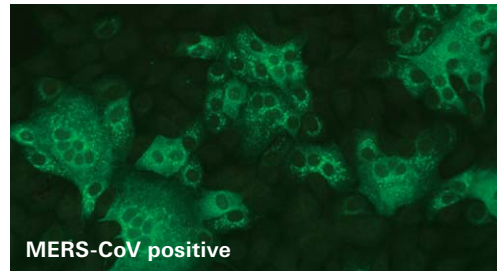




Anti-MERS-CoV IIFT Camel (IgG)



- **First commercially available IIFT for specific detection of anti-MERS-CoV antibodies in camels**
- **Efficient automation solutions available**



Technical data

Antigen substrate	MERS coronavirus-infected and non-infected cells (species EU 14)
Sample dilution	Camelid serum or plasma Qualitative evaluation: 1:100; semiquantitative evaluation: 1:10/100/1000 etc. There is no upper limit to the measurement range
Reagents	Ready for use, with the exception of the PBS-Tween buffer
Test procedure	30 min (sample) / 30 min (conjugate), room temperature
Microscopy	Objective 20x Light source: EUROIMMUN LED or mercury vapour lamp, 100W Excitation filter: 488nm, colour separator: 510nm, blocking filter: 520nm
Stability	All kit components are stable for at least 18 months from the date of manufacture
Test kit format	10 slides, each containing 10 test fields; kit includes all necessary reagents
Order no.	FI 2604-1010 GK



Clinical significance

Middle east respiratory syndrome (MERS) was first reported in humans in 2012 and is caused by a novel coronavirus (MERS-CoV). So far, all human MERS-CoV infections have originated in the Middle East, particularly in Saudi Arabia. About 40% of known cases of this disease were fatal. The symptoms in humans resemble those of severe acute respiratory syndrome (SARS), with acute pneumonia, frequently accompanied by kidney failure with subsequent sepsis and finally, multi-organ failure. The incubation time ranges from less than a week in the majority of cases to up to 12 days in individual cases. Transmission between humans takes place via aerosols and smear infections. Respiratory secretions of the upper respiratory tract of infected persons play a particularly important role as they can be passed on by sneezing, coughing, and via contaminated hands. So far, there is no approved or safe antiviral therapy. Therefore, the treatment of patients is limited to the alleviation of symptoms. An effective vaccine against MERS-CoV is not yet available. Confirmed host organisms for MERS-CoV alongside bats are dromedary camels, which are being currently discussed as a potential source of sporadic infections in humans. The antibody prevalence in adult camels in endemic areas is up to 100%, thus differing from the seroprevalence in young camels under two years old (up to 72%). In newborn camels, it is assumed that the virus multiplies and is shed, as time is needed to generate neutralizing antibodies. During this time the calves might be a source of infection for humans. However, clinical disease associated with a MERS-CoV infection is rare and mild in camels. There is no certified vaccine available.



Application

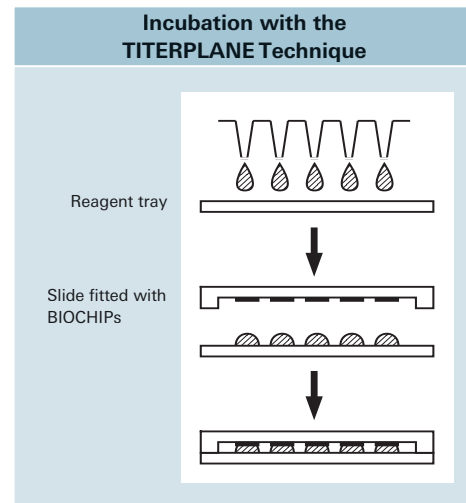
The most reliable laboratory diagnostic methods for confirmation of suspected MERS-CoV infections are the direct detection of MERS-CoV using polymerase chain reaction (PCR) and the detection of antibodies against MERS-CoV using indirect immunofluorescence (IIFT), ELISA, or neutralisation test. IgG antibodies can be detected approximately 3 weeks after infection and persist for years. The Anti-MERS-CoV IIFT Camel (IgG) is based on MERS-CoV-infected cells, allowing efficient determination of MERS-CoV antibodies in camels. Cross reactions with other coronaviruses, especially bovine coronavirus, need to be taken into account in serological diagnostics. Positive results should therefore be confirmed using a different test method, ideally a neutralisation assay.



Test principle and procedure

This test kit is designed exclusively for the in vitro determination of antibodies in camelid serum or plasma. The determination can be performed qualitatively or quantitatively. BIOCHIPS coated with MERS-CoV-infected cells are incubated with diluted test samples. In case of positive reactions, specific antibodies of class IgG, IgA and IgM will attach to the virus antigens. In a second step, the attached antibodies are stained with fluorescein-labelled anti-camel IgG antibodies and made visible using the fluorescence microscope.

Slides with EUROIMMUN BIOCHIPS are incubated using the TITERPLANE Technique, which enables multiple samples to be incubated next to each other and simultaneously under identical conditions. Incubation of the substrates with the positive and negative controls provided in each kit verifies correct performance of the test and aids evaluation.



Reference range

Titer < 1:100. In a control panel comprising camel blood donors from Germany with a negative predictive value for MERS-CoV (n=33), the MERS-CoV antibody prevalence was 0%.

Sensitivity and specificity

33 serologically precharacterised camelid sera with negative expectation values (origin: Germany and UAE) as well as 163 camelid sera with positive expectation values (origin: Dubai, Tenerife, Gran Canaria, UAE) were analysed using the Anti-MERS-CoV IIFT Camel (IgG). The sensitivity of the test amounted to 99.4%, with a specificity of 100%.

n = 196		Expectation values of the samples	
		positive	negative
EUROIMMUN Anti-MERS-CoV IIFT Camel (IgG)	positive	162	0
	negative	1	33

Literature

1. Corman VM, et al. **Antibodies against MERS Coronavirus in Dromedary Camels, Kenya, 1992-2013.** Emerg Infect Dis 20(8): 1319-1322 (2014).
2. Meyer B, et al. **Antibodies against MERS coronavirus in dromedary camels, United Arab Emirates, 2003 and 2013.** Emerg Infect Dis 20(4):552-559 (2014).
3. Müller MA, et al. **MERS coronavirus neutralizing antibodies in camels, eastern Africa, 1983-1997.** Emerg Infect Dis 20(12):2093-2095 (2014).
4. Gutiérrez C, et al. **Presence of antibodies but no evidence for circulation of MERS-CoV in dromedaries on the Canary Islands, 2015.** Euro Surveill 20(37) (2015).
5. Meyer B, et al. **Serological assays for emerging coronaviruses: Challenges and pitfalls.** Virus research 194:175-183 (2014).