Anti-Toxoplasma gondii ELISA Cat (IgG)

- **Highly sensitive and specific test for the detection of feline anti-Toxoplasma gondii antibodies**
- **Designed especially for the analysis of feline samples**
- **Efficient automation solutions available**

Technical data

Antigen	Detergent extract of purified Toxoplasma gondii organisms	
Calibration	Semiquantitative:	
	Calculation of a ratio from the extinction of the sample and the extinction of the calibrator	
Result interpretation	EUROIMMUN recommends interpreting results as follows:	
	Ratio < 0.8:	negative
	Ratio ≥0.8 to <1.1:	borderline
	Ratio ≥1.1:	positive
Sample dilution	Feline serum or plasma, 1:101 in sample buffer	
Reagents	Ready for use, with the exception of the wash buffer (10x), colour-coded solutions	
Test procedure	30 min (37°C) / 30 min (37°C) / 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 no.	**EI 2410-9601 GF**	

Clinical significance

The sporozoon Toxoplasma gondii is the causative agent of the worldwide distributed zoonosis toxoplasmosis. The only final hosts are the domestic cat and other felidae, in the intestine of which oocysts develop in a sexual development stage. During asexual development, which can also take place in other warm-blooded animals and in birds, the Toxoplasma parasites develop in brain, muscle, liver, spleen and in other organs, where they become encapsulated. Humans are generally infected perorally by ingestion of water or food contaminated with oocysts (through the faeces of infected cats) or from meat products (the raw flesh of infected animals contains cysts with viable trophozoites).

Cats become infected primarily by ingestion of infected rodents or other raw meat, less frequently through ingested oocysts or by intrauterine infection. It could be shown that cerebral toxoplasma cysts cause behavioural changes in mice and rats, which increase the rodent's probability of getting caught by a cat. Toxoplasma infections in cats proceed asymptomatically in most cases. Especially connatally infected cats, however, often develop severe clinical symptoms, from which they die. Proliferation of the parasite in the intestine of the host can lead to diarrhoea. The infection of extraintestinal tissue frequently affects the lungs, liver, CNS, pancreas or eyes. In this case, the cats present with lethargy, anorexia, fever, icterus, dyspnoea, ataxia or uveitis.

Alongside the clinical relevance for cats, toxoplasmosis is an important zoonosis. After primary infection or reactivation of a latent infection (e.g. by immunosuppresion or reinfection), infected cats excrete oocysts with their faeces for 1 to 3 weeks. These become infectious after 2 to 4 days in the environment and can perorally infect humans or warm-blooded animals. Postnatal infection is often symptom-free. However, in immunosuppressed individuals the parasites can cause severe infections, such as encephalitides in AIDS patients, even after reactivation. In pregnant women and warm-blooded animals toxoplasma can be transmitted via the placenta to the foetus. Intrauterine infection can result in abortion, malformation and other damage to the newborn, depending on the time and dose of infection and the immune status of mother and foetus.

Diagnostic application

The detection of toxoplasma oocysts in faeces is rarely successful due to the short period of oocyst secretion. Additionally, the oocysts cannot be distinguished from Hammondia or Besnoitia oocysts based on their morphology. The PCR methods which have been established during recent years are much more sensitive than flotation and microscopy and they allow differentiation of oocyst types in stool. The detection of specific antibodies in serum or plasma using IIFT, ELISA or agglutination assay is an important diagnostic tool. A positive IgG antibody result indicates an infection. Due to the use of a specific lysate, the Anti-Toxoplasma gondii ELISA Cat (IgG) has a very high sensitivity, at a high specificity.

Reproducibility

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

	Intra-assay variation, n = 20		Inter-assay variation, n = 4 x 6	
Serum	Mean value (ratio)	CV (%)	Mean value (ratio)	CV (%)
1	0.8	4.4	1.0	14.2
2	4.1	2.3	4.8	11.3
3	6.3	3.1	6.8	10.2

Sensitivity and specificity

The sensitivity and specificity were determined by investigating 200 randomly selected feline sera with the EUROIMMUN Anti-Toxoplasma gondii ELISA Cat (IgG) and a commercial IIFT, approved in Germany. The results were compared. The sensitivity and specificity both amounted to 100 %.

n = 200		Anti-Toxoplasma gondii IIFT Cat (IgG) FLI-B 567*		
		positive	borderline	negative
EUROIMMUN Anti-Toxoplasma gondii ELISA Cat (IgG)	positive	43	0	0
	borderline	0	0	0
	negative	0	0	157

*Approved in accordance with § 17 c TierSG (Approval no.: FLI-B 567).

Literature

1. Dubey JP, Ferreira LR, Martins J, Jones JL. Sporulation and survival of Toxoplasma gondii oocysts in different types of commercial cat litter. J Parasitol (2011) 751-754.
2. Dubey JP, Jones JL. Toxoplasma gondii infection in humans and animals in the United States. Int J Parasitol (2008) 1257-1278.
3. Elmore SA, Jones JL, Conrad PA, Patton S, Lindsay DS, Dubey JP. Toxoplasma gondii: epidemiology, feline clinical aspects, and prevention. Trends Parasitol (2010) 190-196.
4. Lappin MR. Update on the diagnosis and management of Toxoplasma gondii infection in cats. Top Companion Anim Med (2010) 136-141.
5. Lindsay SA, Barrs VR, Child G, Beatty JA, Krockenberger MB. Myelitis due to reactivated spinal toxoplasmosis in a cat. J Feline Med Surg (2010) 818-821.
6. Salant H, Spira DT, Hamburger J. A comparative analysis of coprologic diagnostic methods for detection of Toxoplasma gondii in cats. Am J Trop Med Hyg (2010) 865-870.
7. Vyas A, Kim SK, Giacomini N, Boothroyd JC, Sapolsky RM. Behavioral changes induced by Toxoplasma infection of rodents are highly specific to aversion of cat odors. Proc Natl Acad Sci U S A (2007) 6442-6447.