Rapid Response™

Prostate Specific Antigen (PSA) Test Cassette
(Whole Blood/Serum/Plasma)

REF PSA-13C40 Product Insert

For professional *in vitro* diagnostic use only.

Intended Use

The Rapid Response™ PSA Test Cassette (Whole Blood/Serum/Plasma) is a rapid visual immunoassay for the qualitative presumptive detection of prostate specific antigens in human whole blood, serum, or plasma specimens. This kit is intended for use as an aid in the diagnosis of prostate cancer.

Introduction

Prostate cancer is the most frequent type of cancer found in males and is the second cause of death in males. Prostate cancer incidences increase dramatically in males with an age over 40 years, occurring in 50% of those over 70 years. Compared to other cancers, prostate cancer is more successfully treated if diagnosed early. Recently, another prostate enzyme has been identified and purified, which specific for prostate tissue, normal or malignant, and also found in periurethral glands. This enzyme is called prostate specific antigen (PSA). Looking at PSA from the biological side, it is a 33 kDa protein that is synthesized in the prostatic gland. It functions as a serine protease and serves to liquefy the seminal fluid. As demonstrated by immunohistological studies, PSA is localized in the cytoplasm of prostate acinar cells, ductal epithelium and in the secretion on the ductal lumina, present in normal, benign hyperplastic and malignant prostate tissues as well as in metastatic prostate cancer and in seminal fluid. An elevation of the serum concentration is reported in patients with both benign prostatic hypertrophy prostate carcinoma, but rarely in healthy men and is absent in normal women. PSA is not present in any other normal tissue obtained from men, nor is it produced by cancers of the breast, lung, colon, rectum, stomach, pancreas and thyroid. The PSA level in serum or plasma of normal health men should be lower than 4 ng/ml, so the reference line is designed to be approximately the intensity of 10 ng/ml. If the structural integrity of the prostate is disturbed and/or the gland size is increased, the amount of PSA in the blood serum/plasma may become elevated, reaching levels up to 200 ng/ml PSA. At a cut-off of 4 ng/ml PSA, further medical analysis is recommended, although at a concentration range between 4-10 ng/ml PSA the elevated levels are commonly not caused by cancer but by other factors like benign prostatic hyperplasia or prostatitis. Plasma concentrations of >10 ng/ml PSA strongly indicate the presence of prostatic carcinoma. Although a race- and/or age-dependent modification of the cut-off has been discussed in the literature, the amount of 4 ng/ml PSA is the generally accepted value at which follow-up examinations of the patient should be started.

Principle

The Rapid Response™ PSA Test Cassette (Whole Blood/Serum/Plasma) detects prostate specific antigens through visual interpretation of color development on the internal strip. PSA antibodies are immobilized on the test region of the membrane. During testing, the specimen reacts with PSA antibodies conjugated to colored particles and precoated onto the sample pad of the test. The mixture then migrates through the membrane by capillary action and interacts with reagents on the membrane. If there are sufficient PSA in the specimen, a colored band will form at the test region of the membrane. A test band (T) signal weaker than the reference band (R) indicates that the PSA level in the specimen is between 4-10 NG/mL. A test band (T) signal equal or close to the reference band (R) indicates that the PSA level in the specimen is approximately 10 ng/mL. A test band (T) signal stronger than the reference and (R) indicates that the PSA level in the specimen is above 10 ng/mL. The appearance of a colored band at the control region serves as a procedural control, indicating that the proper volume of specimen has been added and membrane wicking has occurred.

Materials

Materials provided

- Individually packed test devices
- Disposable pipettes
- Buffer
- Package insert

Materials required but not provided

- Centrifuge
- Specimen collection container
- Timer

Precautions

- For professional *in vitro* diagnostic use only.
- Do not use after the expiration date indicated on the package. Do not use the test if the foil pouch is damaged. Do not reuse tests.
- This kit contains products of animal origin. Certified knowledge of the origin and/or sanitary state of the animals does not completely guarantee the absence of transmissible pathogenic agents. It is therefore, recommended that these products be treated as potentially infectious, and handled by observing usual safety precautions (e.g., do not ingest or inhale).
- Avoid cross-contamination of specimens by using a new specimen collection container for each specimen obtained.
- Read the entire procedure carefully prior to testing.
- Do not eat, drink or smoke in the area where the specimens and kits are handled. Handle all specimens as if they contain infectious agents. Observe established precautions against microbiological hazards throughout the procedure and follow standard procedures for the proper disposal of specimens. Wear protective clothing such as laboratory coats, disposable gloves and eye protection when specimens are assayed.
- Humidity and temperature can adversely affect results.
- Used testing materials should be discarded according to local regulations.

