

Yersinia sp.



Immunoenzymatic kits for the diagnostics of
Yersinia infections

ELISA and **IMMUNOBLOT** kits are optimized and validated for detection of specific IgA, IgG and IgM antibodies in human serum or plasma

INTRODUCTION

Yersinia are pathogenic gram-negative bacteria of the *Enterobacteriaceae* family and their representatives *Y. enterocolitica* and *Y. pseudotuberculosis* are known as human enteropathogens. The carriers are latently infected warm-blooded animals. The infection occurs orally after the ingestion of contaminated water or food.

The clinical signs of *Y. enterocolitica* and *Y. pseudotuberculosis* infection are very similar. Differences are mostly observed in intestinal complaints, pseudoappendicitis and sepsis. The most widespread *Y. enterocolitica* causes diarrhoea in humans, accompanied by diarrhoea of the small intestine, colon or appendix. It can also cause joint inflammation and enlargement of the lymph nodes. Complications such as acute reactive arthritis, erythema nodosum, acute glomerulonephritis and myocarditis may develop during the infection.

Arthritis can sometimes develop into a chronic and incurable form. Reactive arthritis is often associated with erythema nodosum, especially in women. Skin symptoms appear about 1-6 weeks after the infection. In some cases, *Y. enterocolitica* may also persist for years in the intestinal mucosa and in the lymphatic tissues.

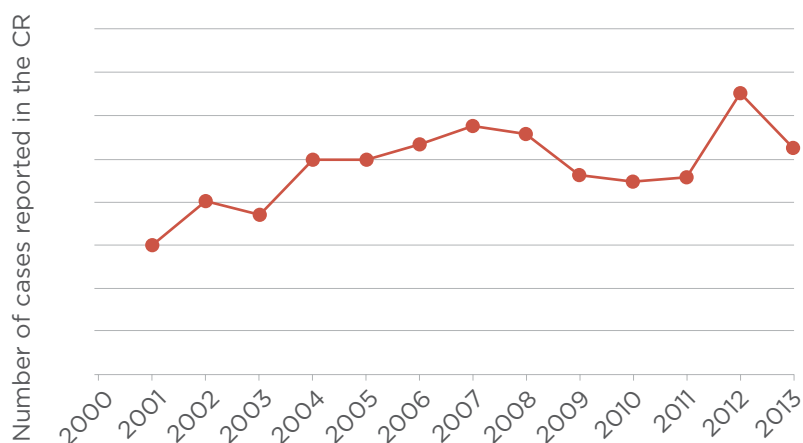
ANTIBODY RESPONSE

IgA, IgG and IgM antibodies can be detected in the initial phase after contact with virulent *Yersinia* factors. IgA and IgM titres will decrease after several months.

IgG class antibodies persist longer and can be detected in serum for longer than one year. In chronic forms of the disease and immunopathological complications, the decrease in IgA antibodies may be slower and they may completely disappear only after several years. IgG antibodies may persist in some cases throughout the life.

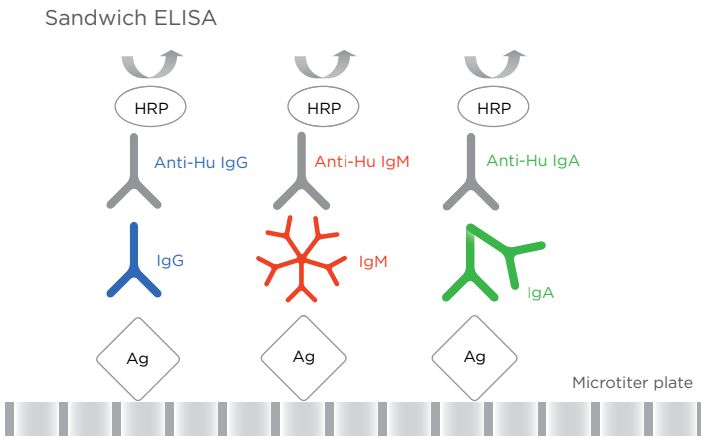
PREVALENCE

Yersinosis is the third most common bacterial food disease after salmonellosis and campylobacteriosis, and the fourth the most common zoonosis in many European countries (EFSA 2013).



