

URI-TRAK 10

Reagent Strips for Urinalysis

REF : 1100 100

Uritrak 10 for 10 Parameters

Summary and Explanation

URI-TRAK-10 Reagent Strips are dip-and-read test strips for In Vitro Diagnostic Use only for testing ten parameters in urine. Test result may provide information regarding the status of carbohydrate metabolism, kidney and liver function, acid-base balance, and urinary tract infection. It is measured by comparison of test paper attached to a plastic strip with the color chart blocks printed on the vial label. The strips may be read visually. They can also be read instrumentally, using urine chemistry analyzers.

Principle

Blood: The test is based on the Pseudo-peroxidase activity of the haem moiety of hemoglobin and myoglobin. The chromogen is oxidized by a hydroperoxide in the presence of haem and changes color from yellow (or greenish yellow) to blue.

Ingredients:

Diisopropylbenzene dihydro peroxide 26.0%W/W
Tetramethylbenzidine 1.5%W/W

Bilirubin: Azo-coupling reaction of bilirubin with a diazonium salt in an acid medium to form an azodye. Color changes from light tan to beige or light pink.

Ingredients: 2,4-dichloroaniline diazonium salt 0.6%W/W

Urobilinogen: The test is based on the Ehrlich's reaction. Color changes from light orange-pink to dark pink.

Ingredients: Fast blue B salt 0.2%W/W

Ketone: Legal's test-nitroprusside reaction. Acetoacetic acid in an alkaline medium reacts with nitroferrocyanide to produce a color change from beige to purple.

Ingredients: Sodium Nitroprusside 5.7%W/W

Glucose: Glucose oxidase catalyzes the oxidation of glucose to form hydrogen peroxide. The hydrogen peroxide thus formed then oxidizes a chromogen on the reaction pad by the action of peroxidase.

Ingredients: Glucose oxidase (microbial.123U) 1.7%W/W
Peroxidase(horseradish.203U) 0.2%W/W
Tetramethylbenzidine 0.1%W/W

Protein: Protein "error of indicators." When pH is held constant by a buffer, indicator dyes release H⁺ ions because of the protein present and change color from yellow (or greenish yellow) to blue-green.

Ingredients: Tetrabromophenol Blue 0.1%W/W

Nitrite: The test is based on the diazotization reaction of nitrite with an aromatic amine to produce a diazonium salt. It is followed by an azo-coupling reaction of this diazonium salt with an aromatic compound on the reaction pad. The azo dye produced causes a color change from white to pink.

Ingredients:

P-arsanilic acid-N-(1-Naphthol)-ethylenediamine 1.3%W/W
Tetrahydroquinoline 0.9%W/W

Leukocyte: This test pad contains an indoxyl ester and diazonium salt. It is followed by an azo-coupling reaction of the aromatic amine formed by leukocytes esterase with a diazonium salt on the reaction pad. The azo dye produced causes a color change from beige to violet.

Ingredients: Indoxyl ester 4.3%W/W
Phenyl Diazonium salt 0.4%W/W

pH: Double indicator system. Indicator's methyl red and bromothymol blue are used to give distinct color changes from orange to green to blue. (pH 5.0 to 9.0)

Ingredients: Methyl Red 3.3%W/W
Bromothymol Blue 55.0%W/W

SYMBOLS IN PRODUCT LABELLING

| | | | |
|---|------------------------------|---|---------------------------------------|
|  | Authorised Representative |  | Use by/Expiration Date |
|  | For in-vitro diagnostic use |  | CAUTION. Consult instructions for use |
|  | Batch Code/Lot number |  | Manufactured by |
|  | Catalogue Number | | |
|  | Consult instructions for use | | |
|  | Temperature Limitation | | |

Specific Gravity(SG)

Ionic solutes present in the urine cause protons to be released from a polyelectrolyte. As the protons are released the pH decreases and produces a color change of bromothymol blue from blue-green to yellow-green.

Ingredients:

Bromothymol Blue 4.8%W/W
Poly(methyl vinyl ether-alt- maleic anhydride) 90.2%W/W

Storage and Handling

Store in a cool, dry place at temperatures between 2- 30°C. Do not store the strips in a refrigerator or freezer. Store away from moisture and light. When stored in the original container, the product is stable up to the expiry date printed on the label and (or) vial box.