Storage and Stability

- The kit should be stored at 35.6-86°F (2-30°C) until the expiry date printed on the sealed pouch.
- The test must remain in the sealed pouch until use.
- **Do not freeze.**
- Care should be taken to protect the components of the kit from contamination. Do not use if there is evidence of microbial contamination or precipitation. Biological contamination of dispensing equipments, containers or reagents can lead to false results.

Specimen Collection and Storage

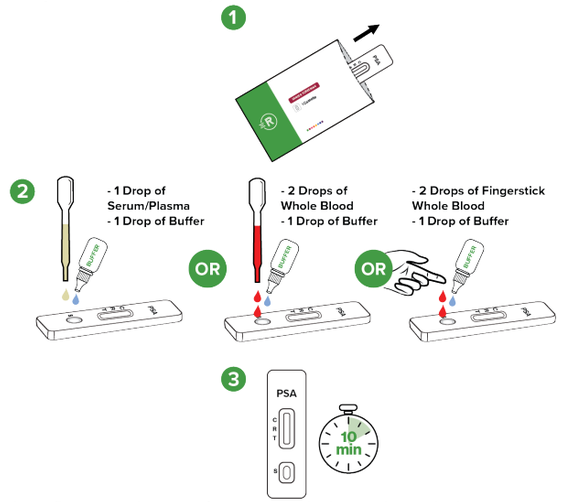
- The Rapid Response™ PSA Test Cassette (Whole Blood/Serum/Plasma) is intended for use with human whole blood, serum, or plasma specimens only.
- Intake of Finasteride (5-reductaseinhibitor) will reduce the PSA concentration by max. 50%. This should be considered by the interpretation of the results.
- Different factors could increase the PSA level in blood serum and should be avoided before collection of the blood sample and/or should be desisted from by the patient before sample taking.
  - Ride on a bicycle: 24 hours before taking of blood sample.
  - Sexual activities (Ejaculation): 24-48 hours before taking of blood sample.
  - Every manipulation of the prostate by medical examinations. The following intervals are recommended until taking of blood sample:

Examination	Interval
Prostatic biopsy	> 6 weeks
Transurethal resection of the prostate	> 6 weeks
Transrectal prostatic ultrasound	> 1 week
Rigid Cytoscopy	> 1 week
Digital rectal examination	3 days – 1 week
Prostatic massage	> 1 week

- Only clear, non-hemolyzed specimens are recommended for use with this test. Serum or plasma should be separated as soon as possible to avoid hemolysis.
- Perform testing immediately after specimen collection. Do not leave specimens at room temperature for prolonged periods. Serum and plasma specimens may be stored at 2-8°C for up to 3 days. For long term storage, specimens should be kept below -20°C. Whole blood collected by venipuncture should be stored at 2-8°C if the test is to be run within 2 days of collection. Do not freeze whole blood specimens. Whole blood collected should be tested immediately.
- Containers containing anticoagulants such as EDTA, citrate, or heparin should be used for whole blood storage.
- Bring specimens to room temperature prior to testing. Frozen specimens must be completely thawed and mixed well prior to testing. Avoid repeated freezing and thawing of specimens.
- If specimens are to be shipped, pack them in compliance with all applicable regulations for transportation of etiological agents.
- Icteric, lipemic, hemolysed, heat treated and contaminated specimens may cause erroneous results.

Test Procedure

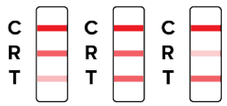
Bring tests, specimens, buffer and/or controls to room temperature (15 - 30°C) before use.