ELISA

TEST PRINCIPLE



SUMMARY PROTOCOL

Step	Test steps
1	Dilution of samples • serum/plasma 1:101 (10 µl + 1 ml)
2	Pipette Controls and diluted samples 100 µl • Including blank
3	Incubate 30 minutes at 37 °C
4	Aspirate and wash the wells 5 times
5	Add Conjugate 100 µl • Including blank
6	Incubate 30 minutes at 37 °C
7	Aspirate and wash the wells 5 times
8	Add 100 µl Substrate (TMB-Complete) • Including blank
9	Incubate 30 minutes at 37 °C
10	Add 100 µl Stopping solution • Including blank
11	Read colour intensity at 450 nm

ANTIGENS

Mixture of highly specific recombinant antigens.

CLINICAL APPLICATION

- ▶ Screening tests for detection of yersinia infection in humans
- ▶ Diagnostics of the disease phase by significant increase or decrease of antibodies

USER COMFORT

- ▶ Ready-to-use components
- ▶ Colour-coded components
- ▶ Interchangeable components
- ▶ Breakable colour-coded microplate strips
- ▶ CUT-OFF and calibrators included
- ▶ Semiquantitative evaluation of results (Index of Positivity) or quantitative evaluation of results (IU/ml)

ADVANTAGES

- ▶ High diagnostic specificity and sensitivity
- ▶ High reproducibility
- ▶ High dynamics of antibody response
- ▶ Identical assay procedure
- ▶ Short total assay time
- ▶ Ready for automation
- ▶ Customer support

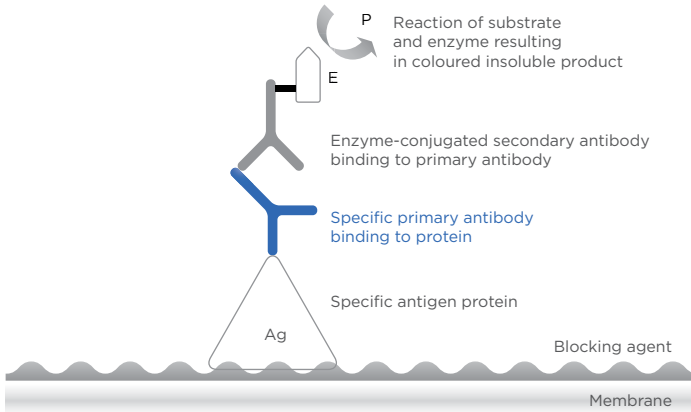
TEST CHARACTERISTICS

ELISA	Diagnostic Sensitivity	Diagnostic Specificity
Yersinia IgA	90.0%	99.9%
Yersinia IgG	94.2%	90.0%
Yersinia IgM	90.0%	95.0%

IMMUNOBLOT

TEST PRINCIPLE

Recombinant antigens are transferred to a nitrocellulose membrane using a micro-dispensing method.



CLINICAL APPLICATION

- ▶ Detailed determination for the presence of *anti-Yersinia* sp. specific antibodies
- ▶ Confirmation of ambiguous results
- ▶ Confirmation for ELISA tests

USER COMFORT

- ▶ Ready-to-use components
- ▶ Colour-coded strips
- ▶ Positive and Negative controls
- ▶ Interchangeable components
- ▶ Control line is present on the strip
- ▶ Possibility of software evaluation

SUMMARY PROTOCOL

Step	Test steps
1	▶ Pipette Universal solution 2.5 ml
2	▶ Strips soaking 10 min. at room temperature • Shaker
3	▶ Aspirate
4	▶ Dilute samples • serum/plasma 1:51 (30 µl + 1,5 ml)
5	▶ Pipette Controls and diluted samples 1.5 ml
6	▶ Incubate 30 min. at room temperature • Shaker
7	▶ Aspirate samples and wash strips with 1.5 ml of Universal solution 3-times for 5 min. • Shaker
8	▶ Pipette Conjugate 1.5 ml
9	▶ Incubate 30 min. at room temperature • Shaker
10	▶ Aspirate Conjugate and wash strips with 1.5 ml of Universal solution 3-times for 5 min. • Shaker
11	▶ Pipette Substrate solution (BCIP/NBT) 1.5 ml
12	▶ Incubate 15 min. at room temperature • Shaker
13	▶ Aspirate Substrate solution and wash strips with 2 ml of distilled water 2-times for 5 min. • Shaker
14	▶ Sticking and evaluation of strips

