

**BODY FLUID STANDARDS****22.1 PURPOSE**

To prepare body fluid standards for the purpose of maintaining quality control of reagents and alternate light sources.

**22.2 RESPONSIBILITY**

Personnel qualified to perform Forensic Biology duties.

**22.3 SAFETY**

Use appropriate measures for the proper handling of biohazardous materials according to the GL-2 (Safety Manual).

**22.4 DEFINITIONS/ABBREVIATIONS**

- A. KM: Kastle Meyer Test
- B. AP: Acid Phosphatase
- C. ALS: Alternate Light Source
- D. RSID™: Rapid Stain Identification
- E. ABACard®: Rapid Immunoassay

**22.5 PROCEDURE**

All prepared body fluid standards will be checked prior to use as a standard. Record the appropriate information on the Body Fluid Standards Reagent Log Sheet.

- A. If the appropriate results are not obtained, review the procedure and repeat the test. If the standard still does not yield the appropriate result, then discard and make a new standard. If still unable to obtain the appropriate result, then inform the Unit Lead to try to determine the root cause.

- B. If the standard is acceptable for use, follow the packaging and storage instructions for each.

The standard is considered acceptable for use when a positive result is obtained with the body fluid standard being tested and a negative result is obtained with the blank standard being tested.

**22.5.1: Materials**

- A. Body fluid samples (human)
- B. dH<sub>2</sub>O
- C. Cloth swatches
- D. Filter paper
- E. Swabs
- F. Forceps

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- G. Scissors/scalpel(s)
- H. Glass slides
- I. Coin envelopes/tins
- J. Micropipette and tips
- K. Centrifuge tubes or test tubes
- L. Purple Top Tubes (PTTs)

**22.5.2: Procedure** - The following standards are stored in the freezer and replaced as needed:

Semen

- A. Preparation of semen standards (CT, SH, AP)
  - 1. Aliquot (250µl suggested) neat semen into centrifuge tubes labeled with the sample-type, lot # (date of collection) and preparer's initials.
  - 2. Store in a plastic bag labeled with the sample-type, source (if available) and/or lot # (date of collection) and preparer's initials. (Note on the label if the sample is spermic or aspermic).
- B. Christmas Tree and Sperm Hy-liter Stain Standards
  - 1. Make a dilution (1:250 suggested) of neat spermic semen in dH<sub>2</sub>O and aliquot into centrifuge tubes labeled with the sample-type. Re-freeze remaining neat semen aliquot.
  - 2. Store in a plastic bag labeled with the sample-type, date/source of neat collection, lot # (date of preparation) and preparer's initials.
- C. AP standards
  - 1. Make a 1:10 dilution of neat semen in dH<sub>2</sub>O and aliquot (50µl suggested) into centrifuge tubes labeled with the sample-type. Re-freeze remaining neat semen aliquot.  
  
Store in a plastic bag labeled with the sample-type, date, source (if available) of neat collection, lot # (date of preparation) and preparer's initials.
  - 2. Make a stain on filter paper with a 1:10 dilution of semen.  
  
Dry overnight in hood and place into a coin envelope labeled with the sample-type, source (if available), lot # (date of collection/preparation) and preparer's initials.

Urine (RSID™-Urine and p30 ABACard®)

- A. Saturate filter paper or swabs with neat female urine and dry overnight in the hood.
- B. Place sample made on filter paper into a coin envelope or re-package swabs into the paper sleeves and label with the sample-type, source (if available), lot # (date of preparation) and preparer's initials.

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- A. Use blank swabs, filter paper or cloth swatches as needed.
- B. Place into appropriately labeled (sample-type, source (if available), lot # (date of collection/preparation) and preparer's initials) coin envelopes.

Other

- A. Vaginal swabs
  - 1. Collect semen free vaginal samples (minimum of five days post coital) on swabs and dry overnight in hood.
  - 2. Re-package the swabs in the paper sleeves and label with the sample-type, source (if available), date of collection, lot # (date of preparation) and preparer's initials.
- B. Vaginal/semen mixed swabs
  - 1. Add 100µl of a 1:10 dilution of semen (previously described) to each pre-made vaginal swab or collect post coital (~ 24 hours) vaginal/semen mixed swabs and dry overnight in hood.
  - 2. Re-package the swabs in the paper sleeves and label with the sample-type, source (if available), date of collection, lot # (date of preparation) and preparer's initials.
- C. Oral swabs
  - 1. Collect oral sample on swabs and dry overnight in hood.
  - 2. Re-package the swabs in the paper sleeves and label with the sample-type, source (if available), date of collection, lot # (date of preparation) and preparer's initials.
- D. Fecal swabs
  - 1. Collect fecal material on swabs and dry overnight in hood.
  - 2. Re-package the swabs in the paper sleeves and label with the sample-type, source (if available), lot # (date of collection) and preparer's initials.
- E. Breast milk
  - 1. Store liquid breast milk in the freezer. Label with the sample-type, source (if available), lot # (date of collection) and preparer's initials.
  - 2. Thaw as needed and make a stain of the breast milk sample on filter paper or swabs. Re-freeze remaining sample.
  - 3. Dry overnight in the hood. Place sample made on filter paper into a coin envelope or re-package swabs into the paper sleeves and label with the sample-type, source (if available), date of collection, lot # (date of preparation) and preparer's initials.