Replace the bottle cap immediately and tightly after removing test strips, and keep the vial tightly closed between tests. Do not remove desiccant from bottle. Do not touch test areas of urine reagent strips. Do not open container until ready to use.

Discoloration or darkening of the test pads may indicate deterioration. If this is evident, or if test results are questionable or inconsistent with expecting finding, confirm that the product is within its expiration date and is reacting properly using known negative and positive control materials. Do not use after the expiry date. Note once the canister has been opened, the remaining strips remain stable for up to 6 months.

Specimen Collection and Preparation

- Collect urine in a clean, dry container that allows complete immersion of all the fields on the test strip. Do not add preservatives. Test the specimen as soon as possible, with the sample well mixed but not centrifuged.

- The use of fresh morning urine is recommended for optimal nitrite tests, as well as for the valid determination of bilirubin and urobilinogen, since these compounds are unstable when exposed to light.

- If immediate testing is not possible, the sample should be stored in the refrigerator, but not frozen, and then brought to room temperature before being used in the test. Unpreserved urine at room temperature may undergo pH changes due to microbial proliferation, which may interfere with protein determination.

- If cleanly voided specimens are not collected from females, positive results for leukocytes may be found due to contamination from outside the urinary tract.

- Skin cleansers containing chlorhexidine may affect protein test results if specimen contamination occurs.

Instructions for use

The procedure must be followed exactly to achieve reliable results. Do not compare strips with color chart before the strip is dipped in urine.

1. Dip the strip into the urine up to the test area for no more than two seconds.

2. Draw the edge of the strip along the brim of the vessel to remove excess urine; at this time, don't make the test areas touched to the brim of the vessel. Turn the strip on its side and tap once on a piece of absorbent material to remove any remaining urine; Excessive urine on the strip may cause the interaction of chemicals between adjacent reagent pads, so that an incorrect result may occur.

3. Compare the colours of the reagent pads exactly after 60 seconds (Leukocytes after 90-120 seconds) with the color chart on the vial label under good light. While comparing, keep the strip horizontally to prevent possible mixing of chemicals when excessive urine is present.



Quality control

For Best results, performance of reagent strips should be confirmed by testing known negative and positive specimen or controls whenever a new bottle is first opened. Each laboratory should establish its own goals for adequate standards of performance. Each lab worker should ensure that it complies with government and local requirements.

Limitations of procedure

As with all laboratory tests, definitive diagnostic or therapeutic decision should not be based on any single result of method. Substances that cause abnormal urine color may affect the readability of test pads in urinalysis reagent strips.

Blood: Elevated specific gravity or protein in urine may reduce the reactivity of the blood test portion. Microbial peroxidase associated with urinary tract infections may cause false positive results. Ascorbic acid concentrations (>30 mg/dl) may cause false negatives at the low level of blood.

Bilirubin: Metabolites of drugs, such as pyridium and selenium, which give a color at low pH, may cause false positives. Indican (indoxyl sulfate) can produce a yellow-orange to red color response, which may interfere with the interpretation of negative or positive bilirubin readings. Ascorbic acid (> 30mg/dl) may cause false negative result.

Urobilinogen: The absence of urobilinogen in the specimen cannot be determined. The test area will react with interfering substances known to react with Ehrlich's reagent, such as p-aminosalicylic acid. Drugs containing azo gantrisin may give a masking golden color. The test is not reliable method for the detection of porphobilinogen.

Ketone: Positive results (trace or less) may occur with highly pigmented urine specimens or those containing large amounts of levodopa metabolites. Some high SG and low pH urine may give false positive result. Phenosulfonphthalein may cause false positive result.

Glucose: High SG (>1.020) with high pH urine and ascorbic acid (more than 40mg/dl) may cause false negative result at the low level of glucose.

Protein: False positive results may be found in strongly basic urine (pH 9). The interpretation of results is also difficult in turbid urine specimens.

