Name of the test
SARS-CoV-2 S-RBD IgG antibodies

What is this test used for?
This test is used for the quantitative measurement of SARS-CoV-2 S-RBD IgG antibodies in human serum and plasma.

SARS-CoV-2 is a new coronavirus, which causes COVID-19. There are four structural proteins of SARS-CoV-2. The most important proteins are the nucleocapsid (N) and spike (S) proteins. SARS-CoV-2 uses its spike protein to bind to the ACE2 (angiotensin-converting enzyme 2) receptors on the surface of human cells. After binding to the ACE2 receptor, SARS-CoV-2 can then enter the cell.

The spike protein consists of S1 and S2 sub-units. S1 sub-unit contains the RBD (receptor binding domain) site, and it is the RBD site of the spike protein that directly binds to ACE2 receptors.

After becoming infected or getting vaccinated, the human body usually starts producing antibodies. There are two types of antibodies against the SARS-CoV-2 based on their function: neutralizing and non-neutralizing antibodies. RBD site on the spike protein is one of the main targets of neutralizing antibodies – they connect to the RBD site and this prevents the virus from binding to ACE2 receptors and entering the cells.

SARS-CoV-2 S-RBD IgG antibodies are IgG class antibodies that connect to the RBD site on the spike protein of SARS-CoV-2 and neutralize the virus.

When is the test ordered?
This test is used to measure SARS-Coronavirus-2 S-RBD IgG antibodies in the serum or plasma.

In non-vaccinated individuals, this provides some information about possible COVID-19 infection in the past. Detecting these antibodies in vaccinated individuals might usually mean that the body has produced antibodies against SARS-CoV-2 in response to the vaccination.

It must be noted, that it takes some time before the antibodies are produced. For this reason, the test of SARS-CoV-2 S-RBD IgG antibodies can be ordered after at least around 2-3 weeks have passed since the vaccination or the onset of COVID-19. Otherwise, the test may not be able to detect the antibodies.

For the above-mentioned reasons, this test is not used to diagnose an acute COVID-19 infection.[1-4]

Besides, it must be emphasized that according to the currently existing recommendations, the results of this test should not be used to decide whether vaccination is needed or not, and they should not be used to assess the level of protection against becoming infected with SARS-CoV-2 and developing COVID-19.[1-4]

How is this test performed?
A blood sample is taken from a vein.

How to prepare for the test
No special preparation is needed, however certain factors may affect the test results.

Interpretation of results
The test results should be interpreted by a doctor, considering information from other clinical and laboratory findings.

Among other reasons, positive test results may be due to:

- In non-vaccinated individuals – it may be because of past COVID-19 infection, regardless of how severe were the symptoms.
- In vaccinated individuals without the history of prior COVID-19 infection – it may indicate that the body has produced IgG antibodies against the RBD site of the spike protein.

It must be noted, that in some individuals the SARS-CoV-2 S-RBD IgG antibody titers may be low even after infection or vaccination. For example, the immune response may be weak in elderly people (age >65 years), in cancer patients, in people with high body-mass index or in patients who receive immunosuppressive treatment.[5]

It is important to remember that it takes some time before the antibodies are produced, so if the test is performed too soon after vaccination or COVID-19 infection, the results may be negative. The results could also be negative in patients who have immunodeficiency or who are receiving immunosuppressants.

Lastly, it is currently still not fully known for how long these antibodies persist after infection or vaccination.

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References

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