1. Remove the test from its sealed pouch, and place it on a clean, level surface. Label the device with patient or control identification. For best results, the assay should be performed within one hour.
2. Transfer 1 drops of serum/plasma to the specimen well (S) of the device with the provided disposable pipette, then add 1 drop of buffer, and start the timer.
   OR
   Transfer 2 drops of whole blood to the specimen well (S) of the device with the provided disposable pipette, then add 1 drop of buffer, and start the timer.
   OR
   Allow 2 hanging drops of fingerstick whole blood to fall into the center of the specimen well (S) of the test device, then add 1 drop of buffer, start the timer.
   Avoid trapping air bubbles in the specimen well (S), and do not add any solution to the result area.
   As the test begins to work, color will migrate across the membrane.
3. Wait for the colored band(s) to appear. The result should be read at 10 minutes. Do not interpret the result after 20

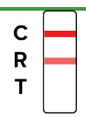
minutes.

Results Interpretation

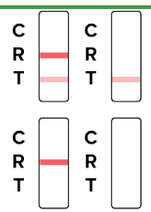


POSITIVE: Three colored bands appear on the membrane. One band appears in the control region (C) and another two bands should appear in the test region (T) and reference region (R).

- A test band (T) signal weaker than the reference band (R) indicates a PSA level between 4 and 10 ng/mL.
- A test band (T) signal equal or close to the reference band (R) indicates a PSA level of Approximately 10 ng/mL.
- A test band (T) signal stronger than the reference band (R) indicates A PSA level above 10 ng/mL.



NEGATIVE: Only two colored bands appear in the control region (C) and reference region (R). No colored band appears in the test region (T).



INVALID: Control band fails to appear. Results from any test which has not produced a control band at the specified read time must be discarded. Please review the procedure and repeat with a new test. If the problem persists, discontinue using the kit immediately and contact your local distributor.

NOTE:

1. The intensity of color in the test region (T) may vary depending on the concentration of analytes present in the specimen. Therefore, any shade of color in the test region should be considered positive. Note that this is a qualitative test only and cannot determine the concentration of analytes in the specimen.
2. Insufficient specimen volume, incorrect operating procedure or expired tests are the most likely reasons for control band failure.

Quality Control

- Internal procedural controls are included in the test. A colored band appearing in the control region (C) is considered an internal positive procedural control, confirming sufficient specimen volume and correct procedural technique.
- External controls are not supplied with this kit. It is recommended that positive and negative controls be tested as a good laboratory practice to confirm the test procedure and to verify proper test performance.

Limitations

1. The Rapid Response™ PSA Test Cassette (Whole Blood/Serum/Plasma) is for professional in vitro diagnostic use, and should only be used for the qualitative detection of PSA. No meaning should be inferred from the color intensity or width of any apparent bands.
2. The Rapid Response™ PSA Test Cassette (Whole Blood/Serum/Plasma) will only indicate the presence of PSA in the specimen and should not be used as the sole criteria for the diagnosis of prostate cancers.
3. A significant numbers of patients with BPH (more that 15%) and less than 1% of healthy individuals have elevated PSA. As with all diagnostic tests, a confirmed diagnosis should only be made by a physician after all clinical and laboratory findings have been evaluated.
4. Specimens from patients who have received mouse monoclonal antibodies for diagnostic or therapeutical use may contain human anti-mouse antibodies. Such specimens may show either elevated or depressed values when tested with assay kits that utilize mouse monoclonal antibodies.

Performance Characteristics

Table 1: Rapid Response™ PSA Test Cassette vs. EIA

Relative Sensitivity:
98.8% (96.4%-99.6%)*
Relative Specificity:
98.6% (96.8%-99.4%)*
Overall Agreement:
98.7% (97.4%-99.3%)*
*95% Confidence Interval

Rapid Response™ PSA Test Cassette

ELA		+	-	Total
	+	241	3	244
	-	5	356	361
		246	359	605

Bibliography

1. Fritsche, H,A, und R,J. Babalan; Analytical performance goals for measuring prostate-specific antigen: Clin, Chem, 39,1529-1529 (1993)
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3. Stamey, T, et al,; Prostate-specific antigen as serum marker for adenocarcinoma of the prostate, N, Engl, J, Med, 317,909-916 (1987)
4. Hammerer P. and Huland H., Der Onkologe (1996), Vol 2: 218-223
5. Jung K. et al., Urology (1999), Vol 53: 155-160
6. Milford Ward A. et al., Ann Clin Biochem (2001), Vol 38: 633-651

Glossary of Symbols

Consult instructions for use
Test per Kit
Do Not Reuse
Store between 35.6°F to 86°F (2°C to 30°C)
Use by
REF Catalogue #
LOT Lot Number
IVD For *in vitro* diagnostic use only

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