Nitrite: Ascorbic acid (>30mg/dL) may cause false negative result with low level of nitrite containing (<0.03mg) urine. The negative result does not always mean that the patient is free from bacteriuria. Pink spots or pink edges should not be interpreted as a positive result. Negative result may occur when urinary tract infections are caused by organism which do not contain nitrate reductase; when urine has not been retained in the bladder long enough (four hours or more) for reduction of nitrate to nitrite occur; or when dietary nitrate is absent.

Leukocyte: The test result may not always be consistent with the leukocyte cell number by the microscopic examination. High concentration of glucose, high specific gravity, high level of albumin, high concentration of formaldehyde or presence of blood may cause decreased test results. High concentration of oxalic acid or traces of oxidizing agents may cause false negative results.

pH: If excessive urine remains on the strip because of improper test procedure, it is possible that the acidic buffer in protein portion comes out and affect the pH portion, then pH result may be decreased than the actual. This phenomenon is called "run-over effect."

Specific Gravity(SG):

High-buffered alkaline urine may cause diminished result, whereas high-buffered acidic urine may cause slightly elevated result.

Expected value

Blood: Normally, no hemoglobin is detectable in urine (0.010mg/ dl; 3 RBC/ μ l). When hemoglobin appears in urine it indicates kidney disease or a urinary tract disorder. Blood may often be found in the urine of menstruating females

Bilirubin: Normally no bilirubin is detectable in urine by even the most sensitive methods. even trace amount of bilirubin are sufficiently abnormal to require further investigation.

Urobilinogen: The normal urobilinogen range is 0.1 to 1.0 Ehrlich unit/dl. If results exceed the concentration of 2.0 mg/dl, the patient and the urine specimen should be evaluated further.

Ketone: Ketone bodies should not be detected in normal urine specimens with this reagent.

Glucose: A small amounts of glucose (up to 30mg/dl) are normally excreted by the kidney.

Protein: Normal urine specimens ordinarily contain some protein (<20mg/dL) therefore only persistent elevated levels of urine protein indicate kidney or urinary tract disease. The persistent results of trace level or over indicate significance proteinuria and thus further clinical testing is needed to evaluate the significance of results.

Nitrite: Normally no nitrite is detectable in urine.

Leukocyte: Normally no leukocytes are detectable in urine.

pH: Urine values generally range from pH 5 to 9.

Specific Gravity(SG):

The normal SG of urine ranges from 1.001 to 1.035.

Performance Characteristics

Performance characteristics are based on clinical and analytical studies and depend upon several factors: the variability of colour perception; the presence or absence of inhibitory and matrix factors typically found in urine; and the laboratory conditions in which the product is used (e.g., lighting, temperature, and humidity). Each colour block represents a range of values. Because of specimen and reading variability, specimens with analyte concentrations that fall between normal levels may give results at either level. Results will usually be within one level of the true concentration. The following list shows the generally detectable levels of the analytes in contrived urines; however, because of the inherent variability of clinical urines, lesser concentrations may be detected under certain conditions.

Test pad and sensitivity(specificity)

| | |
|---------------|--|
| Blood: | 10 RBC/ μ l (0.03mg/dL hemoglobin, Intact RBC) |
| Bilirubin: | 1 mg/dL (Bilirubin) |
| Urobilinogen: | 2 EU/dL (Urobilinogen) |
| Ketone: | 5-15mg/dL (Acetoacetic acid) |
| Glucose: | 50-100mg/dL (Glucose) |
| Protein: | 15-30mg/dL (albumin) |
| Nitrite: | 0.05mg/dL (Nitrite ion) |
| Leukocytes: | 20-25 WBC/ μ l (Intact and lysed WBCs) |

References

NCCLS (National Committee for Clinical Laboratory Standard)
GP 16-A/ ROUTINE URINALYSIS AND COLLECTION
TRANSPORATION AND PRESEVATION OF URINE SPECIMENS;
TRNTATIVE GUIDELINE VOL 12-NO 26, EC.1992

| ORDERING INFORMATION | |
|----------------------|-----------------|
| CATALOG NO. | QUANTITY |
| 1100 100 | 100 test strips |