TEST FOR FECAL MATERIAL

18.1 PURPOSE

18.1.1: To determine the presence of urobilinogen in Forensic samples.

18.1.2: To quality control new mercuric chloride and zinc chloride chemicals.

18.2 RESPONSIBILITY

18.2.1: Forensic Science Examiners from the Division of Scientific Services who have been trained in the discipline of testing for urobilinogen according to FB SOP-26 (Training Manual and Checklist).

18.2.2: Forensic Science Examiners in the Forensic Biology Unit. Ordering information is maintained in a log book in the Forensic Biology Unit. New chemicals are purchased according to GL-6 (Purchasing). For additional information, refer to the Biological Inventory in Appendix 2.

18.3 SAFETY

Use appropriate measures for the proper handling of biohazardous materials, mercuric chloride and zinc chloride according to GL-2 (Safety Manual) and the Safety Data Sheets.

18.4 DEFINITIONS

A. ALS: Alternate Light Source

B. PBS: Phosphate Buffered Saline

18.5 TEST PROCEDURE

A. This test will be performed at the discretion of the examiner, with input from the Unit Lead(s), based on the submitting agency requests, case information and the condition of the evidence.

B. A sample is considered limited/compromised when it appears to be of low quantity and/or in poor condition. The conditions the evidence may have been exposed to prior to submission shall be considered when assessing the sample tested and/or collected.

18.5.1: Materials

A. Alcoholic mercuric chloride (saturated in ethanol)

B. Alcoholic zinc chloride (saturated in ethanol)

C. dH_2O

D. Controls: positive (known fecal stain) and negative (blank swab), include a substrate control from the evidence as needed

E. ALS: Blue/Green (B/G) 460-510nm

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18.5.2: Procedure

A. Prepare a saturated solution of mercuric chloride in a test tube with ethanol. Dissolve enough mercuric chloride in the ethanol until it no longer goes into solution.

B. Repeat above step with zinc chloride.

C. These saturated solutions must be prepared at the time the test is performed. Record on the General Reagent Sheet (FBQR-09).

D. Test a positive and negative control with the following procedure (steps 17.52.E - 17.5.2.M).
   1. The controls may be run concurrently with the questioned samples.

   2. If the questioned sample is limited/compromised, run the controls prior to testing the questioned sample. If the controls yield the appropriate results then immediately test the questioned sample.

   3. If the controls do not yield the appropriate results, review the procedure and retest the controls prior to the questioned sample. If the controls still do not yield the appropriate results, then inform the Unit Lead, determine the root cause and correct.

E. Extract a portion of the stained material in a test tube with enough dH_2O to cover the sample for a minimum of five minutes or longer as needed. Do not extract in PBS. Agitate to ensure sample is submerged.

F. Remove substrate from test tube.

G. Add three (3) drops of extract to a 2nd test tube.

H. Add three (3) drops of alcoholic mercuric chloride to the test tube.

I. Add three (3) drops of alcoholic zinc chloride to the test tube.

J. Vortex the mixture.

K. Examine under ALS (blue-green) and compare to controls.

L. Observe the color of the extract.

M. It is important to compare results of the question samples against the positive and negative controls.

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N. Discard any unused reagent in a designated waste disposal container.

O. Record the results of the controls and sample(s) on the appropriate Quality Record Worksheet.

P. A 2nd examiner will observe and confirm results and initial the appropriate Quality Record Worksheet.

18.5.3: Results and *Suggested Report Statements*

A. Positive
An apple green fluorescence is visible under ALS if urobilinogen is present.

[ ] gave a positive result(s) with a color screening test for the presence of urobilinogen, a component of fecal material.

B. Negative
No color change is noted under ALS, which indicates that no urobilinogen is present or is below detectable level.

A color screening test for the presence of urobilinogen, a component of fecal material, was performed on [ ]. Fecal material was not detected with this test.

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18.6 QC PROCEDURE

Manufacturer's expiration dates with only month and year indicated (i.e. 04/2014) expire the last day of the month noted.

A. Test the new lots before use according to the test procedure and the Urobilinogen Reagent Log Sheet. Record the required information.

B. If the appropriate results are not obtained, review the procedure and repeat the test. If the reagent still does not yield the appropriate results, then inform the Unit Lead, determine the root cause and correct.

C. If the lots are suitable for use, record the date received, date opened and examiner's initials on the bottles.

D. Store at room temperature.

18.7 REFERENCES

A. Metropolitan Police Forensic Science Laboratory. Biology Methods Manual. 1978, pp. 4-7.
B. GL-2 (Safety Manual)
C. GL-6 (Purchasing)
D. Safety Data Sheets