DRG® Brucella IgA (EIA-3271)

Revised 29 July 2010 rm (Vers. 3.1) **USA: RUO**

INTENDED USE

Enzyme immunassay for the in-vitro determination of IgA antibodies against Brucella in human serum and plasma.

SUMMARY AND EXPLANATION

Brucellosis is an infectious disease caused by small ellipsoid, gram-negative bacteria. There are four different germs: Br. abortus, Br. melitensis, Br. suis and Br. canis. People are infected by contact with infected animals or by swallowing meat or unpasteurized milk from infected animals. Infected humans are not contagious. The incubation period may take one to three weeks, in some cases two months. Br. abortus and Br. melitensis cause Bang's Disease, and raraly the Malta Fever. Typical symptoms for Bang's Disease are periodically occuring fever, splenomegaly and swelling of lymph nodes. In some cases an inflammation of different joints and organs occurs. Malta Fever is caused by the epidemic type of brucellosis. Infection almost always leads to a manifest illness. Brucella also can cause Brucella Hepatitis. In addition, it is possible that there is a link between an infection with Brucella and the outbreak of multiple sclerosis.
During an antibiotic therapy or a chronic infection, the detection of Brucella spec. in blood, urine, cerebrospinal fluid, sputum or other body fluids may be negative. Serological methods like agglutination, complement fixation reaction, Brucella Coombs test and ELISA are good alternatives. To monitor the status of infection antibodies can serve as a usual indication. During the first days, IgM is the only immunoglobulin appearing. As the disease progresses, IgM recedes quantitatively and IgG becomes predominant. In chronic brucellosis. IgG may be produced for extended periods.

TEST PRINCIPLE

Solid phase enzyme-linked immunosorbent assay (ELISA) based on the sandwich principle.
The wells are coated with antigen. Specific antibodies of the sample binding to the antigen coated wells are detected by a secondary enzyme conjugated antibody (E-Ab) specific for human IgA. After the substrate reaction the intensity of the color developed is proportional to the amount of IgA-specific antibodies detected. Results of samples can be determined directly using the standard curve.

WARNINGS AND PRECAUTIONS

1. For in-vitro use only. For professional use only.
2. Before starting the assay, read the instructions completely and carefully. Use the valid version of the package insert provided with the kit. Be sure that everything is understood.
3. In case of severe damage of the kit package please contact DRG or your supplier in written form, latest one week after receiving the kit. Do not use damaged components in test runs, but keep safe for complaint related issues.
4. Obey lot number and expiry date. Do not mix reagents of different lots. Do not use expired reagents.
5. Follow good laboratory practice and safety guidelines. Wear lab coats, disposable latex gloves and protective glasses where necessary.

6. Reagents of this kit containing hazardous material may cause eye and skin irritations. See MATERIALS SUPPLIED and labels for details. Material Safety Data Sheets for this product are available upon request.
7. Chemicals and prepared or used reagents have to be treated as hazardous waste according to national biohazard and safety guidelines or regulations.
8. Avoid contact with Stop solution. It may cause skin irritations and burns.
9. Some reagents contain sodium azide (NaN_3) as preservatives. In case of contact with eyes or skin, flush immediately with water. NaN_3 may react with lead and copper plumbing to form explosive metal azides. When disposing reagents, flush with a large volume of water to avoid azide build-up.
10. All reagents of this kit containing human serum or plasma have been tested and were found negative for HIV I/II, HBsAg and HCV. However, a presence of these or other infectious agents cannot be excluded absolutely and therefore reagents should be treated as potential biohazards in use and for disposal.

STORAGE AND STABILITY

The kit is shipped at ambient temperature and should be stored at 2-8°C. Keep away from heat or direct sun light. The storage and stability of specimen and prepared reagents is stated in the corresponding chapters.

The microtiter strips are stable up to the expiry date of the kit in the broken, but tightly closed bag when stored at 2–8°C.

