Status **Active** PolicyStat ID **13365404**

Origination	2/1/2023	Document Contact	Colette Kessler: Mgr, Division Laboratory
Last Approved	4/17/2023	Area	Laboratory-Chemistry
Effective	4/17/2023	Applicability	Royal Oak
Last Revised	4/17/2023		
Next Review	4/16/2025		

Urobilinogen in Urine (Multistix 10 SG) - Royal Oak

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

A. The Multistix test is based on a modified Ehrlich reaction, in which p-dimethylaminobenzaldehyde in conjunction with a color enhancer condenses with urobilinogen in a strongly acid medium to produce a pink color. Results are reported in Ehrlich units/dl of urine because urobilinogen represents a mixture of compounds.

B. Urobilinogen is formed in the intestinal tract from the reduction of direct bilirubin by intestinal flora. About half of the urobilinogen is recirculated back thorough the liver where a small portion enters the blood stream and is eliminated via the kidneys. Normally, a small amount of urobilinogen may be detected in urine. Increased urine urobilinogen levels are correlated with urinary bilirubin to differentially diagnose causes of jaundice. Generally, +urobilinogen/+bilirubin indicates liver dysfunction, cholestasis or cholangitis. Positive urobilinogen/-bilirubin indicates intravascular hemolysis or hemolytic anemia. Normal urobilinogen/+bilirubin indicates extrahepatic obstruction to bile flow.

C. This document describes the steps for this procedure to assist technologists.

II. SPECIMEN COLLECTION AND HANDLING:

A. Fresh, well-mixed uncentrifuged urine. It is especially important to analyze a fresh specimen promptly as urobilinogen is very unstable when exposed to room temperature and light. Urobilinogen is very labile in acid urine. Urinary excretion of urobilinogen is increased in alkaline urine. The preferred collection period for urine urobilinogen quantitation is from 2-4 pm. This postprandial period coincides with excretion of urobilinogen when urine pH is more nearly neutral.

B. It is recommended that testing be done within one hour after voiding. Otherwise, immediately refrigerate the specimen and return to room temperature before testing.

III. REAGENTS/SUPPLIES:

A. Siemens Multistix 10 SG (#2161)

B. 0.2% weight for weight (w/w) p-diethylaminobenzaldehyde

C. 99.8% w/w non-reactive ingredients

IV. QUALITY CONTROL (QC):

A. Both Normal and Abnormal Kova-Trols are run and results are reported:

1. at the beginning of each shift
2. whenever a new lot number of reagent strips is opened
3. whenever a new shipment of reagent strips is received
4. whenever troubleshooting warrants it

V. PROCEDURE:

A. Briefly dip the test area of the strip in fresh, **well-mixed** uncentrifuged urine.

B. While removing the strip, run the edge against the rim of the urine container to remove excess urine. Hold the strip in a horizontal position to prevent mixing of chemicals from adjacent reagent areas and/or contaminating the hands with urine.

1. If reading visually, compare the **UROBILINOGEN** reagent area to the corresponding Color Chart on the bottle label at **60 seconds**. Hold strip close to color blocks and match carefully.
2. If reading instrumentally, follow directions given in the Advantus procedure.

VI. REPORTABLE RANGE:

Multistix 10SG has a color comparison chart with **FIVE** blocks with increasing of pink color. These represent urobilinogen as normal or present in increasing amounts. Results are reported in Ehrlich units/dL as follows: 0.2, 1, 2, 4, 8 EU/dL.

VII. REFERENCE RANGE:

The normal urobilinogen range obtained with this test is 0.2 to 1.0 Ehrlich units/dL, (as represented by the first **two** blocks on the color comparison chart). A result of 2.0 EU/dL represents the transition from normal to abnormal, and the patient and/or urine specimen should be evaluated further.

VIII. SENSITIVITY:

The test area will detect Urobilinogen in concentrations as low as 0.2 mg/dL (approximately 0.2 EU/dL) in urine. The absence of Urobilinogen in the specimen being tested cannot be determined.

IX. INTERPRETATION:

When an abnormal urobilinogen result is obtained the dipstick should be repeated (visually read). The technologist should review the patient's chart in the hospital information system (EPIC) for correlation with liver function tests (bilirubin, enzymes) and hematology results (evidence of hemolysis).

X. LIMITATIONS/INTERFERING SUBSTANCES:

A. The absence of urobilinogen cannot be determined with this test.

B. Strip reactivity increases with temperature (optimum temp. 22-26°C).

C. False positives may occur with porphobilinogen, p-aminosalicylic acid, sulfonamides, p-aminobenzoic acid, procaine, 5-HIAA, indole, or methyldopa.

D. Pyridium, azogantrisin, riboflavin, or increased bilirubin may mask the color reaction or yield false positive results.

E. Formalin, acidic urine, or light exposure will lower urobilinogen results.

XI. REFERENCES:

1. Multistix 10 SG, Miles, Inc. Diagnostic Division, Elkhart, IN 46515, rev. 04/99
2. Henry, J.B., Clinical Diagnosis and Management by Laboratory Methods, 20th edition, Philadelphia, W.B. Saunders Co., 2001 pg.384.
3. Hundley, J.M. and Fleming, J.K., Urine Analysis American Society of Clinical Pathologists Workshop, Dearborn, MI, 1991.

Approval Signatures

Step Description	Approver	Date
Medical Director	Ann Marie Blenc: System Med Dir, Hematopath	4/17/2023
Policy and Forms Steering Committee Approval (if needed)	Colette Kessler: Mgr, Division Laboratory	4/5/2023
Policy and Forms Steering Committee Approval (if needed)	Gail Juleff: Project Mgr Policy	4/5/2023
Lab Chemistry Best Practice Committee	Caitlin Schein: Staff Physician	4/5/2023

Lab Chemistry Best Practice Committee	Qian Sun: Tech Dir, Clin Chemistry, Path	3/24/2023
	Colette Kessler: Mgr, Division Laboratory	3/24/2023