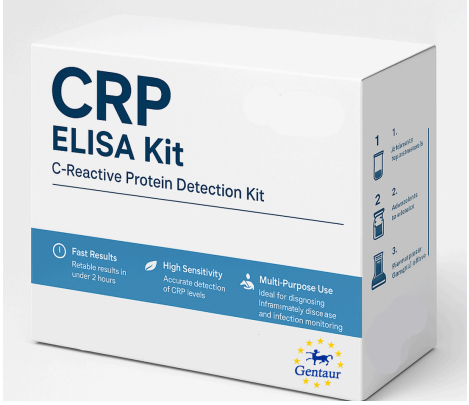


C-Reactive Protein (CRP) ELISA Kit: A Reliable Diagnostic Tool for Inflammatory Response

- **REF: M-9009**
- **Email: info@gentaur.com**
- **Web Site: labm.com**

The CRP ELISA Kit is an enzyme-linked immunosorbent assay designed for the quantitative determination of C-Reactive Protein (CRP) in human serum and plasma. This test offers an efficient, accurate way to assess acute-phase inflammatory responses and monitor diseases associated with inflammation, such as rheumatoid arthritis, systemic lupus erythematosus, and cardiovascular diseases.

What is C-Reactive Protein (CRP)?

C-Reactive Protein (CRP) is a protein produced by the liver in response to inflammation. It is part of the acute-phase response, which occurs when the body faces infection, injury, or other forms of tissue damage. Elevated levels of CRP in the blood are indicative of active inflammation, making it a valuable marker for detecting inflammatory conditions.

CRP levels rise in response to various inflammatory processes such as:

- Bacterial infections (e.g., pneumonia, tuberculosis)
- Autoimmune diseases (e.g., rheumatoid arthritis, lupus)
- Cardiovascular diseases (e.g., atherosclerosis, heart attack)
- Cancer and trauma

It is also commonly used in monitoring disease progression and treatment efficacy for various inflammatory disorders.

Key Features

- **High Sensitivity**: Accurately detects CRP levels in serum/plasma samples, ensuring reliable and reproducible results.
- **Rapid Diagnostic Process**: Provides results in under 2 hours, ideal for emergency settings and clinical laboratories.
- **Easy-to-Use**: Designed for simplicity with minimal hands-on time, making it accessible for routine clinical use.
- **Versatile Applications**: Ideal for diagnosing inflammatory disorders, infection monitoring, and treatment assessment.

How the CRP ELISA Kit Works?

The CRP ELISA Kit detects C-Reactive Protein in human serum or plasma using monoclonal antibodies specific to CRP antigens. The test works in the following manner:

1. **Coated Wells**: The microtiter plate is pre-coated with monoclonal antibodies that specifically bind to C-Reactive Protein (CRP).
2. **Sample Addition**: The serum or plasma sample is added to the wells, allowing the CRP present in the sample to bind to the antibodies.
3. **Conjugate Addition**: After washing, a peroxidase-conjugated anti-CRP antibody is added to form a sandwich complex between the antibody and antigen.
4. **Substrate Addition**: TMB (Tetramethylbenzidine) substrate is added, causing a colorimetric reaction that changes from blue to yellow when the reaction is stopped.
5. **Measurement**: The color intensity is measured using an ELISA plate reader at 450 nm, and the results are interpreted based on the absorbance values.

Applications:

1. **Acute Inflammation Detection**: Helps diagnose conditions such as rheumatoid arthritis, systemic lupus erythematosus, cardiovascular diseases, and bacterial infections.
2. **Monitoring Inflammatory Diseases**: Tracks CRP levels to monitor disease progression, treatment response, and the efficacy of anti-inflammatory medications.
3. **Cancer Monitoring**: CRP is elevated in certain types of cancer, and monitoring its levels can be useful in diagnostic and prognostic evaluations.

Detailed Protocol for the CRP ELISA Kit

1. Sample Preparation:

- Collect serum or plasma samples from patients.
- Dilute the sample as required by the kit instructions.
- Store samples at 2-8°C if not processed immediately.

2. Plate Preparation:

- The microtiter plate provided with the kit is pre-coated with CRP antibodies.
- Ensure the wells are dry and properly prepared before use.

3. Sample and Conjugate Addition:

- Add 50 µL of diluted sample into each well.
- Incubate the plate at 36 ± 1°C for 30 minutes.
- Wash the wells 3 times using the provided wash buffer to remove any unbound substances.

