IF-VIDITEST
anti-EA (D) EBV IgG

REF ODZ-058 Σ 80 tests -18 °C to -28 °C

Type of determination: IgG antibodies

Type of evaluation: Qualitative

Type of samples: Serum/Plasma

IVD

VIDIA

Instruction manual

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1. TITLE

IF-VIDITEST anti- EA (D) EBV IgG

2. INTENTED USE

The kit is intended for professional use for use for qualitative immunofluorescence detection of IgG antibodies against the diffuse (D) component of the early antigen EA (D) of the Epstein and Barr virus (EBV) in human serum or plasma.
It is used for the diagnostics of diseases caused or related to EBV, such as infectious mononucleosis, chronic active EBV infection, Burkitt's lymphoma, lymphomas derived from Waldeyer's circuit, opportunistic lymphomas in immunosuppressed individuals, and nasopharyngeal carcinoma. The kit is also useful in the complex characterization of immunodeficiency syndromes and chronic fatigue syndrome, where EBV is often activated.

3. TEST PRINCIPLE

A human lymphoma cell line is latently infected with EBV and does not produce EA under physiological conditions. Certain chemicals can be used to induce the initiation of abortive virus replication, which begins with the synthesis of EA, in part of the cell population. Coatings are prepared from the infected mixture and fixed with suitable method. The EA antigen contained in these cells is first bound with human anti-EA antibodies in an indirect fluorescence assay, if they are present present in the tested serum or plasma. The complex of antigen and human antibody is then visualised by binding an antibody against human IgG labelled with fluorescein isothiocyanate (FITC conjugate). This complex is then detected using a fluorescence microscope.

4. KIT COMPONENTS

Rasterised slides with fixed cell smears	10 x 1 slides
0.1 mL of lyophilised IgG positive human control serum	1 vial
0.1 mL of lyophilised negative human control serum	1 vial
0.25 mL of lyophilised animal anti-human IgG antibody – anti IgG FITC conjugate	1 vial
5.0 mL of mounting solution r.t.u. (90% glycerol)	1 vial
Quality Control Certificate	
Instruction manual	

5. MATERIALS REQUIRED BUT NOT PROVIDED

Phosphate buffered saline (PBS) pH 7.2 for dilution of control sera, tested samples, conjugates and for washing slides; distilled water for dissolving lyophilised kit components; wet chamber (suitable plastic box with lid, lined with damp absorbent material); tubes and pipetting equipment; haematological cuvettes for washing slides; coverslips 50 x 25 mm; pencil suitable for writing on glass; fluorescence microscope.

All instruments and equipment used must have valid validation of function.

6. REAGENTS PREPARATION

Bring all components of the kit to laboratory temperature.

Dissolve the control human sera in 0.1 mL of distilled water and dilute further with PBS at a ratio of 1:10 (i.e. add 0.9 mL of PBS).

Dilute the tested human samples 1:10 for screening examination. For titration testing, which is much more important in EA diagnostics, prepare a number of samples in dilutions e.g. 1:10, 1:20, 1:40, 1:80, 1:160...etc. Use PBS for all dilutions of the test samples.

Dissolve FITC IgG conjugate in 0.25 mL distilled water and further dilute 1:20 (v/v) with PBS (i.e. add 4.75 mL PBS). You need about 50 µl of FITC conjugate per well, i.e. 400 µl per slide.

7. ASSAY PROCEDURE

The manufacturer is not responsible for the correct function of the kit if the assay procedure is not followed.

a. Remove the slides from the packaging. If you do not use both slides at the same time, put the unused slide back into the bag immediately, close and store at -18 to -28 °C.

b. Place the slides in a humid chamber. Pipette approx. 30 µl of the tested sample into the wells of the slides in the selected dilutions. Positive control serum in one well, negative control serum in the other well. It is recommended to include a positive reference serum sample (internal control) in each test to verify the continuity and variability of the test. Make sure that the droplet is always spread over the entire surface of the well and that the samples do not stick together.

