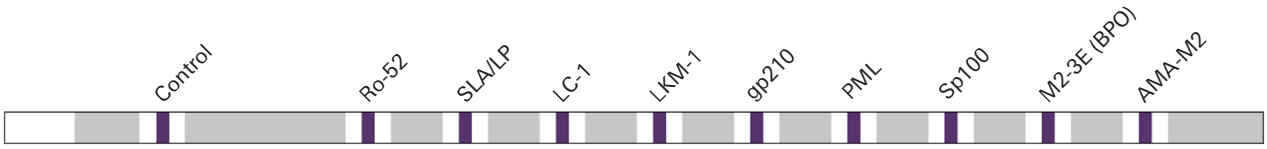
EUROLINE Autoimmune Liver Diseases (IgG)



- **Supports the diagnosis of autoimmune hepatitis (AIH) and primary biliary cholangitis (PBC)**
- **Automated analysis of nine different antibodies relevant for AIH and PBC**
- **Enables secure identification of PBC/AIH overlap syndrome**

Technical data

Antigens	**AMA-M2**: native M2 antigen, main component: E2 subunit (74 kDa) of pyruvate dehydrogenase complex (PDH); **M2-3E (BPO)**: recombinant fusion protein of the immunogenic regions of the E2 subunit of the three enzyme complexes of M2 antigen: branched-chained oxoglutarate dehydrogenase (**B**COADH), **P**DH and oxoglutarate dehydrogenase (**O**GDH); **Sp100**: recombinant speckled protein (100 kDa); **PML**: recombinant pro-myelocytic leukaemia protein; **gp210**: recombinant glycoprotein (210 kDa); **LKM-1**: recombinant cytochrome P450 IID6; **LC-1**: recombinant formiminotransferase cyclodeaminase; **SLA/LP**: recombinant UGA-suppressor-tRNA-associated protein; **Ro-52**: recombinant Ro-52 protein (52 kDa)
Sample dilution	Serum or plasma, 1 : 101 in sample buffer
Test procedure	30 min / 30 min / 10 min (sample / conjugate / substrate incubation), room temperature, fully automatable
Test kit format	16, 50 or 64 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 number	**DL 1300-1601-4 G (16 strips), DL 1300-6401-4 G (64 strips) or DL 1300-5001-4 G Immunoblot-PreQ (pre-equipped individual channels, 50 strips)***

Clinical significance

The prevalence of **autoimmune hepatitis (AIH)** is reported to be 10 to 20 cases per 100,000 persons and is characterised by female predominance (> 75 %). The incidence of AIH in western Europe is 1.9 cases per 100,000 inhabitants per year. Untreated, AIH soon proceeds to liver cirrhosis; hepatocellular carcinoma can also develop. With early and consequent life-long therapy based on low-dosed immunosuppressives, up to 90 % of patients have a normal life expectancy. For around 10 % of patients, liver transplant constitutes the last therapeutic option. **Primary biliary cholangitis (PBC)** is a chronic, non-purulent, destructive cholangitis with progressive destruction of the small bile ducts. In Germany, the prevalence amounts to around 3 to 4 cases per 100,000 persons and, in 80 to 90 %, women between 20 and 60 years of age are affected. In the final stage of PBC, decompensated liver cirrhosis, only liver transplantation will save the patient's life. 75 % of the PBC patients are healed by liver transplantation; in the remaining patients, a slowly progressing relapse develops.

The **EUROLINE Autoimmune Liver Diseases (IgG)** enables automated analysis of nine different autoantibodies relevant for AIH and PBC on a single test strip. Moreover, it allows identification of a PBC/AIH overlap syndrome, which is characterised by the simultaneous presence of AIH- and PBC-specific autoantibodies.

Autoantibodies against soluble liver antigen/liver pancreas antigen (SLA/LP) have the highest diagnostic accuracy for **AIH**. Due to their low prevalence, however, detection of other autoantibodies is indispensable in most suspected cases of AIH. These include autoantibodies against cell nuclei (anti-nuclear antibodies, ANA), granulocytes (perinuclear antineutrophil cytoplasmic antibodies, p-ANCA), double-stranded DNA (dsDNA), liver kidney microsomes (LKM-1), cytosolic liver antigen type 1 (LC-1) and smooth muscle (anti-smooth muscle antibodies, ASMA, with the most important target antigen F-actin), most of which can be detected using this EUROLINE. ASMA occur in most AIH patients, but can only be detected with high specificity in the IIFT. In order to securely diagnose **PBC**, two of the following three criteria must be met: biochemical markers of cholestasis, PBC-typic histological characteristics in a liver biopsy or PBC-specific autoantibodies, especially autoantibodies against the M2 component of mitochondria (AMA-M2). Moreover, the additional determination of ANA Sp100 and PML, as well as of autoantibodies against the nuclear membrane component gp210 is recommended. In order to secure the diagnosis of **autoimmune liver disease**, viral and toxic hepatitides as well as metabolic or hereditary liver diseases must be excluded.