4. Conjugate Binding:

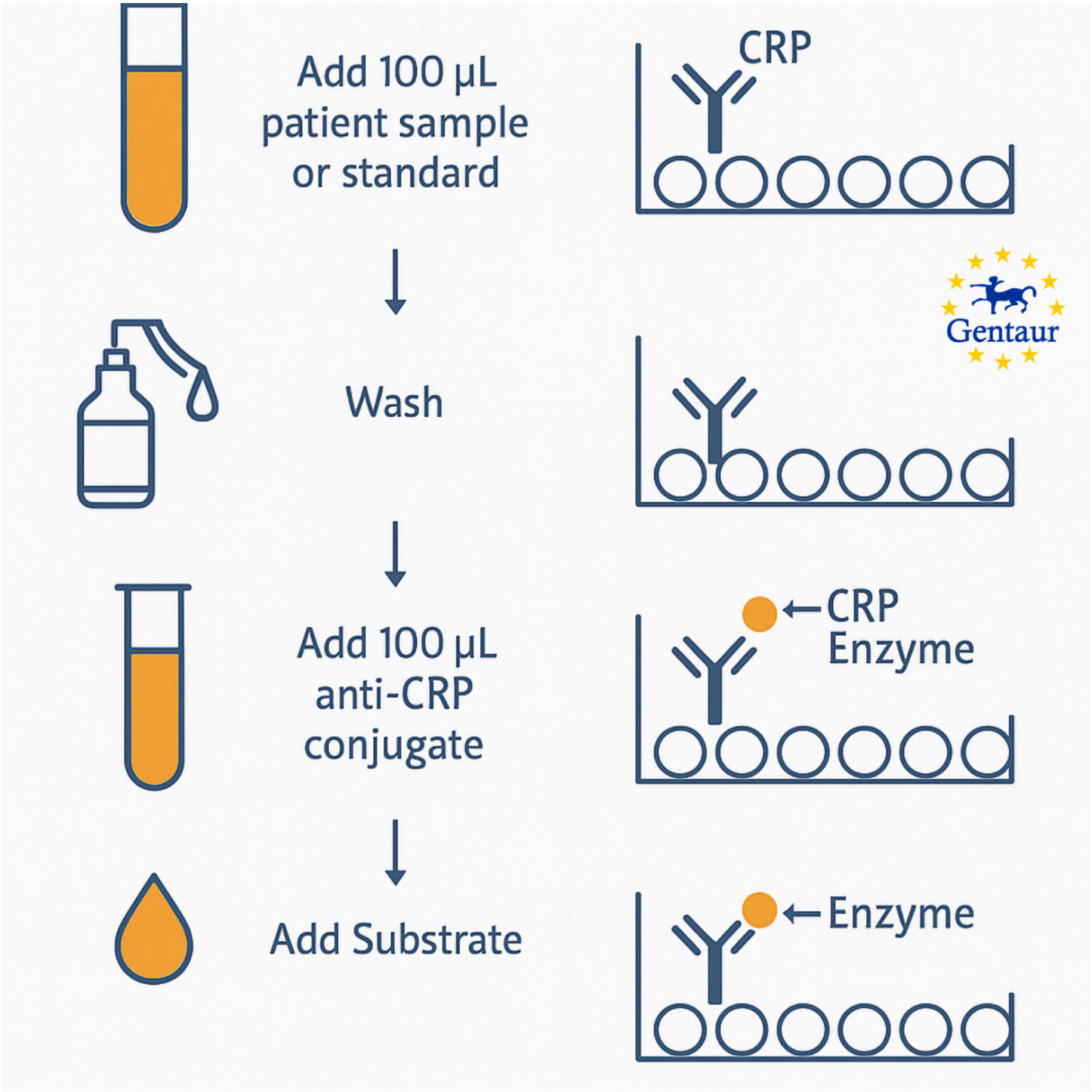
- Add 50 µL of conjugate to each well and incubate for 30 minutes at 36 ± 1°C.
- Wash the wells 3 times again.

5. TMB Substrate Addition:

- Add 100 µL of TMB substrate to each well.
- Incubate for 15 minutes at room temperature.
- A blue color will form in the presence of CRP-antibody complex.

6. Reaction Stop and Measurement:

- Stop the reaction by adding 50 µL of H_2SO_4 to each well.
- The blue color will turn to yellow, which is directly proportional to the amount of CRP present in the sample.
- Measure the absorbance at 450 nm using an ELISA plate reader.



Why Choose the CRP ELISA Kit?

- **Accurate Results**: The high sensitivity of the CRP ELISA Kit ensures reliable quantification of CRP, even in low concentrations, making it ideal for early diagnosis and monitoring.
- **Cost-Effective**: Provides a cost-efficient method compared to other tests, making it perfect for routine clinical use.
- **Quick and Easy**: The simple protocol enables fast results, making it perfect for high-throughput laboratories.

The CRP ELISA Kit is an essential tool for monitoring inflammation, diagnosing inflammatory diseases, and tracking disease progress. With high sensitivity, easy-to-follow instructions, and rapid results, this kit is ideal for clinical

diagnostics and epidemiological studies in detecting acute-phase proteins like C-Reactive Protein.