   Seal the humid chamber and incubate for **60 ± 5 minutes at laboratory temperature.**

   Cell smears must remain moist throughout the incubation period.

c. Aspirate the samples into a safety collection bottle containing a suitable disinfectant (see WARNINGS), and place the slides into haematology cuvettes with PBS. After **5 ± 1 minutes,** replace the PBS with fresh – repeat the washing **3 times** in total**.** Carefully aspirate PBS from the washed slides so as not to damage the cell smears but **to keep the smears moist**.

d. Place the slides back into the moist chamber, apply anti-IgG FITC conjugate at working dilution and incubate for **60 ± 5 minutes at laboratory temperature.**

   Cell smears must remain moist throughout the incubation period.

e. Aspirate the FITC conjugate and wash the slides in PBS cuvettes **(3 times for 5 ± 1 min each)** and then briefly immerse in distilled water. Place the stained slides upright on an absorbent pad and allow to dry at laboratory temperature.

f. Apply two to three drops of mounting solution per slide and cover with a cover slip to prevent the formation of air bubbles.

g. Read off the stained slides immediately or store them in the dark at +2 °C to +10 °C.

   Immunofluorescence is clearly visible at least one week after staining.

8. TEST EVALUATION

View the stained slides in a fluorescence microscope under blue excitation light. If positive, the cells show a brilliant green fluorescence. The whole cytoplasm (especially in the submembrane region) or the cytoplasm can glow diffusely. Immunofluorescence limited only to cell nuclei may indicate the presence of autoantibodies and we therefore do not evaluate it as a positive result of this test.

In case of a negative result, the indicated cellular structures are olive-green to dark red. Weak membrane fluorescence due to the presence of the Fc receptor is not considered as positive result.

A well incubated with a negative control serum should be negative if the test is performed correctly.

The well incubated with the positive control serum contains at least 3 % positive cells, but usually around 20 % (the percentage of positive cells is stated in the Quality Control Certificate).

In the screening test, the presence of antibodies in the sample is tested at a 1:10 dilution and it is determined whether the sample shows a positive reaction at this dilution. The titration test determines the highest dilution of the sample that still shows a positive reaction. The reciprocal value of this dilution is given as the antibody titre against the tested antigen. For the differential diagnosis of diseases associated with EBV, titration of antibodies against EA (D) is important. Antibodies to EA (D) appear after primary EBV infection (usually a little later than IgM antibodies to VCA) in about 50% of cases of infectious mononucleosis. They can also be present in EBV reactivations. High titers of antibodies against EA (D) are usually found in patients with EBV-positive nasopharyngeal carcinoma.

The presence of anti-EA (D) antibodies does not exclude active EBV infection and therefore this test has to be complemented with further examinations (determination of IgG and IgM antibodies against VCA EBV and EBNA) within serological EBV diagnostics.

9. CLINICAL SIGNIFICANCE

Epstein-Barr (EB) virus infection proceeds differently, mainly depending on age, infectious dose, from an inapparent course to a typical picture of infectious mononucleosis. The virus can persist in the body for a long time and reactivate when resistance decreases (stress, pregnancy, chronic disease, etc.). In children, EB virus infection occurs as mild tonsillitis, pharyngitis, subfebrile condition. EB virus infection is causally associated with certain types of malignant tumors with different geographic distributions, for example, nasopharyngeal carcinoma (Southeast Asia), Burkitt's lymphoma (Africa), and other lymphoepithelial tumors, often in HIV-positive individuals.

10. TEST CHARACTERISTICS

The kit is designed for professional use for qualitative immunofluorescence detection of IgG antibodies against the diffusible (D) component of the Epstein-Barr virus (EBV) EA (D) early antigen in human serum or plasma.

Samples of serum or plasma (heparinized) taken in a standard laboratory manner are suitable for testing.

10.1 Diagnostic sensitivity and specificity of the test

The test was prepared based on the description of the standard method for the determination of IgG antibodies against EA(D) EBV, published in the literature. By testing of the sample kit, a sensitivity of 86.00 % and a specificity of 100.00 % were found when compared with the reference method of indirect immunofluorescence used by the National Reference Laboratory.

10.2 Measuring range

The starting point for dilution is 1:10, samples can be further serially diluted, i.e. 1:20, 40, 160, 320, etc. There is no upper limit of the range.

