine, for Bioassay in 1968 (WHO ECBS, TRS 1969). For further details of this Standard and its collaborative study, see Bangham et al (1962). For an assessment of the stability of the Standard and the heterogeneity of the peptides contained in it, see Storrning et al (1980).

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
Each ampoule contains 5 INTERNATIONAL UNITS (by definition)

4. CONTENTS
Country of origin of biological material: United Kingdom.
Each ampoule contains the residue, after freeze-drying, of 1.0ml of a solution which contained:
Porcine ACTH  approx 50 μg
Lactose " 5 mg
Acetic acid " 3 mg
Nitrogen gas 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 at 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.

7. USE OF MATERIAL
For practical purposes each ampoule contains the same amount of the same materials. Dissolve all the contents in a known amount of buffer solution. No attempt should be made to weigh portions of the freeze-dried powder. For economy of use the solution can be kept for several months if an anti-bacterial preservative is added and the solution is subdivided into several small containers, which are frozen rapidly to below -70°C and then stored below -30°C in the dark; repeated freezing and thawing should be avoided. If extensive dilutions are prepared, a carrier protein (0.1% w/v) should be added, which is free of peptidase.

The material has not been sterilized and contains no bacteriostat.

8. PREPARATION OF AMPOULES
The bulk material. This consisted of 4.5g of a batch of corticotrophin made by the Armour Laboratories, Chicago, and generously donated by the Armour Company of Great Britain, and a further 4.5g of material from the same manufacturing batch that were supplied through the courtesy of the United States Pharmacopoeia. The material was made from pig pituitaries and purified by glacial acetic acid extraction, ethyl ether precipitation, oxyccellulose adsorption and elution, removal of electrolytes by ion exchange, and freeze-drying. Its stated potency was 99.9 IU/mg by subcutaneous Sayers' assay and 31.8 - 34.5 IU/mg by intravenous Sayers' assay.

Preparation of master ampoules. In July 1959 a weighed amount of the bulk was dissolved in ice-cold 50mM-acetic acid. The solution was clarified by centrifugation at 4000g at 2°C for 30 mins. The supernatant was then pipetted in 10ml amounts into 46 ampoules. The ampoule contents were freeze-dried, secondarily desiccated and sealed under nitrogen.

Preparation of the Standard. The contents of one master ampoule were dissolved in ice-cold 50mM-acetic acid in glass-distilled water, centrifuged at 10,000g at 2°C for 10mins and diluted to 3600ml with 0.5% lactose. The solution was then delivered by measured volume into 3500 ampoules, each containing 0.993g amounts. The maximum filling error estimated by weighing every 70th ampoule was ± 0.3%.

9. ACTIVITY OF AMPOULE CONTENTS
This was compared with the activity of the Second International Standard in an international collaborative study (Bangham et al, 1962). The pressor activity, estimated by rat blood pressure assay in terms of the Third International Standard for Oxytocin and Vasopressin, Ovine, for Bioassay, was found to be < 25mlU/ampoule. Accelerated thermal degradation studies have shown the Standard to be very stable under normal storage conditions (Storrning et al, 1980).
10. STABILITY
NIBSC follows the policy of WHO with respect to its reference materials. 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. For information specific to a particular biological standard, contact the appropriate NIBSC scientist. In addition, once reconstituted, diluted or aliquoted, users should determine the stability of the material according to their own method of preparation, storage and use. Users who have data supporting any deterioration in the characteristics of any reference preparation are encouraged to contact NIBSC.

11. REFERENCES

12. ACKNOWLEDGEMENTS
Grateful acknowledgements are due to the Armour Company of Great Britain and the United States Pharmacopeia for providing the material for the Standard and to the participants in the international collaborative study.

13. 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

14. 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

15. 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.

16. 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>
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<tbody>
<tr>
<td>Physical appearance: Freeze dried powder</td>
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<tr>
<td>Corrosive:</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Stable:</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Oxidising:</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Hygroscopic:</td>
</tr>
<tr>
<td>Yes</td>
</tr>
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<td>Irritant:</td>
</tr>
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</tr>
<tr>
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</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Handling:</td>
</tr>
<tr>
<td>See caution, Section 2</td>
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<tr>
<td>Other (specify):</td>
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17. LIABILITY AND LOSS
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18. INFORMATION FOR CUSTOMS USE ONLY

<table>
<thead>
<tr>
<th>Country of origin for customs purposes*:</th>
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<tbody>
<tr>
<td>United Kingdom</td>
</tr>
<tr>
<td>&quot;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>
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<tr>
<td>Net weight: 8mg</td>
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<tr>
<td>Toxicity Statement: Non-toxic</td>
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<tr>
<td>Veterinary certificate or other statement if applicable.</td>
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<td>Attached: No</td>
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