



## Anti-Borrelia ELISA Horse (IgG)



- **Highly sensitive screening test for the detection of equine anti-Borrelia antibodies**
- **Detects all relevant Borrelia species of the Borrelia burgdorferi sensu lato group**
- **Fully automatable**



### Technical data

<b>Antigen</b>	Antigen extracts of <i>Borrelia burgdorferi sensu stricto</i> and <i>Borrelia afzelii</i>
<b>Calibration</b>	Semiquantitative evaluation using ratio values: Extinction value of the sample over the extinction value of the calibrator
<b>Result interpretation</b>	EUROIMMUN recommends interpreting results as follows: Ratio < 0.8: negative Ratio ≥ 0.8 to < 1.1: borderline Ratio ≥ 1.1: positive
<b>Sample dilution</b>	Equine serum or plasma, 1:101 in sample buffer
<b>Reagents</b>	Ready for use, with the exception of the wash buffer (10x), colour-coded solutions
<b>Test procedure</b>	30 min (37°C) / 30 min (37°C) / 15 min (room temperature), fully automatable
<b>Measurement</b>	450 nm, reference wavelength between 620 nm and 650 nm
<b>Test kit format</b>	96 break-off wells, kit includes all necessary reagents
<b>Order no.</b>	<b>EI 2132-9601 GE</b>



### Clinical significance

In 1982 W. Burgdorfer found that ticks transmit “*Treponema-like spirochaeta*”, which were later identified as the causative agent of Lyme borreliosis. In 1985 antibodies to *Borrelia* (*B.*) *burgdorferi* were reported in horses in New England, USA. The Gram-negative bacteria causing Lyme borreliosis are collectively referred to as *Borrelia burgdorferi sensu lato*. Among these, the genospecies *B. burgdorferi sensu stricto*, *B. garinii* and *B. afzelii* are pathogenic for horses. Whereas in the U.S. only *B. burgdorferi sensu stricto* is relevant, 80% of pathogens found in European ticks are *B. garinii* or *B. afzelii*.

The bacteria are transmitted to humans and animals by ticks of the *Ixodes* species. Due to their pasturing, the risk of infection is clearly increased in horses. However, the majority of infections in horses proceed asymptotically. To date, a large number of clinical symptoms which usually only appear several weeks or months after infection could be assigned to an infection with *Borrelia burgdorferi*. They encompass, amongst others, arthritis, alternating lameness, algescic muscles, uveitis, encephalitis, miscarriage, fever and lethargy. Erythema migrans, which is typically found in humans, is not relevant in horses since it generally cannot be observed due to fur or dark skin. As of late, a vaccine for horses is available.



### Application

Direct detection of the pathogen using PCR techniques or cultivation is reliable only in tissue samples, but not in blood samples. Therefore, serological detection of antibodies is the method of choice for laboratory diagnosis of borreliosis in horses. *Borrelia*-specific IgG antibodies can be detected approximately 4 to 6 weeks after infection and persist for months or years. For diagnosis of equine borreliosis, clinical symptoms and differential diagnostics should always be taken into account alongside the serological results. For the serological detection of anti-*Borrelia* antibodies, several studies call for a two-stage strategy: a sensitive screening test, such as the EUROIMMUN Anti-*Borrelia* ELISA Horse (IgG), will identify practically all sera that react with *Borrelia* antigens. As a follow-up, the EUROIMMUN Anti-*Borrelia* EUROLINE Horse (order no. DN 2136-1601 GE) provides a secure confirmation of *Borrelia*-specific reactions.



## Principle of the test

The ELISA test kit provides a semiquantitative in vitro assay for equine antibodies of the IgG class against *Borrelia* antigens in serum or plasma. The test kit contains microtiter strips each with 8 break-off reagent wells coated with a mix of whole antigen extracts of *Borrelia burgdorferi sensu stricto* and *Borrelia afzelii*. In the first reaction step, diluted samples are incubated in the wells. In the case of positive samples, specific IgG antibodies (also IgA and IgM) will bind to the antigens. To detect the bound antibodies, a second incubation is carried out using an enzyme-labelled anti-horse IgG (enzyme conjugate) catalysing a colour reaction.



## Sensitivity and specificity

To confirm assay sensitivity and specificity, 76 randomly collected sera from horses were analysed and results were compared to a commercially available ELISA. The sensitivity of the EUROIMMUN Anti-*Borrelia* ELISA Horse (IgG) amounted to 100% and the specificity to 98% not including borderline results.

n = 76		Precharacterisation		
		positive	borderline	negative
EUROIMMUN Anti- <i>Borrelia</i> ELISA Horse (IgG)	positive	11	11	1
	borderline	0	3	7
	negative	0	0	43



## Literature

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