10.3 Reproducibility (Intraassay)

Reproducibility was tested on more than 20 wells within the batch. The intensity of immunofluorescence is indicated from "negative" (i.e. no fluorescence) to "++++" (strongest fluorescence). For the quantitative evaluations of the results, the maximum deviation was one level of intensity.

10.4 Repeatability (Interassay)

Repeatability was measured on more than 15 different batches. The intensity of immunofluorescence is indicated from "negative" (i.e. no fluorescence) to "++++" (strongest fluorescence). For the quantitative evaluations of the results, the maximum deviation was one level of intensity.

10.5 Interference

Haemolytic and lipemic samples have no influence on the test results up to concentration of 50 mg/mL of haemoglobin, 5 mg/mL of bilirubin and 50 mg/mL of triglycerides. However, examination of such samples is not recommended.

11. WARNINGS

a. All kit components are for laboratory use only.
b. The manufacturer guarantees the usability of the kit as a whole. Combining components of different batches of kits is not recommended.
c. Work aseptically to avoid microbial contamination of samples and reagents.
d. When collecting, diluting, and storing reagents, be careful not to cross-contaminate them or contaminate them with fluorescence quenching agents.
e. Do not eat, drink or smoke while working. Do not pipette by mouth, but by suitable pipetting devices.
f. Wear protective work equipment (clothing, rubber gloves, face shield) and wash your hands thoroughly after work. Be careful not to spill specimens or form an aerosol.
g. Human sera (control) used in the kit were tested for the absence of HBsAg, anti-HIV-1,2 and HCV antibodies. Treat test samples, control sera and used slides as infectious material. Autoclave items that have come into contact with them for 1 hour at 121 °C or disinfect with a 3% chloramine solution for at least 30 minutes.
h. Disinfect the waste generated during strip washing in a waste container using a suitable disinfectant solution (eg Incidur, Incidin, chloramine, ...) at the concentration recommended by the manufacturer.
i. Handle FITC Conjugate with Evans Blue with care to avoid staining the skin or mucous membranes or affecting eyes. If this happens, wash the affected area with sufficient amount of running water.
j. All reagents and packaging material must be disposed of in accordance with applicable legislation.
k. In case of suspicion of an adverse event in connection with the use of the kit, inform the manufacturer and the competent state authority without delay.

12. SAFETY PRECAUTIONS

The conjugate and control human sera are preserved with ProClin 300 (a mixture of 5-Chloro-2-methyl-4-isothiazolin-3-one and 2-Methyl-2H-isothiazol-3-one (3:1)). Therefore, the following warnings and safety precautions apply to these solutions:

Warning

H317	May cause an allergic skin reaction.
H412	Harmful to aquatic life with long-lasting effects.
P280	Wear protective gloves/protective clothing/ protective glasses/ face protection.
P302+P352	Of on skin: Wash with plenty of water.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.

Further information can be found in the safety data sheet.

13. STORAGE AND EXPIRATION

a. Store the kit and its components in a dry and dark place at a temperature of -18 °C to -28 °C. Under these conditions, the expiration period of the entire kit is indicated on the central label on the kit package, the expiration date of the individual components is indicated on their package.

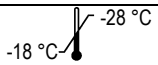
b. Store unused dissolved control human sera and conjugate at -18 °C to -28 °C for long-term storage. Avoid frequent freezing and thawing. If you store human sera and conjugates at + 2 °C to + 10 °C, then test them within one week

c. The kits are transported refrigerated in thermal bags, transport time up to 72 hours has no influence on expiration. If, upon receipt of the kit, you notice serious damage to the packaging of any component of the kit, inform the manufacturer immediately.

d. Store unused test samples undiluted, aliquoted and frozen at -18 °C to -28 °C. Frequent freezing and thawing is not recommended. If you store samples at + 2 °C to + 10 °C, then test them within one week.

e. Test sample solutions at the working concentration cannot be stored. Always prepare them fresh.

14. USED SYMBOLS

Symbol	Explanation
	number of tests
CE	Conformité Européenne – product meets the requirements of European legislation
IVD	diagnostics *in vitro*
	manufacturer
	expiration
LOT	lot of the kit
	storage at -18 °C to -28 °C
	read the package leaflet
REF	catalog number
°C	Celsius degree
%	percentage

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