Indications: Test system for the in vitro determination of antibodies against measles virus in human serum or plasma for the diagnosis of the following diseases: measles.

Clinical significance: Measles is a highly contagious infectious disease caused by the measles virus, which belongs to the group of paramyxoviruses. The virus is spread by droplet infection. It enters the body via the conjunctiva and respiratory tract and multiplies in the epithelial cells of the respiratory tract. Around 10 days after infection, the prodrome phase of the disease begins. This lasts approximately 3 days and is characterized by coryza, cough, conjunctivitis, headache, and steadily rising fever. During this time Koplik’s spots – small, bright red spots with a white speck in the centre – appear on the buccal mucosa. These spots are considered to be pathognomonic for measles. 4-5 days after the first symptoms a characteristic maculopapular rash appears (measles exanthem). It starts behind the ears and spreads from the head over the body to the limbs. At the same time a chesty cough, swelling of the spleen and lymph nodes and relapse of fever can occur.

Diagnosis of measles is made on the basis of clinical symptoms and serological tests. Antibodies against measles virus IgG testing requires two serum samples, taken with an interval of several weeks. The second specimen should show a significant increase in antibody titer compared to the first specimen.

Measles is typically a childhood disease, with the highest incidence occurring between the ages of five and nine. However, adults can also be affected. Today, many children are routinely immunised against measles using a live attenuated virus, which is often given in combination with mumps and rubella vaccines (the so-called MMR vaccine). Usually lifelong immunity develops following the disease or vaccination. According to the Standing Commission for Vaccination at the Robert Koch Institute in Berlin, Germany, primary vaccination should be performed between the 11th and 14th months of life, followed by a second vaccination between the 15th and 23rd months. The immune status should be determined 8 to 12 weeks afterwards. For successful elimination of measles infections, the immunisation rate should be at least 95% (Epidemiological Bulletin, 34/2007)

Fluorescence pattern (positive reaction): Antibodies against measles virus cause a distinct fluorescence of the infected cells. Mainly in the area of the cytoplasm, granular to coarse droplet-shaped structures containing viral material fluoresce. Depending on the degree of infection, tiny grains to coarser droplets fluoresce in a few cells, while more seriously infected cells show a pattern of coarse droplets and, in parts, a spread of fluorescence. If the cell nuclei or the cytoplasm of all cells (including the non-infected cells) are stained, antinuclear antibodies or antibodies against mitochondria and other cell antigens are present.

Application of the Anti-Measles Virus IIFT: Due to its sensitivity and specificity the indirect immunofluorescence technique is a simple method for investigating antibodies against measles virus and for monitoring the immune status. Other, traditionally used methods have significant drawbacks. For example, the neutralisation test is too expensive and laborious to perform routinely.
Test Characteristics

Anti-Measles Virus IIFT

Test principle: The indirect immunofluorescence test is a standardized in vitro assay for the determination of specific antibodies against measles virus. BIOCHIPs are coated with measles virus-infected cells and fixed onto the reaction fields of a microscope slide. If samples are positive, specific antibodies of classes IgA, IgG and IgM bind to the viral antigens. Bound antibodies are stained with fluorescein-labelled anti-human antibodies in a second incubation step and then visualised by fluorescence microscopy.

Test procedure: EUROIMMUN BIOCHIP slides are incubated using the proprietary TITERPLANE™ Technique, which enables multiple samples to be incubated next to each other and simultaneously under identical conditions. Results are evaluated by fluorescence microscopy. Incubation of the substrate with the positive and negative control sera provided in each kit verifies correct performance of the test and aids evaluation.

Inter-lot reproducibility: Inter-lot reproducibility was tested with more than 10 different lots. The deviation in the fluorescence intensity of the IIFT amounted to no more than ± 1 intensity level for all samples.

Reference range: Titer 1: <10 (IgG, IgM). The following antibody prevalences (titer 1:10 or higher) were determined in apparently healthy blood donors (origin of samples: Germany): IgG: 95% (n = 198 blood donors) IgM: 0.7% (n = 149 blood donors)

Specificity: The sensitivity of the test system for antibodies of class IgG is 100%. Reference: National Reference Centre (n = 31). The specificity of the test system for antibodies of class IgM is 100%. Reference: National Reference Centre (n = 31). (Origin of all samples: Germany)

Sensitivity: The sensitivity of the test system for antibodies of class IgG is 100%. Reference: National Reference Centre (n = 31). The sensitivity of the test system for antibodies of class IgM is 100%. Reference: National Reference Centre (n = 31). (Origin of all samples: Germany)

Technical Data:

Antigen substrate: Measles virus-infected cells (species EU 38).

Sample dilution: Serum or plasma.

Qualitative evaluation: 1:10 (IgG and IgM) Quantitative evaluation: 1:100/1000, etc. (IgG and IgM).

Test procedure: 30 min (sample) / 30 min (conjugate), room temperature.

Microscopy: Objective 40x Excitation filter: 488 nm, colour separator: 510 nm, blocking filter: 520 nm Light source: EUROIMMUN LED or mercury vapour lamp, 100 W

Reagents: Ready for use, with the exception of the PBS-Tween buffer (for dilution and washing).

Stability: All kit components are stable for up to 18 months from the date of manufacture.

Standard kit formats: 10 or 20 slides, each containing 3, 5 or 10 test fields. Kits include all necessary reagents (except EUROSORB for the RF-absorption, order no.: 2F 1270-0145).

Order no.: FI 2610-1005 G or M (example for test kit with 10 slides each with 5 test fields)