WHO International Standard
ARGinine VASOPRESSIN (AVP)  1st International Standard
NIBSC code: 77/501
Instructions for use
(Version 6.0, Dated 30/04/2013)

1. INTENDED USE
Calibrant for arginine vasopressin bioassays.

Stocks of this WHO international standard for arginine vasopressin (AVP), ampoule code 77/501, will soon be exhausted and NIBSC has no plans to make a replacement standard because AVP is no longer classified as a biological by NIBSC since this substance can be adequately characterised by physico-chemical tests. The USP issues a standard that was calibrated against the IS and the EP issues a standard for the HPLC test described in that Pharmacopoeia.

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 approx. 20µg arginine vasopressin.

The assigned potency is 8.2 International units (IU) per ampoule.

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

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

20µg Arginine Vasopressin
5mg human serum albumin
1ml N/200 citric acid

This material has not been sterilized and contains no bacteriostat.

5. STORAGE
Store at -20°C or below.

Arginine vasopressin is less likely to dimerize within the pH range 3.0-4.0
Unopened ampoules of the Standard should be stored below 0°C.

For economy of use, a solution of the standard (pH 3.0-4.0) containing a suitable preservative (eg 0.2% chlorbutol) may be stored at +4°C in tightly-closed containers for at least 3 months

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 all practical purposes each ampoule contains the same amount of the same materials. Dissolve the total contents in a known amount of suitable buffer solution* with carrier protein (free of peptidase), where extensive dilution is required, to minimise loss by surface adsorption.

* See section 5 above

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

It is the policy of WHO 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.

9. REFERENCES
Delderfield et al., J Biol Stds. 1978, 6, 331

10. ACKNOWLEDGEMENTS
The help of the following is gratefully acknowledged:
Professor G A Moore for synthesizing and supplying the arginine vasopressin with aid from MRC, Canada;
Dr E Stürmer and Professor G W Bisset for preliminary stability studies.
Dr P Corran (NIBSC) for chromatographic analyses and the participants in the International Collaborative Study.

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
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>
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<tbody>
<tr>
<td>Physical appearance: Freeze-dried</td>
<td>Corrosive: No</td>
</tr>
<tr>
<td>Stable: Yes</td>
<td>Oxidising: No</td>
</tr>
<tr>
<td>Hygroscopic: Yes</td>
<td>Irritant: No</td>
</tr>
<tr>
<td>Flammable: No</td>
<td>Handling: See caution, Section 2</td>
</tr>
<tr>
<td>Other (specify): Contains dried material of human origin</td>
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<table>
<thead>
<tr>
<th>Toxicological properties</th>
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<tr>
<td>Effects of inhalation: Not established, avoid inhalation</td>
<td></td>
</tr>
<tr>
<td>Effects of ingestion: Not established, avoid ingestion</td>
<td></td>
</tr>
<tr>
<td>Effects of skin absorption: Not established, avoid contact with skin</td>
<td></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 a virucidal agent. Rinse area with a virucidal agent 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.