ELISA Analyser

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1 Introduction

An ELISA is an immunological assay commonly used to measure antibodies or antigens, including proteins or glycoproteins, in biological samples. Like other immunoassays, they rely on binding of antibodies to their targets to facilitate detection.

2 Types of ELISA

Direct ELISA test
Indirect ELISA test
Sandwich ELISA
Competitive ELISA

3 Working Method

Enzyme-linked immunosorbent assays (ELISA) principles are very similar to other immunoassay technologies. ELISAs rely on specific antibodies to bind the target antigen, and a detection system to indicate the presence and quantity of antigen binding. In order to maximize the sensitivity and precision of the assay, the plate must be carefully coated with high-affinity antibodies – a process that Boster Bio has mastered.

4 Comonly Used enzymateric Markers

- OPD (o-phenylenediamine dihydrochloride) turns amber to detect HRP (Horseradish Peroxidase), which is often used to as a conjugated protein.
- TMB (3,3',5,5'-tetramethylbenzidine) turns blue when detecting HRP and turns yellow after the addition of sulfuric or phosphoric acid.
- ABTS (2,2'-Azinobis [3-ethylbenzothiazoline-6-sulfonic acid]-diammonium salt) turns green when detecting

- HRPPNPP (p-Nitrophenyl Phosphate, Disodium Salt) turns yellow when detecting alkaline phosphatase.

5 Advantages of ELISA Analyser

- Results fetched from ELISA gives an accurate diagnosis of a particular disease since two antibodies are used.
- Can be carried out for complex samples as the antigen is not required to get purified to detect.
- It is highly responsive since direct and indirect analysis methods can be carried out.
- Possible detection for ELISA ranges from the quantitative, semi-quantitative, standard curve, qualitative, calibration curve models etc.
- Easier to perform and uncomplicated process as compared to other assays which require the presence of radioactive materials.

6 Application of ELISA

1. The presence of antibodies and antigens in a sample can be determined.
2. It is used in the food industry to detect any food allergens present.
3. To determine the concentration of serum antibody in a virus test.
4. During a disease outbreak, to evaluate the spread of the disease, e.g. during recent COVID-19 outbreak, rapid testing kits are being used to determine presence of antibodies in the blood sample.

7 Diseases That Can Be Diagnosed Using ELISA

Ebola
Pernicious anaemia
AIDS
Rotavirus
Lyme disease
Syphilis
Toxoplasmosis
Zika virus
Carcinoma of the epithelial cells