

Agglutination Reactions

4 - Rheumatoid factors (RF)

PRINCIPLE OF THE METHOD:

The RF-latex is a slide agglutination test for the qualitative and semi- quantitative detection of RF in human serum. Latex particles coated with human gammaglobulin are agglutinated when mixed with samples containing RF.

CLINICAL SIGNIFICANCE:

Rheumatoid factors are a group of antibodies directed to determinants in the FC portion of the immunoglobulin G molecule. Although rheumatoid factors are found in a number of rheumatoid disorders, such as systemic lupus erythematosus (SLE) and Sjogren's syndrome, as well as in nonrheumatic conditions, its central role in clinic lies its utility as an aid in the diagnosis of rheumatoid arthritis (RA).

A study of the(American College of Rheumatology) shows that 80.4% of RA patients were RF positive.

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Test contents:

- Instruction leaflet.
- Rheumatoid factors test card.
Latex particles coated with human gamma -globulin, pH, 8.2.
Control + (Red cap): Human serum with RF concentration >30 IU/mL.
- Control - (Blue cap): Animal serum.
- Plastic stike.



Rheumatoid factors test (RF) kit.

SAMPLES:

Fresh serum, Stable 7 days at $2-8^{\circ}\text{C}$ or 3 months at -20°C .
Samples with presence of fibrin should be centrifuged, Do not use highly hemolysed or lipemic samples.

PROCEDURE

Qualitative method

1. Allow the reagents and samples to reach room temperature.

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The Sensitivity of the test may be reduced at low temperatures.

2. Place 50 μl of the sample and one drop of each Positive and Negative controls into separate circles on the slide test.
3. Swirl the RF-latex reagent gently before using and add one drop (50 μl) next to the sample to be tested.
4. Mix the drops with a stirrer, spreading them over the entire surface of the circle. Use different stirrers for each sample.
5. Place the slide on a mechanical rotator at 80-100 rpm for 2 minutes. False positive results could appear if the test is read later than two minutes.

Semi-quantitative method

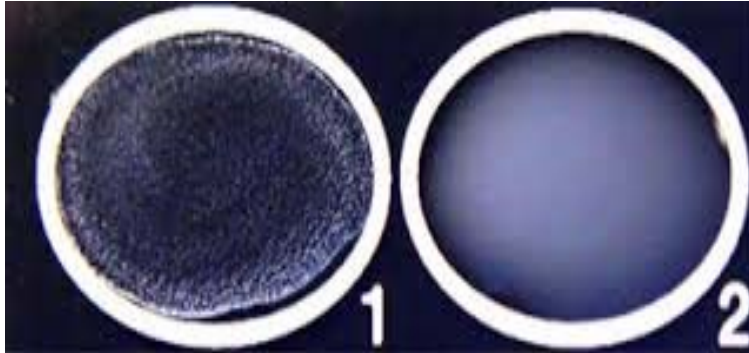
1. Make serial two fold dilutions of the sample in 9 g / L saline solution.
2. Proceed for each dilution as in the qualitative method.

Result of the test:

Presence of Agglutination → Positive . Figure (1)

No Agglutination→ Negative. Figure (2)

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Rheumatoid factors test (RF) **Positive (1), Negative(2)**

READING AND INTERPRETATION:

Examine macroscopically the presence or absence of visible agglutination immediately after removing the slide from the rotator, the presence of agglutination indicates RF concentration equal or greater than 8 IU / mL.

The titer, in semi-quantitative method. is defined as the highest dilution showing a positive result.

CALCULATIONS:

The approximate RF concentration in the patient sample is calculated as follows:

$$8 \times \text{RF titer} = \text{IU} / \text{mL}.$$

Normal

Less than 8 IU / mL.

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LIMITATIONS OF PROCEDURE:

- The incidence of false positive results is about 3-5 Individuals suffering from infectious mononucleosis, hepatitis. syphilis as well as elderly people may give positive results.
- Diagnosis should not be solely based on the results of latex method but also should be complemented with a Waaler Rose test along with the clinical examination.