TEST CHARACTERISTICS

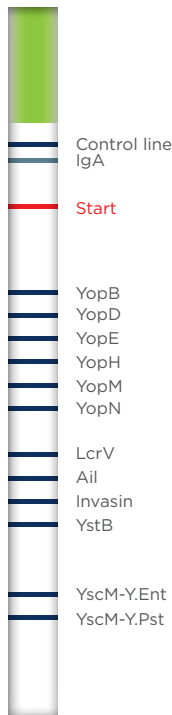
Pathogen	Diagnostic Sensitivity	Diagnostic Specificity
Yersinia IgA	94.2%	93.9%
Yersinia IgG	97.8%	93.9%
Yersinia IgM	90.0%	95.5%

ADVANTAGES

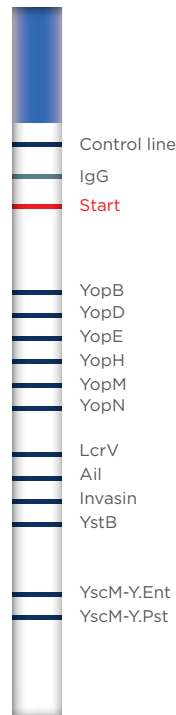
- ▶ Identical assay procedure
- ▶ Easy interpretation and reproducibility of results
- ▶ Sophisticated evaluation software
- ▶ High diagnostic efficiency
- ▶ Ready for automation
- ▶ Customer support

ANTIGENS

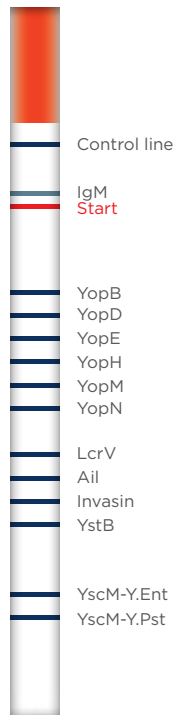
BLOT-LINE YERSINIA IgA



BLOT-LINE YERSINIA IgG



BLOT-LINE YERSINIA IgM



- YopB** - YopB Yersinia outer protein, transmembrane protein
- YopD** - Yersinia outer protein, transmembrane protein
- YopE** - Yersinia outer protein
- YopH** - Yersinia outer protein
- YopM** - Yersinia outer protein
- YopN** - Yersinia outer protein
- LcrV** - Low calcium response Virulence, important for YopD a YopB secretion
- Ail** - Attachment-invasion locus protein early phase, involved in the adhesion and invasion process, and allows yersinia to survive outside the host cell, a significant virulence factor
- Invasin** - surface adhesin that binds to $\beta 1$ integrins on the surface of target cells and is important particularly in the first stage of infection, a virulence factor
- YstB** - heat-stable enterotoxin B, responsible for the virulence and pathogenicity of *Y. Enterocolitica* strains, biotype 1A
- YscM-Y.ent** - Yop proteins translocation protein M (specific for *Y. enterocolitica*)
- YscM-Y.pst** - Yop proteins translocation protein M (specific for *Y. pseudotuberculosis*)

INTERPRETATION OF RESULTS

IgG	IgA	IgM	Interpretation
-	-	-	Negative result.
-	- / +	+	Eventual incipient infection. In order to confirm the results it is necessary to repeat the tests.
+	-	-	Persistent IgG antibodies after previous infection.
+	border line/low +	-	Previous infection. Beginning of reinfection.
+	++	-	On-going infection. (IgM not necessarily produced) Repeated infection. Chronic infection. (Chronicity confirmed by tests repeated after the 1st and 3rd months; occurrence of clinical symptoms)
+	+	+	On-going infection.

ORDERING INFORMATION

ELISA

Cat. No.	Product	No. of Tests
YA0096	EIA Yersinia enterocolitica IgA	96
YG0096	EIA Yersinia enterocolitica IgG	96
YM0096	EIA Yersinia enterocolitica IgM	96
SK-YA0096	SmartEIA Yersinia enterocolitica IgA	96
SK-YG0096	SmartEIA Yersinia enterocolitica IgG	96
SK-YM0096	SmartEIA Yersinia enterocolitica IgM	96

SmartEIA kits are designed for automated processing using the Agility® analyser.

IMMUNOBLOT

Cat. No.	Product	No. of Tests
YAL020	BLOT-LINE Yersinia IgA	20
YGL020	BLOT-LINE Yersinia IgG	20
YML020	BLOT-LINE Yersinia IgM	20

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Company is certified to the quality management system standards ISO 9001 and ISO 13485 for in vitro diagnostics.

