Anti-Echinococcus ELISA (IgG)

- **Semiquantitative determination of alveolar and cystic echinococcosis**
- **Ideal supplement to imaging diagnostics**
- **Fully automated processing and evaluation**

Technical data

Antigen	Native, purified Echinococcus multilocularis vesicle fluid (EmVF)
Calibration	Semiquantitative, calculation of a ratio from the extinction of the sample and extinction of the calibrator
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.
Result interpretation	EUROIMMUN recommends interpreting results as follows: Ratio < 0.8: negative Ratio ≥ 0.8 to < 1.1: borderline Ratio ≥ 1.1: positive
Test procedure	60 min (37 °C) / 30 min (37 °C) / 30 min (room temperature), fully automatable
Measurement	450 nm, reference wavelength between 620 and 650 nm.
Test kit format	96 break-off wells; kit includes all necessary reagents.
Order number	**EI 2320-9601-1 G**

Clinical significance

Echinococcosis is an infectious disease caused by parasites of the genus Echinococcus. In Europe, mostly the dog tapeworm (E. granulosus), causing cystic echinococcosis (CE), and the fox tapeworm (E. multilocularis), causing alveolar echinococcosis (AE), are important from the medical point of view.

Infections in humans proceed asymptomatically until they manifest by cholestatic icterus, epigastric pains, fatigue, weight loss and hepatomegaly after 10 to 15 years. Due to the compression and destruction of the healthy liver tissue, untreated echinococcosis may lead to the death of the patient. Differential diagnosis from cysts, malignant and benignant tumours and abscesses, and distinction between AE and CE are essential.

Diagnostic application

For the diagnosis of echinococcosis, imaging procedures such as sonography, CT and MRT are used. The Anti-Echinococcus ELISA (IgG) for the detection of parasite-specific antibodies in serum is a useful supplement to the clinical and imaging diagnosis of CE and AE. The serological differentiation of E. granulosus and E. multilocularis is in many cases possible owing to the use of species-specific antigens. This Anti-Echinococcus ELISA (IgG) detects both species and serves as a screening test. Molecular detection methods (PCR for the detection of Echinococcus DNA and RNA) have not proven successful.

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Reference range

The levels of the anti-Echinococcus antibodies (IgG) were analysed with this EUROIMMUN ELISA in a panel of 500 healthy blood donors. With a cut-off of ratio of 1.0 RU/ml, 0.6 % of the blood donors were anti-Echinococcus positive.

Reproducibility

The reproducibility of the test was investigated by determining the intra- and inter-assay coefficients of variation using 4 sera. The intra-assay CVs are based on 20 determinations and the inter-assay CVs on 3 determinations performed in 10 different test runs.

	Intra-assay variation, n = 20		Inter-assay variation, n = 3 x 10	
Serum	Mean value (ratio)	CV (%)	Mean value (ratio)	CV (%)
1	0.6	7.6	0.6	8.4
2	1.4	3.6	1.3	6.6
3	2.0	2.2	1.9	6.1
4	2.9	3.5	2.8	5.2

Sensitivity and specificity

100 precharacterised patient samples (origin: National Centre for Infectious and Parasite Diseases, Sofia, Bulgaria) were investigated with the EUROIMMUN Anti-Echinococcus ELISA (IgG). The sensitivity of the ELISA with respect to IIFT was 96 %, with a specificity of 96 %. Borderline results were not included in the calculation.

n = 100		Precharacterisation		
		positive	borderline	negative
EUROIMMUN Anti-Echinococcus ELISA (IgG)	positive	42	0	2
	borderline	6	0	3
	negative	2	0	45

Agreement with quality assessment results

46 clinically precharacterised patient sera from quality assessment schemes (INSTAND e.V., Germany; NEQAS, UK and RfB, Germany) were investigated with the EUROIMMUN Anti-Echinococcus ELISA (IgG). The results showed an agreement of 100 % with the clinical characterisation.

n = 46		Specification of the quality assessment		
		positive	borderline	negative
EUROIMMUN Anti-Echinococcus ELISA (IgG)	positive	16	0	0
	borderline	0	0	0
	negative	0	0	30

Cross reactivity

178 serum samples from patients with parasitic infectious diseases, different autoimmune diseases, heterophile antibodies or an acute EBV infection were investigated using the Anti-Echinococcus ELISA (IgG). A total of 6 out of the 178 sera tested positive. Consequently, the specificity of the Anti-Echinococcus ELISA (IgG) amounted to 97%.

Potential interfering factors	n	Cross reactivity Anti-Echinococcus ELISA (IgG)	Potential interfering factors	n	Cross reactivity Anti-Echinococcus ELISA (IgG)
Various ANA	34	0%	**Anti-Toxocara canis**	10	0%
Rheumatoid factor	37	5,4%	**Anti-Toxoplasma gondii**	10	0%
Anti-Ascaris lumbricoides	10	10%	**Anti-Trichinella spiralis**	10	10%
Anti-Giardia lambia	10	0%	**Anti-Trichomonas vaginalis**	10	10%
Anti-Opisthorchis viverrini	10	0%	**Anti-Trypanosoma cruzi**	10	0%
Anti-Plasmodium	10	10%	**EBV**	7	0%
Anti-Schistosoma mansoni	10	0%			

Literature

1. Eckert J, et al (Edited by) WHO/OIE. **Manual on Echinococcosis in Humans and Animals: a Public Health Problem of Global Concern.** Office International des Epizooties (OIE) Paris (2002) I-XVII, 1-286.
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