Highly specific and sensitive test for the detection of Epstein-Barr virus antibodies

Ideally suited for the determination of the EBV immune status (seronegativity/seropositivity)

More tests available for avidity determination and CSF diagnostics

Technical data

Antigen
Purified Epstein-Barr virus capsid antigens; antigen source: inactivated cell lysate of human B cells infected with Epstein-Barr virus of strain P3HR1

Calibration
Quantitative, in relative units per ml (RU/ml)

Calibration serum 1: 200 RU/ml
Calibration serum 2: 20 RU/ml
Calibration serum 3: 2 RU/ml

Recommended upper threshold of the reference range for non-infected individuals (cut-off): 20 RU/ml

Sample dilution
Serum or plasma, 1:101 in sample buffer

Reagents
Ready for use, with the exception of the wash buffer (10x); colour-coded solutions, in most cases exchangeable with those in other EUROIMMUN ELISA kits

Test procedure
30 min / 30 min / 15 min, room temperature, fully automatable

Measurement
450 nm, reference wavelength between 620 nm and 650 nm

Test kit format
96 break-off wells, kit includes all necessary reagents

Order number
EI 2791-9601 G

Clinical significance

EBV (Epstein-Barr virus) and herpes simplex virus types 1 and 2 belong to the most ubiquitous human-pathogenic herpes viruses in adults. The virus is the causative agent of infectious mononucleosis (glandular fever), a febrile disease usually accompanied by pharyngitis and lymphadenopathy, frequently by hepatosplenomegaly and more rarely by exanthema. EBV infections are also found in connection with Burkitt’s lymphoma and nasopharyngeal carcinoma. The clinical picture of EBV infection can be diverse. The symptoms are unspecific and often overlap with those of other diseases. EBV infection should be differentiated diagnostically from infections with CMV, Toxoplasmosa, Streptococcus, parvovirus B19 and HIV.

Diagnostic application

Since direct detection of EBV is often difficult, serological tests are routinely used for diagnosing EBV infections. The immune response after infection is characterised by the development of antibodies against the EBV capsid antigen (EBV-CA), the EBV nuclear antigens (EBNA-1 to EBNA-6) and the EBV early antigens (EBV-EA). In over 90% of cases an acute EBV infection can be characterised serologically by the detection of anti-EBV-CA IgM and an increase in titer of anti-EBV-CA IgG using ELISA. An at least twofold increase in the anti-EBV-CA IgG titer and the absence of antibodies against EBNA-1 is characteristic for the early phase of an acute EBV infection. Serologically challenging constellations can be clarified by measuring the avidity of the anti-EBV-CA IgG antibodies (EI 2791-9601-1 G). EBV infections of the central nervous system can be diagnosed by determining the anti-EBV-CA antibodies of class IgG in the cerebrospinal fluid (EI 2791-9601-L G).
Linearity

The linearity of the Anti-EBV-CA ELISA (IgG) was determined by performing four serial dilutions of different serum samples. The linear regression $R^2$ was $> 0.95$ for all samples. The Anti-EBV-CA ELISA (IgG) is linear in the investigated concentration range ($4–141$ RU/ml).

Reference range

Levels of anti-EBV-CA antibodies (IgG) were analysed in a group of 500 healthy blood donors using the EUROIMMUN ELISA. With a cut-off value of 20 RU/ml, 93.4% of the blood donors were anti-EBV-CA positive (IgG), in agreement with the known infection level in adults.

Reproducibility

The reproducibility was investigated by determining the intra- and inter-assay coefficients of variation using three sera. The intra-assay CVs are based on 20 determinations and the inter-assay CVs on four determinations performed in six different test runs.

Specificity and sensitivity

In a panel of 175 clinically and serologically precharacterised patient samples (quality assessments by INSTAND, Germany / Labquality, Finland) were investigated using the EUROIMMUN ELISA. The specificity and sensitivity were each 100%, excluding borderline sera.

Prevalence

Sera from children, pregnant women and healthy blood donors were investigated for IgG and IgM antibodies using the EUROIMMUN Anti-EBV-CA ELISA. The prevalences corresponded to the data found in literature (e.g. Bauer, G: Rationale und rationelle Epstein-Barr-Virus-Diagnostik, Clin Lab, 1995).

Literature