**22.5.3: Procedure** - The following standards are maintained at room temperature and replaced annually (A minimum of one (1) set of the expired standards are retained for research purposes and the remainder are discarded):

*Due to the number of standards prepared and tested at one time, the lot # of the standards will be the date the standards are placed into use (as opposed to the date of collection or preparation).*

Blood (KM, o-Tolidine, RSID™-Blood and HemaTrace®)

- A. Saturate each filter paper with approximately 1ml of human blood. Properly label (sample-type, source lot # and preparer's initials) and refrigerate any remaining blood. Replace as needed.
- B. Dry overnight in a designated area.
- C. Once determined to be acceptable for use (see 22.5), cut into pieces and package each into a properly labeled (sample-type, lot #, control date and preparer's initials) coin envelope or tin.
- D. Replace the expiring standards in the Forensic Biology Unit and other units as necessary.

Semen (AP and p30 ABACard®)

- A. Make a 1:10 dilution of neat semen (previously described in section 22.5.2 Semen) in dH<sub>2</sub>O. Re-freeze remaining neat semen aliquot.
- B. Saturate each filter paper with approximately 1ml of the 1:10 dilution of semen.
- C. Dry overnight in a designated area.
- D. Once determined to be acceptable for use (see 22.5), cut into pieces ensuring no unstained filter paper is included by checking with the appropriate alternate light source.
- E. Package each into a properly labeled (sample-type, lot #, control date and preparer's initials) coin envelope or tin.
- F. Replace the expiring standards in the Forensic Biology Unit.

Saliva (Phadebas®)

- A. Saturate each filter paper with approximately 1ml of saliva.
- B. Dry overnight in a designated area.
- C. Once determined to be acceptable for use (see 22.5), cut into pieces ensuring no unstained filter paper is included by checking with the appropriate alternate light source.

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- D. Package each into a properly labeled (sample-type, lot #, control date and preparer's initials) coin envelope or tin.
- E. Replace the expiring standards in the Forensic Biology Unit.

Blood, Semen, Saliva, Urine (alternate light sources)

- A. Make blood stains approximately 1" in diameter on cloth swatches, ensuring that unstained substrate remains around each stain.
- B. Make separate 1:10 semen stains approximately 0.5" - 1" in diameter on filter paper, ensuring that unstained substrate remains around each stain.

Repeat for saliva and urine.

- C. Dry overnight in a designated area.
- D. Cut out the stains leaving unstained substrate around each.
- E. Check with the appropriate alternate light source(s) before use and record the results on the Body Fluid Standards Log Sheet.
- F. If the appropriate results are not obtained, discard the standard, review the procedure and make a new standard. If still unable to obtain the appropriate result, then inform the Unit Lead to try to determine the root cause.
- G. If the standard is acceptable for use, package each into a properly labeled (sample-type, lot #, control date and preparer's initials) coin envelope .

The standard is considered acceptable for use when it demonstrates fluorescence and/or stain detection under the appropriate alternate light source.

- H. Replace the expiring standards in the Forensic Biology Unit.

Negative controls

- A. Once determined to be acceptable for use (see 22.5), cut blank filter paper into pieces and package into properly labeled (sample-type, lot #, control date and preparer's initials) coin envelopes or tins.
- B. Replace the expiring standards in the Forensic Biology Unit and other units as necessary.

**22.5.4: Procedure** - The following standards are stored at room temperature and replaced as needed: Christmas Tree and Sperm Hy-liter control smears (if made in advance)

- A. Collect an epithelial cell (buccal) sample on a swab and form a smear onto a glass slide.
- B. With a micropipette, place approximately 3µl of diluted spermic semen (previously described in section 22.5.2 Semen) onto the smear. Re-freeze the remaining semen aliquot.
- D. Dry the positive control smear at room temperature or 37°C (do not apply open flame heat to the Sperm Hy-liter control smears).
- C. Label the smears with the sample-type, lot # (date of preparation) and preparer's initials.
- E. Store in a slide box until use.

Sperm Hy-liter control swabs (made in advance as needed)

- A. Spermic semen/epithelial cell (buccal) swabs
  - 1. Collect epithelial cell (buccal) samples on swabs and add 25ul neat spermic semen (previously described in section 22.5.2 Semen).
  - 2. Dry swabs overnight in hood and re-freeze remaining neat semen aliquot.
- B. Separate spermic semen and epithelial cell (buccal) swabs
  - 1. Place 25ul neat spermic semen (previously described in section 22.5.2 Semen) onto swabs and dry overnight in hood. Re-freeze remaining neat semen aliquot.
  - 2. Collect epithelial cell (buccal) samples on swabs and dry overnight in hood.
- C. Package the prepared swabs in separate coin envelopes and label with the sample-type, lot # (date of preparation) and preparer's initials.

## **22.6 REFERENCES**

GL-2 (Safety Manual)