SPECIMEN COLLECTION AND STORAGE

Serum, Plasma (EDTA, Heparin)

The usual precautions for venipuncture should be observed. It is important to preserve the chemical integrity of a blood specimen from the moment it is collected until it is assayed. Do not use grossly hemolytic, icteric or grossly lipemic specimens. Samples appearing turbid should be centrifuged before testing to remove any particulate material.

Storage:	2-8°C	-20°C	Keep away from heat or direct sun light.
Stability:	2 d	> 2 d	Avoid repeated freeze-thaw cycles.

MATERIALS SUPPLIED

1 x 12 x 8	MTP	**Microtiter Plate** Break apart strips. Coated with specific antigen.
1 x 14 mL	ENZCONJ IgA	**Enzyme Conjugate IgA** Red colored. Ready to use. Contains: anti-human IgA, conjugated to peroxidase, protein-containing buffer, stabilizers.
4 x 2 mL	CAL A-D	**Standards A-D** 1; 10; 50; 200 U/mL. Ready to use. Standard A = Negative Control Standard B = Cut-Off Control Standard C = Weakly Positive Control Standard D = Positive Control Contains: IgA antibodies against Brucella, PBS, stabilizers.

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1 x 60 mL	DILBUF	**Diluent Buffer** Ready to use. Contains: PBS Buffer, BSA, < 0.1 % NaN_3.
1 x 60 mL	WASHBUF CONC	**Wash Buffer**, Concentrate (10x) Contains: PBS Buffer, Tween 20.
1 x 14 mL	TMB SUBS	**TMB Substrate Solution** Ready to use. Contains: TMB.
1 x 14 mL	TMB STOP	**TMB Stop Solution** Ready to use. 0.5 M H_2SO_4.
2 x	FOIL	**Adhesive Foil** For covering of Microtiter Plate during incubation.
1 x	BAG	**Plastic Bag** Resealable. For dry storage of non-used strips.

MATERIALS REQUIRED BUT NOT SUPPLIED

1. Micropipettes (Multipette Eppendorf or similar devices, < 3% CV). Volumes: 5; 50; 100; 500 µL
2. Calibrated measures
3. Tubes (1 mL) for sample dilution
4. 8-Channel Micropipettor with reagent reservoirs
5. Wash bottle, automated or semi-automated microtiter plate washing system
6. Microtiter plate reader capable of reading absorbance at 450 nm (reference wavelength 600-650 nm)
7. Bidistilled or deionised water
8. Paper towels, pipette tips and timer

PROCEDURE NOTES

1. Any improper handling of samples or modification of the test procedure may influence the results. The indicated pipetting volumes, incubation times, temperatures and pretreatment steps have to be performed strictly according to the instructions. Use calibrated pipettes and devices only.
2. Once the test has been started, all steps should be completed without interruption. Make sure that required reagents, materials and devices are prepared ready at the appropriate time. Allow all reagents and specimens to reach room temperature (18-25 °C) and gently swirl each vial of liquid reagent and sample before use. Mix reagents without foaming.
3. Avoid contamination of reagents, pipettes and wells/tubes. Use new disposable plastic pipette tips for each component and specimen. Do not interchange caps. Always cap not used vials. Do not reuse wells/tubes or reagents.
4. Use a pipetting scheme to verify an appropriate plate layout.
5. Incubation time affects results. All wells should be handled in the same order and time sequences. It is recommended to use an 8-channel Micropipettor for pipetting of solutions in all wells.

6. Microplate washing is important. Improperly washed wells will give erroneous results. It is recommended to use a multichannel pipette or an automatic microplate washing system. Do not allow the wells to dry between incubations. Do not scratch coated wells during rinsing and aspiration. Rinse and fill all reagents with care. While rinsing, check that all wells are filled precisely with Wash Buffer, and that there are no residues in the wells.
7. Humidity affects the coated wells/tubes. Do not open the pouch until it reaches room temperature. Unused wells/tubes should be returned immediately to the resealed pouch including the desiccant.

PRE-TEST SETUP INSTRUCTIONS

Preparation of Components

The contents of the kit for 96 determinations can be divided into 3 separate runs. The volumes stated below are for one run with 4 strips (32 determinations).

