

ROSS RIVER VIRUS VIRCLIA® IgG MONOTEST

For *in vitro* diagnostic use

VCM069: Indirect chemiluminescent immunoassay (CLIA) to test IgG antibodies against Ross River Virus in human serum/plasma. 24 tests.

INTRODUCTION:

Ross River Virus (RRV) is an Alphavirus (Togaviridae family) endemic to Australia, Papua New Guinea and other islands on the Pacific. RRV is transmitted by mosquitoes including several species in the *Aedes* and *Culex* genera. Kangaroos and wallabies are thought to be the main animal reservoirs, although domestic and peridomestic animals can be involved in transmission in urban areas. Most common symptoms of RRV disease include fever, polyarthralgia and rash; yet, more than half of the infections are subclinical. Most patients recover within a few weeks, but some develop chronic disease that may last for months to years. The average incubation period is 7-9 days. Diagnosis is usually made via serology since viremia is rarely present at the onset of symptoms. Antibodies can be detected as early as 2-3 days after the onset of symptoms. Hemagglutination inhibition and neutralization methods can be used for serological diagnosis, but other methods that are capable of specifically detecting IgG or IgM responses, such as enzyme immunoassays, are preferred. Persistent IgM antibodies to RRV have been detected up to 2 years after the acute infection.

Detection methods based on chemiluminescence have received much attention due to their low background, linearity and wide dynamic range. When coupled to enzyme immunoassays, the signal amplification effect provided by the enzyme enables the design of CLIA (ChemiLuminescent ImmunoAssay) tests with shorter incubation times while keeping or improving their sensitivity.

PRINCIPLE OF THE TEST:

The CLIA method is based upon the reaction of antibodies in the sample tested with the antigen adsorbed on the polystyrene surface. Unbound immunoglobulins are washed off. An enzyme-labelled anti-human globulin binds the antigen-antibody complex in a second step. After a new washing step, bound conjugate is developed with the aid of a chemiluminescent substrate solution that will generate a glow-type luminescence that can be read with a luminometer.

KIT FEATURES:

All reagents supplied are ready to use.
Serum dilution solution and conjugate are coloured to help in the performance of the technique.
Sample predilution is not necessary.
Reagents required for the run of the test are included in the monodose presentation.

KIT CONTENTS:

1 VIRCLIA® ROSS RIVER VIRUS IgG MONODOSE: 24 monodoses consisting of 3 reaction wells and 5 reagent wells with the following composition:

Wells A, B, C: reaction wells; wells coated with RRV antigen (strain NCPV0005281v).

Well D: Conjugate: orange; containing anti-human IgG peroxidase conjugate dilution and Neolone and Bronidox as preservatives.

Well E: Serum dilution solution: blue; phosphate buffer containing protein stabilizers and Neolone and Bronidox as preservatives.

Well F: Calibrator: clear; positive serum dilution containing Neolone and Bronidox as preservative.

Well G: Substrate component B: clear; containing peroxide.

Well H: Substrate component A: clear; containing luminol.

Store at 2-8°C and check expiration date.

Materials required but not supplied:

-VIRCLIA® AUXILIARY REAGENTS (REF:VCMAR)

-Precision micropipettes 5 and 100 µl.

-Eight channel micropipette 100 µl.

-Adapted microplate washer.

-Thermostated incubator/water bath.

-Microplate luminometer.

-Alternatively, a CLIA automated processor.

STORAGE REQUIREMENTS:

Store at 2-8°C. Do not use the kit reagents beyond the expiration date. This will be valid only if reagents are stored, closed and at 2-8°C.

STORAGE OF REAGENTS ONCE OPENED:

Reagent	Stability
VIRCLIA® MONODOSE	Once opened, use it in the same day

STABILITY AND HANDLING OF REAGENTS:

Handle reagents in aseptic conditions to avoid microbial contaminations.

Do not let the plate dry between washing and reagent addition.

Substrate component A is light sensitive. Avoid light exposure. Substrate solutions should not get in contact with acid, combustible materials and strong oxidizing or reducing agents. Make sure that no metal components come in contact with the substrate without having previously tested their compatibility.

VIRCELL, S.L. does not accept responsibility for the mishandling of the reagents included in the kit.

RECOMMENDATIONS AND PRECAUTIONS:

1. For *in vitro* diagnosis use only. For professional use only.
2. Use kit components only. Do not mix components from different kits or manufacturers. Only components of the AUXILIARY REAGENTS kit are compatible with all VIRCLIA® references and lots.
3. Clean pipette tips must be used for every assay step. Use only clean, preferably disposable material.
4. Wear protective disposable gloves, laboratory coats and eye protection when handling specimens. Wash hands thoroughly after manipulating samples. Besides, follow all safety protocols in use in your laboratory.
5. Do not use in the event of damage to the package.
6. Never pipette by mouth.
7. Serum dilution solution, reaction wells, conjugates and calibrator in this kit include substances of animal origin. Calibrator includes as well substances of human origin. Although the human serum controls of this kit have been



tested and found negative for Hepatitis B Surface Antigen (HBsAg), Hepatitis C antibodies and Human Immunodeficiency Virus antibodies, control sera and patient specimens should be handled as potentially infectious. Reaction wells are coated with inactivated antigen. Nevertheless, they should be considered potentially infectious and handled with care. No present method can offer complete assurance that infectious agents are absent. All material should be handled and disposed as potentially infectious. Observe the local regulations for clinical waste disposal.

8. Do not use this product in automated processors unless they have been previously validated for that purpose.

SPECIMEN COLLECTION AND HANDLING:

Blood should be collected aseptically using venipuncture techniques by qualified personnel. Use of sterile or aseptic techniques will preserve the integrity of the specimen. Serum/plasma samples are to be refrigerated (2-8°C) upon collection or frozen (-20°C) if the test cannot be performed within 7 days. Samples should not be repeatedly frozen and thawed. Do not use hyperlipemic, hemolysed or contaminated samples. Samples containing particles should be clarified by centrifugation. The kit is suitable for use with serum or plasma.

