

Covid Kavach ELISA Test [UPSC Current Affairs]

What is COVID Kavach ELISA Test?

Covid Kavach ELISA is the first indigenous anti-SARS-CoV-2 human IgG ELISA test kit for antibody detection of [COVID-19](#).

- It has been developed by the National Institute of Virology (NIV), Pune, a part of the [Indian Council of Medical Research \(ICMR\)](#).
- The kit basically detects past infections of the novel coronavirus.
- It is being manufactured by the pharmaceutical company Zydus Cadila.
- The test was developed by isolating the coronavirus causing covid-19 from patients in India.

What is ELISA Test?

ELISA or Enzyme-Linked Immunosorbent Assay is a test that detects and measures antibodies in the blood.

- When a virus or bacterium infects a person, the body generates antibodies whose presence or absence is indicated by the test.
- The presence of antibodies indicates that the person had been exposed to the virus or any other infectious agent.
- Essentially, the ELISA test diagnoses antibody-antigen interaction after a certain virus infection occurs in a person.
 - The antigen is the inactivated virus that is used in the test.
- They are blood-based tests and hence easier than the RT-PCR Test which involves getting a throat or nasal swab.
- ELISA tests are used to diagnose HIV, [Zika virus](#), cholera, bird flu, STD, etc.

How is the ELISA Test carried out?

1. The sample used for testing is obtained by drawing blood from the person.
2. The sample is placed inside an ELISA plate whose walls are coated with the antigen.
3. If antibodies are present in the blood sample, they will bind to the antigen and a substrate solution is added.
4. The resultant reaction causes a change of colour helping in the detection of antibodies.

What are antibodies?

- Antibody (or immunoglobulin) is a protective protein produced by the immune system whenever any unknown substance (germs, viruses) enters the body.
- It fights the foreign substance in order to keep the body healthy.

- There are five immunoglobulin classes of antibody molecules found in serum: IgG, IgM, IgA, IgE and IgD.
- The ELISA test qualitatively detects IgG antibodies to SARS-CoV-2 in human serum.

Benefits of COVID Kavach ELISA Test

COVID Kavach Test, which is based on the ELISA test, can play a critical role in surveillance of the proportion of the population exposed to the coronavirus infection.

- It will be used in the countrywide sero-surveillance conducted by the Health Ministry.
- It acts as a screening process for the detection of covid-19 infection.
- It is easier and gives quicker results compared to the RT-PCR test that is used as a confirmatory test.
 - It is to be noted that the ELISA test is a screening test in that it can be used to assess the infection exposure of a large number of samples.
 - Then, the persons with positive samples can be further tested using the RT-PCR for confirmation of the coronavirus infection.
- It can be used to assess a large number of samples in a day and also for surveillance studies.
- It will help in the detection of infection in the case of persons who have been exposed to the virus but are yet to develop symptoms, that is are asymptomatic.
- The test has a high specificity and sensitivity.
 - Specificity: signifies accurate negative test results
 - Sensitivity: signifies accurate positive test results
- The test also has minimal biosafety and biosecurity requirements as compared to the RT-PCR test.
- The testing can easily be performed even at the district level.

Limitations of ELISA Test

- It is used to detect past infections, that is, to assess whether a person had been previously infected by the coronavirus.
- It usually takes 1 – 3 weeks for the antibodies to develop after the virus has attacked the body, hence, in case the test is conducted during this window period, the result will be negative. Only a repeat test after a few weeks will reveal the correct infection status.