Dilute/ dissolve	Component		Diluent	Relation	Remarks	Storage	Stability
20 mL	Wash Buffer	ad 200 mL	bidist. water	1:11	Warm up at 37°C to dissolve crystals. Mix vigorously.	2-8°C	8 w

Dilution of Samples

Sample	to be diluted	with	Relation	Remarks
Serum / Plasma	generally	Diluent Buffer	1:101	e.g. 5 µL + 500 µL DILBUF

Samples containing concentrations higher than the highest standard have to be diluted further.

TEST PROCEDURE

1. Pipette **100 µL** of each **Standard and diluted sample** into the respective wells of the Microtiter Plate. In the qualitative test only Standard B is used.
2. Cover plate with adhesive foil. **Incubate 60 min** at **18-25°C**.
3. Remove adhesive foil. Discard incubation solution. Wash plate **3 x** with **300 µL** of **diluted Wash Buffer**. Remove excess solution by tapping the inverted plate on a paper towel.
4. Pipette **100 µL** of **Enzyme Conjugate** into each well.
5. Cover plate with new adhesive foil. **Incubate 30 min** at **18-25°C**.
6. Remove adhesive foil. Discard incubation solution. Wash plate **3 x** with **300 µL** of **diluted Wash Buffer**. Remove excess solution by tapping the inverted plate on a paper towel.
7. For adding of Substrate and Stop Solution use, if available, an 8-channel Micropipettor. Pipetting should be carried out in the same time intervals for Substrate and Stop Solution. Use positive displacement and avoid formation of air bubbles.
8. Pipette **100 µL** of **TMB Substrate Solution** into each well.
9. **Incubate 20 min** at **18-25°C** in the dark (without adhesive foil).
10. Stop the substrate reaction by adding **100 µL** of **TMB Stop Solution** into each well. Briefly mix contents by gently shaking the plate. Color changes from blue to yellow.
11. **Measure** optical density with a photometer at **450 nm** (Reference-wavelength: 600-650 nm) within **60 min** after pipetting of the Stop Solution.

QUALITY CONTROL

The test results are only valid if the test has been performed following the instructions. Moreover the user must strictly adhere to the rules of GLP (Good Laboratory Practice) or other applicable standards/laws. All standards must be found within the acceptable ranges as stated on the QC Certificate. If the criteria are not met, the run is not valid and should be repeated. Each laboratory should use known samples as further controls.

In case of any deviation the following technical issues should be proven: Expiration dates of (prepared) reagents, storage conditions, pipettes, devices, incubation conditions and washing methods.

It is recommended to participate at appropriate quality assessment trials.

CALCULATION OF RESULTS

The evaluation of the test can be performed either quantitatively or qualitatively.

13.1 Qualitative evaluation

The Cut-off value is given by the optical density (OD) of the Standard B (Cut-off standard). The Cut-off index (COI) is calculated from the mean optical densities of the sample and Cut-off value. If the optical density of the sample is within a range of 20 % around the Cut-off value (grey zone), the sample has to be considered as borderline. Samples with higher ODs are positive, samples with lower ODs are negative.

For a quantification, the Cut-off index (COI) of the samples can be formed as follows:

$$COI = \frac{\text{OD Sample}}{\text{OD Standard B}}$$

Quantitative Evaluation

The obtained OD of the standards (y-axis, linear) are plotted against their concentration (x-axis, logarithmic) either on semi-logarithmic graph paper or using an automated method. A good fit is provided with cubic spline, 4 Parameter Logisitcs or Logit-Log.

For the calculation of the standard curve, apply each signal of the standards (one obvious outlier of duplicates might be omitted and the more plausible single value might be used).

The concentration of the samples can be read directly from the standard curve.

The initial dilution has been taken into consideration when reading the results from the graph. Results of samples of higher predilution have to be multiplied with the dilution factor.

Samples showing concentrations above the highest standard have to be diluted as described in PRE-TEST SETUP INSTRUCTIONS and reassayed.

Typical Calibration Curve

(Example. Do not use for calculation!)

Standard	U/mL	Mean OD
A	1	0.022
B	10	0.444
C	50	1.103
D	200	2.027