

## Product Information

### Brucella IgG ELISA kit

Catalog Number: EA100928

Storage Temperature: 2 – 8°C

## Instruction for Use

### Intended Use

The Brucella IgG ELISA Kit is intended for the detection of IgG antibody to Brucella in human serum or plasma.

### Background

Brucella is a Gram negative coccobacilli capable of infecting a wide range of animal and man. Of the three species causing human infection, *B. melitensis* is the most pathogenic followed by *B. suis* and *B. abortus*. Brucellosis is transmitted through contaminated and untreated milk and milk products and by direct contact with infected animals (cattle, sheep, goats, pigs, camels, buffaloes, and, very recently, seals), animal carcasses, and abortion materials. Worldwide, millions of individual are at risk, especially in developing countries where the infection in animals has not been brought under control, heat treatment procedures of milk (e.g. pasteurization) are not routinely applied, and food habits such as consumption of raw milk. The incubation period of brucellosis is usually one to three weeks, but sometimes may be several months. The illness may be mild and self-limiting or severe. The disease is accompanied by continued, intermittent, or irregular fever, headache, weight loss and generalized aching and fatigue. Urogenital symptoms may dominate the clinical presentation in some patients. This method uses *B. abortus* outer membrane, which is shared by the other species. Brucella IgG and IgA antibodies persist for many years after infection. A significant increase in Brucella IgG level is in patients with symptoms of brucellosis is indicative of recent exposure. IgM antibodies are present in acute brucellosis and also found in about 33% of patients with chronic brucellosis.

### Principle of the Test

Diluted patient serum is added to wells coated with purified antigen. IgG specific antibody, if present, binds to the antigen. All unbound materials are washed away and the enzyme conjugate is added to bind to the antibody antigen complex, if present. Excess enzyme conjugate is washed off and substrate is added. The plate is incubated to allow the hydrolysis of the substrate by the enzyme. The intensity of the color generated is proportional to the amount of IgG specific antibody in the sample.

### Components

MATERIALS PROVIDED	96 Tests
1. Microwells coated with <i>Brucella abortus</i> antigen	12x8x1
2. Sample Diluent: 1 bottle (ready to use)	22 ml
3. Calibrator: 1 Vial (ready to use)	1 ml
4. Positive Control: 1 vial (ready to use)	1 ml

5. Negative Control: 1 vial (ready to use)	1 ml
6. Enzyme conjugate: 1 bottle (ready to use)	12 ml
7. TMB Substrate: 1 bottle (ready to use)	12 ml
8. Stop Solution: 1 bottle (ready to use)	12 ml
9. Wash concentrate 20X: 1 bottle	25 ml

### Materials and Equipment Required but Not Provided

1. Distilled or deionized water
2. Precision pipettes
3. Disposable pipette tips
4. ELISA reader capable of reading absorbance at 450nm
5. Absorbance paper or paper towel

### Disclaimer

This product is for research use only and not intended for diagnostic procedures.

### Specimen Collection and Preparation

1. Collect blood specimens and separate the serum.
2. Specimens may be refrigerated at 2–8°C for up to seven days or frozen for up to six months. Avoid repetitive freezing and thawing.

### Reagent Preparation

1. Prepare 1X Wash buffer by adding Wash Concentrate (25 ml, 20X) to 475 ml of distilled or deionized water. Store at room temperature (18-26°C).

### Assay Procedure

- Before proceeding with the assay, bring all reagents, serum references and controls to room temperature (18-26°C). Gently mix all reagents before use
  - The components in this kit are intended for use as an integral unit. The components of different lots should not be mixed
  - It is recommended that standards, control and serum samples be run in duplicate
  - Do not use sodium azide as preservative. Sodium azide inhibits HRP enzyme activities
1. Place the desired number of coated strips into the holder.
  2. Negative control, positive control, and calibrator are ready to use. Prepare 1:21 dilution of test samples, by adding 10 µl of the sample to 200 µl of sample diluent. Mix well.
  3. Dispense 100 µl of diluted sera, calibrator and controls into the appropriate wells. For the reagent blank, dispense 100 µl sample diluent in 1A well position. Tap the holder to remove air bubbles from the liquid and mix well. Incubate for 20 minutes at room temperature.
  4. Remove liquid from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbance paper or paper towel.
  5. Dispense 100 µl of enzyme conjugate to each well and incubate for 20 minutes at room temperature.
  6. Remove enzyme conjugate from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbance paper or paper towel
  7. Dispense 100 µl of TMB substrate and incubate for 10 minutes at room temperature.
  8. Add 100 µl of stop solution.

9. Read O.D. at 450 nm using ELISA reader within 15 min. A dual wavelength is recommended with reference filter of 600-650 nm.

### Calculation of Results

1. Check Calibrator Factor (CF) value on the calibrator bottle. This value might vary from lot to lot. Make sure you check the value on every kit.
2. Calculate the cut-off value: Calibrator OD x Calibrator Factor (CF).
3. Calculate the Ab (Antibody) Index of each determination by dividing the O.D. value of each sample by cut-off value.

### Example of a Standard Curve

Calibrator mean OD = 0.8

Calibrator Factor (CF) = 0.5

Cut-off Value =  $0.8 \times 0.5 = 0.400$

Positive control O.D. = 1.2

Ab Index =  $1.2 / 0.4 = 3$

Patient sample O.D. = 1.6

Ab Index =  $1.6 / 0.4 = 4.0$

### Quality Control

The test run may be considered valid provided the following criteria are met:

1. If the O.D. of the Calibrator should be greater than 0.250.
2. The Ab index for Negative control should be less than 0.9.
3. The Ab index for Positive control should be greater than 1.2.

### Interpretation

The following is intended as a guide to interpretation of Brucella IgG test results; each laboratory is encouraged to establish its own criteria for test interpretation based on sample populations encountered.

#### • Antibody Index Interpretation

- <0.9 No detectable antibody to Brucella IgG by ELISA
- 0.9-1.1 Borderline positive. Follow-up testing is recommended if clinically indicated.
- >1.1 Detectable antibody to Brucella IgG by ELISA

### References

1. Gad EI-Rab MO; Kambal AM. Evaluation of a Brucella enzyme immunoassay test (ELISA) in comparison with bacteriological culture and agglutination. J Infect 1998; 36(2):197-201.
2. Mikolon AB; Gardner IA; Hietala SK; Hernandez de Anda J; Chamizo Pestana E; Hennager SG; Edmondson AJ. Evaluation of North American antibody detection tests for diagnosis of brucellosis in goats. J Clin Microbiol 1998; 36(6):1716-22.
3. Bowden RA; Cloeckert A; Zygmunt MS; Bernard S; Dubray G. Surface exposure of outer membrane protein and lipopolysaccharide epitopes in Brucella species studied by enzyme-linked immunosorbent assay and flow cytometry. Infect Immun 1995; 63(10):3945-52.
4. Baldi PC; Miguel SE; Fossati CA; Wallach JC. Serological follow-up of human brucellosis by measuring IgG antibodies to lipopolysaccharide and cytoplasmic proteins of Brucella species. Clin Infect Dis 1996;22(3):446-55
5. Casao MA; Leiva J; Diaz R; Gamazo C. Anti-phosphatidylcholine antibodies in patients with brucellosis. J Med Microbiol 1998; 47(1):49-54.