

## Preparation Indirect ELISA Test for Detection of Antibodies against Serotype A13 of Foot and Mouth Disease (FMD) Virus in Cattle

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Foot and Mouth Disease (FMD) Virus is a contagious animal disease that causes irreparable damage to the economy of a country, including Iran where the disease is native in that. Among the ways to combat against FMD is vaccination and slaughter. Because of the specific situation of Iran, it is not possible to kill infected animals. Therefore, the most important way to fight the disease is to vaccinate. The methods used to evaluate the safety and determine the titer of antibody in a serum are mainly SNT and ELISA.

In this research, designing an indirect ELISA test based on coating of complete particle of viral 140S particle makes it possible to determine antibody and following that determining serotype and viral type without need for time-consuming and complex molecular tasks, including gene expression.

In addition, in the event of a new epidemic, a new epidemic condition can be detected by using serum antibody method. However, coating complete viral particle leads us to need virus purification as well as the anti-immunoglobulin conjugate antibody testing of the same animal.

In this study, SNT test was used as a Gold Test to determine the serum antibody level and comparing its results with indirect ELISA method to determine the sensitivity and specificity of the indirect ELISA test for measuring the anti-virus antibody rate of type (A13) FMD through rock analysis with 100% sensitivity and the specificity of 90% sensitivity using routine formulas with 100% sensitivity and specificity of 82%.

The results indicate that in our review, approximately 100% of the items which were examined by the SNT test having protective antibody, have been confirmed with the evidence that was tested by SNT with protective antibodies was also confirmed by indirect ELISA test as well. Besides, 82% of the serums that in terms of SNT test were lack of anti-body titer at a protective level were confirmed by an indirect ELISA test.

In this study, considering Cut off OD=0.3, there was a significant difference between the vaccinated animals and the unvaccinated animals in terms of antibody level against the A13 type. This indicates the correctness of the test and the accurate and proportional antibody detection against the under study viral types of FMD.

**Keywords:** ELISA, serum neutralization test, Food and mouth disease