* Compatible only with the EUROBlotOne

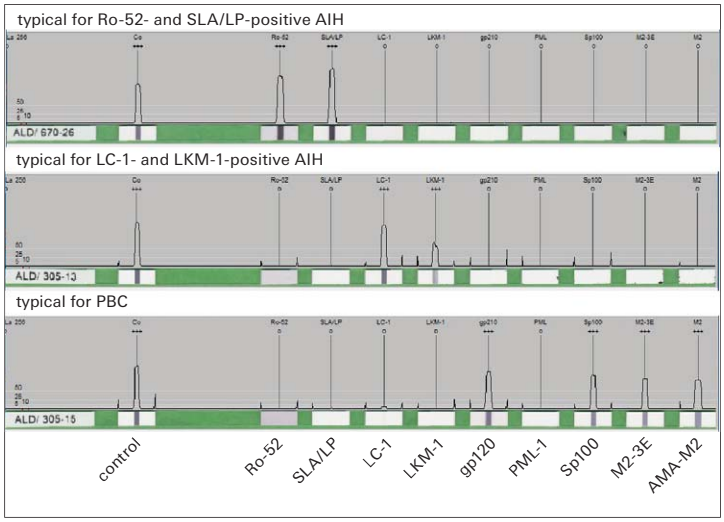
EUROIMMUN Medizinische Labordiagnostika AG · Seekamp 31 · 23560 Lübeck (Germany) · Phone: +49 451 2032-0 · www.euroimmun.com

Test principle

The test kit contains test strips coated with parallel lines of highly purified antigens. In the first reaction step, diluted patient samples are incubated with the immunoblot strips. 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 enzyme-labelled antibodies of class IgG (enzyme conjugate), which promote a colour reaction upon addition of the substrate solution. Correct performance of all test steps is confirmed by staining of several control bands.

Automated 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 EUROLineScan 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 EUROLineScan or, optionally, the laboratory management software EUROLabOffice 4.0. A separate results sheet can be produced for each sample.



Sensitivity and specificity

Sera from 170 patients with clinically characterised PBC, 49 sera from patients with AIH, 200 sera from patients with viral hepatitis (HBV and HCV) and 50 sera from healthy blood donors were investigated for autoantibodies against AMA-M2, M2-3E, Sp100, PML and gp210. In 94% of PBC sera, autoantibodies against at least one of the antigens could be detected. Consequently, the sensitivity of all antigens together amounts to 94% for PBC. The specificity for PBC compared to healthy blood donors amounts to 100%. If the viral hepatitis panel is taken into account, the specificity still amounts to 99%.

Autoantibodies against Ro-52 are not specific for the disease and can be found in sera from patients with AIH, myositis, scleroderma and other collagenoses.

Panel	AMA-M2	M2-3E (BPO)	AMA-M2/M2-3E (BPO)	Sp100	PML	Sp100/PML	gp210	Total
PBC (n = 170)	138 (81%)	146 86%	150 (88%)	35 (21%)	22 (13%)	40 (24%)	45 (26%)	159 (94%)
AIH (n = 49)*	4 (8%)	2 4%	4 (8%)	2 (4%)	2 (4%)	2 (4%)	2 (4%)	6 (12%)
Viral hepatitis (n = 200)	0	0	0	0	1 (1%)	1 (1%)	1 (1%)	2 (1%)
Blood donors (n = 50)	0	0	0	0	0	0	0	0

*4 patients of the panel were characterised as PBC/AIH overlap patients due to the study results.

Sera from 454 AIH patients from four international centres were investigated for autoantibodies against the SLA/LP antigen. The prevalence of these autoantibodies amounted to 5–19%, depending on the panel origin. Sera from 23 patients with anti-LKM-1-positive AIH (type II), 26 patients with PBC, 107 patients with other liver diseases and 50 healthy blood donors were tested for autoantibodies against liver-specific antigens. While autoantibodies against LKM-1 also occur in isolated cases of viral hepatitis, autoantibodies against the antigens SLA/LP and LC-1 both present a specificity of 100% for AIH and anti-LKM-1-positive AIH.

Panel	AMA-M2	LKM-1	LC-1	SLA/LP
PBC (n = 26)	24 (92%)	0	0	0
AIH (n = 454)	n. a.	n. a.	n. a.	5–19%
Anti-LKM-1-positive AIH (n = 23)	0	23 (100%)	6 (26%)	0
Viral hepatitis (n = 69)	0	5 (16%)	0	0
Toxic liver damage (n = 38)	1 (3%)	0	0	0
Blood donors (n = 50)	0	0	0	0

n. a. – not analysed

EUROIMMUN Medizinische Labordiagnostika AG · Seekamp 31 · 23560 Lübeck (Germany) · Phone: +49 451 2032-0 · www.euroimmun.com
DL_1300_D_UK_B04, 10/2022