



Anti-Echinococcus EUROLINE-WB (IgG)



- Confirmation of the results obtained with serological screening tests (ELISA)
- Combination of full antigen extract and selected specific single antigens
- Allows the differentiation between infections with *E. granulosus* and *E. multilocularis*

Technical data

Antigen	Full lysate of <i>Echinococcus</i> plus the antigens Em95, Em18, EgAgB
Sample dilution	Serum or plasma, 1 : 51 in universal buffer
Test procedure	30 min / 30 min / 10 min (sample/conjugate/substrate incubation), room temperature, fully automatable
Test kit format	16 membrane strips; kit includes all necessary reagents
Automation	Compatible with the EUROBlotOne or EUROBlotMaster from EUROIMMUN; the evaluation is performed using the EUROLineScan software.
Order no.	DY 2321-1601-1 G, DY 2321-4801-1 G

Clinical significance

Echinococcosis is an infectious disease caused by parasites of the genus *Echinococcus*. The diagnostically most relevant pathogenic agents in Europe are the dog tapeworm (*E. granulosus*) causing cystic echinococcosis (CE) and the fox tapeworm (*E. multilocularis*) causing alveolar echinococcosis (AE).

In humans both infections proceed asymptotically over many years until they manifest themselves by jaundice, epigastric pains, fatigue, weight loss and hepatomegaly after 10 to 15 years. Due to the compression and destruction of healthy liver tissue, untreated echinococcosis can be fatal. In differential diagnostics cysts, malignant and benign tumours, abscesses and the discrimination between AE and CE are most important.

Initially, imaging techniques such as sonography, CT and MRT are used for diagnosis. Serological test systems for the detection of parasite-specific antibodies in serum or plasma help to confirm the previously obtained imaging results. Echinococcosis can be diagnosed with good sensitivity by means of ELISA and IIFT based on the full antigen of *Echinococcus*.

Diagnostic application

The Anti-Echinococcus EUROLINE-WB (IgG) is suited for the confirmation of results from serological screening tests (IHA, IIFT, ELISA) for the determination of *Echinococcus*-specific antibodies. The full lysate used on the blot strips ensures that all antigens relevant for the determination are present. In many cases, the additionally and separately applied single antigens (EUROLINE membrane chips) allow the differentiation between cystic and alveolar echinococcosis caused by *E. granulosus* and *E. multilocularis*, respectively. The antigens Em18 and Em95 are specific for *E. multilocularis*. For a small number of cases, a clear discrimination between dog and fox tapeworm infection is not possible because the resulting band pattern does not allow a definite allocation to one of the species.

*Patented by EUROIMMUN in Europe for the serological diagnosis of Echinococcus infections (European Patent EP3156798).

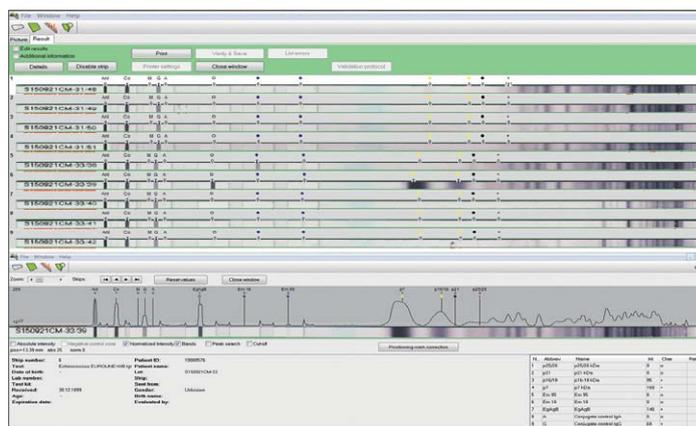


Test principle

The test kit contains test strips with electrophoretically separated antigen extract of *Echinococcus*. In addition to the species-specific proteins p7, p16/18 and others, this extract also contains the antigen 21, which has been patented by EUROIMMUN in Europe for the serological diagnosis of *Echinococcus* infections (European Patent EP3156798). Each test strip contains additional membrane chips with the biochemically produced antigens Em18, Em95 and EgAgB. In the first reaction step, the blot strips are incubated with diluted patient samples. In the case of positive samples, specific antibodies of the class IgG (and IgA, IgM) will bind to the antigens. To detect the bound antibodies, a second incubation is carried out using an enzyme-labelled anti-human IgG (enzyme conjugate), which is capable of promoting a colour reaction.

Automatic processing

EUROBlotOne is a fully automatic device for the standardised processing of EUROIMMUN line assays (EUROLINE, EUROLINE-WB, Westernblot) – from sample recognition to the final test result. Samples are pipetted by the device and all incubation and washing steps are carried out automatically. Finally the data of the pictures taken by the integrated camera are automatically evaluated and digitally archived by the EURO-LineScan software. Alternatively, the immunoblot strips can be incubated by the EUROBlotMaster and scanned using a flatbed scanner. Also in this case, the automatic evaluation is carried out by the EUROLineScan software. The bidirectional communication with a laboratory information management system for import of work lists and export of results is enabled by EURO-LineScan or, optionally, the laboratory management software EUROLabOffice 4.0. A separate results sheet can be produced for each sample.



Sensitivity and specificity

A cohort of 107 defined patient samples with positive *Echinococcus* results and a control panel with serum samples from 50 healthy blood donors and 50 tumour patients were analysed using the Anti-Echinococcus EUROLINE-WB (IgG) (origin of samples: Institute for Parasitology, University of Bern, Switzerland). The Anti-Echinococcus EUROLINE-WB (IgG) has a specificity of 100% and a sensitivity of 93%.

80 of the 99 samples positive for *Echinococcus* in the Anti-Echinococcus EUROLINE-WB (IgG) could be further differentiated. Thus, the rate of differentiation between *E. granulosus* and *E. multilocularis* is 81%.

n = 207		Characterisation by Institute for Parasitology	
		positive	negative
EUROIMMUN Anti-Echinococcus EUROLINE-WB (IgG)	positive	99	0
	negative	8	100

<i>Echinococcus</i> IgG-positive (n=99)	Number
<i>Echinococcus granulosus</i>	47
<i>Echinococcus multilocularis</i>	33
No differentiation possible	19

Literature

- Eckert J, et al. **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.
- Gottstein B, et al. **Echinococcus metacestode: in search of viability markers.** Parasite 21:63 (2014).
- Moro P, et al. **Echinococcosis: a review.** Int J Infect Dis 13(2):125-33 (2009).
- El Zayyat EA, et al. **Human cystic echinococcosis: diagnostic value of different antigenic fractions of hydatid cyst fluid with different specific immunoglobulin G subclasses by enzyme linked immunoelectrotransfer blot.** J Egypt Soc Parasitol 29(3):817-30 (1999).