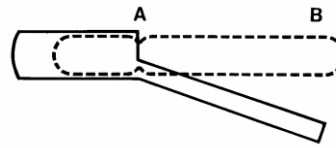




**WHO International Standard
Prolactin, Human
NIBSC code: 83/573
Instructions for use
(Version 5.0, Dated 10/11/2016)**



1. INTENDED USE

The 3rd International Standard (IS) for Prolactin, human, in ampoules coded 84/500, has been widely used for the calibration of immunoassays of Prolactin. Stocks of the 3rd IS are exhausted and the WHO Expert Committee on Biological Standardization (ECBS) has recognised (2015) the need for a replacement IS.

The 4th IS consists of a batch of ampoules, coded 83/573, which contain purified prolactin of human, pituitary origin. The ampouled preparation has been calibrated in an international collaborative study (2016) in terms of the 3rd IS, 84/500. The 4th IS, coded 83/573, was established at the 67th meeting of the ECBS in 2016. This material replaces the 3rd IS which is discontinued.

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

Each ampoule contains 67 MILLI INTERNATIONAL UNITS of human prolactin.

4. CONTENTS

Country of origin of biological material: Sweden
Each ampoule of the material contains the residue, after freeze-drying, of a solution which contained:-

Human prolactin	<u>approximately</u>	3.2 µg
Human albumin		1.0 mg
Lactose		5.0 mg

Ammonium formate 0.63 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.

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

No attempt should be made to weigh out any portion of the freeze-dried material prior to reconstitution.

For practical purposes each ampoule contains the same quantity of human prolactin. Tap the ampoule to collect material at the base of the ampoule and dissolve the total contents in a known volume of a suitable diluent. Addition of a carrier protein (e.g. 0.05 - 0.1% (w/v) bovine or human serum albumin) is recommended. Ensure all the material in ampoule is reconstituted by using the known volume of diluent to rinse all inner surfaces of the ampoule, collecting all the rinses to prepare the stock concentration. Unopened ampoules of the material should be stored below 4°C. The ampoules do not contain bacteriostat and solutions of the material should not be assumed to be sterile.

8. PREPARATION OF AMPOULES

Ampoules were prepared as described in the ECBS report WHO/BS/86.1520¹ and in Schulster² *et al.* (1989), using a quantity of highly purified extract donated by KabiVitrum, Sweden through the good offices of Dr L. Fryklund. Prolactin content in terms of the 3rd International Standard for Prolactin, coded 84/500, was assigned by an international collaborative study (2016) involving ten laboratories in seven countries. There was good agreement between laboratories giving an assigned immunoreactivity of 67 mIU/amp (GCV 8.1%; n=18). Using a panel of human sera containing normal and high prolactin concentrations (n=16), the material was shown to be commutable. Full details of the collaborative study can be found in the ECBS report, WHO/BS/2016.2292³.

9. STABILITY

Analysis of accelerated thermal degradation samples of 83/573, measured by participants in the collaborative study (2016), showed a predicted loss of immunoactivity of 0.007% per year when stored at -20°C.

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.

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.

10. REFERENCES

1. Human Prolactin, Report on the second collaborative study (1986) 37th Meeting of the WHO Expert Committee on Biological Standardization, WHO/BS/86.1520
2. Schulster D. *et al.* (1989). International standards for human prolactin: calibration by international collaborative study. *J. Endocrinol.* 121: 157-166
3. Ferguson J. *et al.* (2016) WHO International collaborative study of the proposed 4th International Standard for Prolactin, human. 67th Meeting of the WHO Expert Committee on Biological Standardization, WHO/BS/86.1520

11. ACKNOWLEDGEMENTS

Acknowledgements are due to KabiVitrum, Sweden for the donation of bulk material through the good offices of Dr L. Fryklund, to the Standards Processing Division of NIBSC for ampouling and to the participants in the collaborative study.

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/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

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

Physical and Chemical properties	
Physical appearance: Freeze dried powder	Corrosive: No
Stable: Yes	Oxidising: No
Hygroscopic: Yes	Irritant: No
Flammable: No	Handling: See caution, Section 2
Other (specify):	Contains material of human origin
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.	

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

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: 7mg

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.