



# Evaluation of cell culture antigen and recombinant antigen diagnostic efficiency for TORCH infection

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## Objective

Recombinant antigens and cell culture antigens are widely used for anti-TORCH antibody detection. The aim of the study was comparison of recombinant and cell culture antigens for TORCH infection diagnostics.

## Methods

75 samples from Anti-Rubella, Anti-CMV, Anti-Herpes Simplex Virus Mixed Titer Performance Panels, BBI, US; 24 samples from ToRCH Mixed Titer Panel, Zeptomatrix, US; 20 commercial available specimens from patients with acute Toxoplasma infection (VIRO-IMMUN, Germany and Aalto, Finland); 20 specimens from patients with confirmed Toxoplasma infection, Children's Hospital, Russia; 20 specimens from blood donors, blood bank, Russia were tested.

The detection of antibody was based on an indirect EIA method using a *E.coli* derived recombinant antigens from RPC Diagnostic Systems, Russia: HSV-1 gD region 266-394aa; HSV-1 gG region 84-175aa; CMV Pp38 region 117-373aa; CMV Pp150 region 1011-1048aa; CMV gB regions; CMV Pp52 region 202-434aa; CMV Pp28 region 130-160aa; *Toxoplasma gondii* MIC 3 region 234-306aa; *Toxoplasma gondii* P30 region 45-198aa; or Cell culture antigens from Serion Immunologics, German: VERO Cell Line HSV antigen; VERO Cell Line *Toxoplasma gondii* antigen; VERO Cell Line Rubella antigen; HEL 299 Cell culture CMV antigen.

## Results

Sensitivity and specificity of the tests for anti-Toxo, anti-CMV, anti-HSV1 IgG detection, based on recombinant antigens or Cell culture antigens were both close to 100%.

Sensitivity and specificity of the test for anti-Toxo IgM detection, based on recombinant Antigens were 25% and 80% respectively. Sensitivity and specificity of the test for anti-Toxo IgM detection, based on Cell culture antigen were 92% and 96% respectively.

Sensitivity and specificity of the test for anti-CMV IgM detection, based on recombinant antigens were 57% and 86% respectively. Sensitivity and specificity of the test for anti-CMV IgM detection, based on cell culture Antigen were both 100%.

Sensitivity and specificity of the test for anti-HSV IgM detection, based on recombinant antigens were 17% and 94% respectively. Sensitivity and specificity of the test for anti-HSV IgM detection, based on Cell culture Antigen were 83% and 100% respectively.

For anti-Rubella antibody detection it is strong necessary to use cell culture antigen or Virus-like particles. Sensitivity and specificity of the tests for anti-Rubella IgG and IgM detection were both 100%.

	Sensitivity of anti-Toxo IgG	Specificity of anti-Toxo IgG	Sensitivity of anti-Toxo IgM	Specificity of anti-Toxo IgM
anti-Toxo detection, based on recombinant Antigens	100%	100%	25%	80%
anti-Toxo detection, based on Cell culture antigen	100%	100%	92%	96%
	Sensitivity of anti-CMV IgG	Specificity of anti-CMV IgG	Sensitivity of anti-CMV IgM	Specificity of anti-CMV IgM
anti-CMV detection, based on recombinant Antigens	100%	100%	57%	86%
anti-CMV detection, based on Cell culture antigen	100%	100%	100%	100%
	Sensitivity of anti-HSV IgG	Specificity of anti-HSV IgG	Sensitivity of anti-HSV IgM	Specificity of anti-HSV IgM
anti-HSV detection, based on recombinant Antigens	100%	100%	17%	94%
anti-HSV detection, based on Cell culture antigen	100%	100%	83%	100%

## Conclusion

Linear immunodominant regions reproduced in recombinant antigens are enough for Torch IgG detection, but recombinant antigens incapable of reproducing native structure for IgM binding. Using of Cell culture antigens was found more preferably for acute TORCH infection diagnostics.