PRELIMINARY PREPARATION OF THE REAGENTS:

All reagents supplied are ready to use.

Only the VIRCLIA® WASHING SOLUTION included in the auxiliary component kit VIRCLIA® AUXILIARY REAGENTS must be prepared in advance. Fill 50 ml of VIRCLIA® WASHING SOLUTION (20x) up to 1 litre with distilled water. Should salt crystals form in the washing concentrate during storage, warm the solution to 37°C before diluting. Once diluted, store at 2-8°C.

ASSAY PROCEDURE:

• AUTOMATED

1. Bring VIRCLIA® WASHING SOLUTION (diluted according to the instructions) to room temperature before use (approximately 1 hour).
2. Follow the Operator's Manual of the Automated Processor.

• MANUAL

Contact the manufacturer for further information on the manual procedure.

INTERNAL QUALITY CONTROL:

Each batch is subjected to internal quality control (Q.C.) testing before batch release complying with specifications stricter than validation protocol for users. Final Q.C. results for each particular lot are available.

The control material is traceable to reference sera panels internally validated.

VALIDATION PROTOCOL FOR USERS:

Each monodose includes one calibrator (well A) and one dilution of the calibrator used as negative control (well C). It allows the validation of the assay and kit.

RLU of the calibrator and the negative control must fall in the following ranges. Otherwise, the test is invalid and must be repeated.

Control	RLU
CALIBRATOR	2-7
NEGATIVE CONTROL	<2

INTERPRETATION OF RESULTS:

Antibody index= (sample RLU/calibrator RLU)

Index	Interpretation
<0.9	Negative
0.9-1.1	Equivocal
>1.1	Positive

Samples with equivocal results must be retested and/or a new sample obtained for confirmation.

Samples with indexes below 0.9 are considered as not having antibodies of the specificity and class measured by this kit. Samples with indexes above 1.1 are considered as having antibodies of the specificity and class measured by this kit.

LIMITATIONS:

1. This kit is intended to be used with human serum/plasma.
2. The user of this kit is advised to carefully read and understand the package insert. Strict adherence to the protocol is necessary to obtain reliable test results. In particular, correct sample and reagent pipetting, along with careful washing and timing of the incubation steps are essential for accurate results.
3. The results of samples should be used in conjunction with clinical evaluation and other diagnostic procedures. A definitive diagnosis should be made by isolation techniques.
4. This test will not indicate the site of infection. It is not intended to replace isolation.
5. Lack of significant rise in antibody level does not exclude the possibility of infection.
6. Samples collected very early in the course of an infection may not have detectable levels of IgG. In such cases, it is recommended an IgM assay be performed or a second serum sample be obtained 14 to 21 days later to be tested in parallel with the original sample to determine seroconversion.
7. Results in IgG detection in neonates must be interpreted with caution, since maternal IgG is transferred passively from the mother to the foetus before birth. IgM assays are generally more useful indicators of infection in children below 6 months of age.
8. The results of a single-specimen antibody determination should not be used to aid in the diagnosis of recent infection. Paired samples (acute and convalescent) should be collected and tested concurrently to look for seroconversion or a significant rise in antibody level.
9. The performance results showed correspond to comparative studies with commercial predicative devices in a defined population sample. Small differences can be found with different populations or different predicative devices.

PERFORMANCES:

• SENSITIVITY AND SPECIFICITY:

295 serum/plasma samples were assayed against a commercial ELISA kit. The results were as follows:

	Samples No.	Sensitivity (%)	Specificity (%)
IgG	295	95	98
95% C.I.		89-98	95-100

C.I. Confidence intervals

Indeterminate values were omitted from the final calculations.



• **INTRA-ASSAY PRECISION:**

3 sera were individually run 10 times each serum in a single automated assay in essentially unchanged conditions. The results were as follows:

Serum	N	% C.V.
Sample +	10	8
CAL	10	7
CN	10	13

C.V. Coefficient of variation

• **INTER-ASSAY PRECISION:**

3 sera were individually run on 5 consecutive days in 2 different automatic processors.

The results were as follows:

Serum	N	% C.V.
Sample +	10	8
CAL	10	6
CN	10	15

C.V. Coefficient of variation









• **CROSS REACTIVITY AND INTERFERENCES:**

85 samples known to be positive for other microorganisms (Toxoplasma, Zika, Chikungunya, Dengue, *Coxiella burnetii*, Borrelia, Epstein-Barr VCA virus, mumps) were assayed. 20 samples known to be positive for rheumatoid factor and antinuclear antibodies were assayed.

No cross-reactivity with Toxoplasma (10 samples tested), Zika (5 samples tested), Borrelia (6 samples tested), *Coxiella burnetii* (10 samples tested), Epstein-Barr VCA virus (10 samples tested), mumps (10 samples tested) and Dengue (7 samples tested) was found. Cross-reactivity with Chikungunya (1 from 7 samples) was found. No interferences with antinuclear antibodies (10 samples tested) were found. No interferences with rheumatoid factor (10 samples tested) were found.

No interferences were observed in 3 samples tested with haemolytic (max 8.5 g / L), lipemic (max 2 g / L of triglycerides), hypercholesterolemic (max 4 g / L) or bilirubin-containing (max 6 g / L) sera or plasma.

SYMBOLS USED IN LABELS:

	In vitro diagnostic medical device
	Use by (expiration date)
	Store at x-y°C
	Contains sufficient for <n> test
	Batch code
	Catalogue number
	Consult instructions for use
	<X> wells

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