ORDER INFORMATION

REF: UROCC 50 Cont. 50 Strips

INTRODUCTION

Hemachex, reagent strips for semi quantitative detection of hemoglobin in urine are disposable stiff plastic strips to which reagent pads are affixed. The result can be read by comparing the color on the pad visually with color block of the label. Hemoglobin is normally not present in Urine, Faeces, or Sputum. Presence of hemoglobin in these materials are an important diagnostics due that usually implies bleeding in the urinary, gastro intestinal track & respiratory tract.

BLOOD IN URINE

HEMATURIA

The term hematuria implies the presence of more or less intact red cells in the urine. Hematuria is usually accompanied by hemoglobinuria because of disintegration of red cell in urine red or brown produce a smoky appearance. Urine that contains red cells as seen by microscopic examination of the sediment, also contain hemoglobin in solution. Hemolysis of red cells is more rapid in alkaline than in acid urine.

HEMOGLOBINURIA

The term hemoglobinuria denotes the dissolved hemoglobin in urine. Hemoglobinuria (free hemoglobin in urine) is related to Hemoglobinemia (free hemoglobin in serum).

TEST PRINCIPLE

(REAIGHT STRIPS FOR HEME COMPOUNDS HEMOGLOBIN & MYOGLOBIN).

The test is based on the liberation of Oxygen from peroxide in the reagent strip by the Peroxidase like activity of Heme in free Hemoglobin, lysed erythrocytes, or that of Myoglobin. Intact erythrocytes are lysed on the pad, causing the hemoglobin to react. Therefore well mixed urine must be tested as intact erythrocyted mixture of an organic peroxide and a Chromogen Tetramethyl Benzidine.

The general reaction is as follows:

\[
\text{Heme} + \text{H}_2\text{O}_2 + \text{TMB} \rightarrow \text{H}_2\text{O} + \text{TMB} \quad \text{(Chroomogen, Reduced, Peroxidase Activity, (Oxidised, Blue Color))}
\]

Heme catalyzes the oxidation of tetramethylbenzidine to produce a green color. The resultant color changes from yellow through green to Dark blue.

EXPECTED VALUE:

Hemoglobin, hemolysed red blood cells and myoglobin give uniformly blue coloration on the test pad. Development of scattered or compact blue dots are indicative of intact RBCs. Assessment of diagnostic significance of results depends on clinical correction and judgement. Urine specimen of menstruating female patients may give trace or positive results. However it has no diagnostic significance.

LIMITAIONS

I. Elevated specific gravity or elevated protein levels may reduce the reactivity of the test pad.

II. Concentration of Ascorbic acid more than 40 mg/dl may give false negative results.

III. Contamination with Oxidizing agents like hypochlorites and bacterial peroxidases from microbes associated with urinary tract infection may give false positive results.

SENSITIVITY :

The test pad can detect 0.015 mg/dl of free hemoglobin and 5-15 intact RBC’S ml. The high sensitivity of the test complements microscopic examination of deposits.

TEST PROCEDURE

Collect fresh urine sample in clean and dry container, mix the sample well before testing. Use uncentrifuged sample only. Remove one test strip from the bottle and replace the cap immediately and tightly. Immerse the strip in well-mixed urine sample for not more than 1 second. Remove the strip running along the edge of the container so that excess urine is drained off. Compare the test area with the color chart. Read result exactly at one minute.

PRECAUTIONS

I. Store below 30° C in a cool, dry place.

II. Replace the cap immediately and tightly after removing strips.

III. Do not remove the dessicant from the bottle.

IV. Keep the strips in the original bottle only. Do not mix strips from different bottles.

V. Do not touch the reagent area of the strip.

VI. Do not refrigerate.

VII. Dip the reagent area completely in sample but do not keep it immersed for longer than 1 second to avoid solubilization of reagents.

VIII. It is very important to protect strips from direct light and moisture to prevent reactivity loss.

IX. Discoloration or darkening of reagent areas is indicative of reagent deterioration. If evident, check with the strip from a fresh bottle.
BLOOD IN FAECES

Bleeding into the gastrointestinal tract of any degree is always alarming and should never be ignored, although often it results from minor pathology, such as hemorrhoids and anal fissures. Bleeding from the jejunum and ilum is very rare.

Drugs, particularly salicylates, steroids, rauwolfia derivatives, phenybutazone and indomethacin have been associated with increased gastrointestinal tract pathology. This effect may follow even after parental administration of the drug. Apparent fecal peroxidase activity has been shown to increase with use of carmine as a stool maker and occasionally with massive iron therapy. The latter however may result from actual bleeding secondary to gastrointestinal irritation produced by some iron compound. Loss of more than 50 to 75 ml of blood from the upper gastrointestinal tract generally imparts a dark red to black color and gives a tarry consistency to the stool ("tarry stool"). Persistence of a tarry appearance for two or three days suggests loss of at least 1000 ml of blood. Following this amount of bleeding.

Occult blood may persist for 5 to 12 days. Somewhat smaller quantities of blood entering the lower gastrointestinal tract may produce similar appearing stools or may appear as bright red blood. Such stools should be considered grossly bloody only after the blood has been verified by chemical tests to avoid confusion with coloring from dietary substances or medications. Smaller increases in blood content may not alter the appearance of the stool. Such stools are said to contain "occult blood" detection of which can be most useful in uncovering or localizing disease. This is especially important because early diagnosis and treatment of patients with colonic cancer result in a relatively good prognosis for survival.

PRECAUTIONS

The patients should not consume red meat, poultry, fish, leafy, green vegetables, or peroxidase containing vegetables like Radish, cauliflower, etc. three days before the test. The patients should not brush his/her teeth vigorously for 2 to 3 days before the test. All the medications that may give false positive or false negative results should be abstained 2-3 days prior to the test.

TEST PROCEDURE

Take 10 ml of distilled water, 0.9 N normal saline in two large test tubes. With scoop take about 1 gm of stool from central portion of stool sample in each tube.

Mix the sample stirring with a glass rod. Heat one of the tube and boil for two minutes. Let it cool down to room temperature. Let both the tubes stand for 15-20 minutes and use supernatant for test. Alternatively the tubes may be centrifuged/ Subsequently follow the test procedure, as employed for urine, to the supernatant.

<table>
<thead>
<tr>
<th>Boiled</th>
<th>Unboiled</th>
<th>Blood in Faeces</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>Positive</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>Doubtful, requires repeat test</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Negative</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>Improbable but requires repeat from different area of stool &amp; also repeat next day.</td>
</tr>
</tbody>
</table>

REFERENCES

1. Ahlquist DA. Accuracy of fecal occult screening for colorectal neoplasia. A perspective study using hemoccult and and hemquant test. JAMA 1993; 269:1262