



# RELATÓRIO TÉCNICO & CIENTÍFICO

## TESTE DE ATIVIDADE ANTIVIRAL CONTRA H1N1

QUASAR BIO APOIO À SAÚDE LTDA  
CNPJ: 37.702.406/0001-26  
[www.quasarbio.com](http://www.quasarbio.com)

São Paulo, September 03, 2021

**Research developer:**

Quasar Bio Apoio à Saúde Ltda  
CNPJ: 37.702.406/0001-26  
Address: Av. Escola Politécnica, s/n, Setor Cietec.  
CEP: 05350-000. Rio pequeno. São Paulo – SP

**Receives:**

Distribuidora Kroma SA de CV  
DKR 900301 AQ7  
Address: Autopista México Querétaro KM 33.5 No 104  
Lechería, Tultitlan, Edomex, México, CP 54940

**ANTIVIRAL ACTIVITY AGAINST H1N1 *in vitro*****1. Study Facility**

Department of Microbiology / *Departamento de Microbiologia*  
Institute of Biomedical Sciences / *Instituto de Ciências Biomédicas*  
University of São Paulo / *Universidade de São Paulo*  
São Paulo/SP – Brazil / *Brasil*

**2. Test Sample Description**

## Fabricant:

**Comercial Mexicana de Pinturas SA de CV**

## Products:

24370.1	Muestra 1. Pintura 1 (with antiviral technology) Vinimex Total Antiviral y Antibacterial
24370.13	Muestra 1. Pintura 1 (Blank)

**3. Tested virus**

**H1N1 (HU10680 H1N1 PAN, GenBank Accession No. DQ335993.1).** Clinical isolate of Influenza A H1N1.

#### 4. Abstract

An adaptation of ISO 21702<sup>1</sup> "Measurement of antiviral activity on plastics and other non-porous surfaces" was used as reference for a quantitative method to evaluate treated product ability to inactivate the H1N1 virus particles, in two different contact times. The sample "24370.13 - Muestra 1. Pintura 1 (Blank)", without antiviral finishing, was used as blank control, and the sample "24370.1 - Muestra 1. Pintura 1 (with antiviral technology) Vinimex Total Antiviral y Antibacterial", with antiviral finishing, was used as test sample.

#### 5. Methodology

The tests are carried out in the laboratory NB-2 (Biosafety Level 2), and following the methods described in the normative ISO 21702 "Measurement of antiviral activity on plastics and other non-porous surfaces". The genotyping procedure of the used H1N1 strain is made following the Roche RealTime Ready Influenza A/H1N1 Detection Set<sup>2</sup>. MDCK cells<sup>3</sup> (Madin-Darby Canine Kidney cells, catalog number CCIAL 068. Other collections: ATCC CCL-34. Instituto Adolfo Lutz) were used as host for viral infection and reproducibility. The TCID50 quantification method is calculated by the Spearman & Karber algorithm as described in Hierholzer e Killington (1996), Virology Methods Manual, p. 374.

The samples are described as follows:

- a) Positive Control - only the viral system, without the presence of samples;
- b) Blank Control - viral system with the presence of sample without the antiviral finishing;
- c) Test Sample - viral system with the presence of the treated sample to be analyzed;

---

<sup>1</sup>ISO 21702:2019. Measurement of antiviral activity on plastics and other non-porous surfaces <https://www.iso.org/standard/71365.html>

<sup>2</sup>Wenzel, J. J., Panning, M., Kaul, K. L., Mangold, K. A., Revell, P. A., Luna, R. A., Zepeda, H., Perea, L., Vazquez-Perez, J. A., Young, S., Rodic-Pollc, B., Eickmann, M., Drosten, C., Jllg, W., & Reischl, U. (2010). Analytical Performance Determination and Clinical Validation of the Novel Roche RealTime Ready Influenza A/H1N1 Detection Set. *Journal of Clinical Microbiology*, 48(9), 3088–3094. <https://doi.org/10.1128/jcm.00785-10>.

<sup>3</sup>Haass C, Koo EH, Capell A, Teplow DB, Selkoe DJ. Polarized sorting of beta-amyloid precursor protein and its proteolytic products in MDCK cells is regulated by two independent signals. *J Cell Biol*. 1995;128(4):537-547. doi:10.1083/jcb.128.4.537.

## TECHNICAL & SCIENTIFIC REPORT

The samples test conditions are described as shown in the following table:

Table 1. Experimental conditions

Identification	Description
Products	24370.13 - Muestra 1. Pintura 1 (Blank), 24370.1 - Muestra 1. Pintura 1 (with antiviral technology) Vinimex Total Antiviral y Antibacterial
Cell line	MDCK cells (Madin-Darby Canine Kidney cells)
Viral Strain	H1N1 (HU10680 H1N1 PAN, GenBank Accession No. DQ335993.1)
Temperature of incubation	37°C + 5% CO <sub>2</sub>
Contact times	10 min and 30 min
Test temperature (s)	20°C
Diluent used for product	Sterile distilled water
Medium for cell cultures	Dulbecco's modified Eagles medium + 2,5%/10% v/v fetal bovine serum

Quasar Bio Apoio à Saúde Ltda

CNPJ: 37.702.406/0001-26.

Av. Escola Politécnica, s/n, Setor Cietec, Rio pequeno,  
CEP: 05350-000, São Paulo – SP. [quasarbio@gmail.com](mailto:quasarbio@gmail.com)

[www.quasarbio.com](http://www.quasarbio.com)

## 6. Results

Table 2 shows the viral titer of the control media without sample, and the control titer of blank control and of the treated sample, in the contact time of 10 minutes and 30 minutes. With the result of the viral titer of each sample, the viral inactivation effect of each product is calculated, using the media without any sample as control.

Table 2. TCID<sub>50</sub> per mL of H1N1 at 10 minutes and 30 minutes of contact time.

Sample	Product	Contact Time	Temperature	Cytotoxic effect dilution	Viral Titer (TCID <sub>50</sub> /mL)	Log <sub>10</sub> Viral Titer Reduction <sup>(b)</sup> (TCID <sub>50</sub> /mL)	Viral Inactivation (%)
Positive Control	Viral suspension				6.67E+05	-	-
Test	Blank Control (24370.13)	10 min	20°C	NI <sup>(a)</sup>	2.11E+04	1.49	96.83%
	Test Sample (24370.1)			NI <sup>(a)</sup>	1.19E+01	4.74	99.99%
Positive Control	Viral suspension				6.67E+06	-	-
Test	Blank Control (24370.13)	30 min	20°C	NI <sup>(a)</sup>	2.11E+06	0.49	68.36%
	Test Sample (24370.1)			NI <sup>(a)</sup>	2.11E+03	3.49	99.96%

<sup>a</sup>Spearman & Karber, Hierholzer e Killington (1996), Virology Methods Manual, p. 374.

- (a) NI: Not Identified. No cytotoxicity identified.
- (b) The log<sub>10</sub> Viral Titer Reduction represents the difference between the logarithmic titer of the Positive Control and the logarithmic titer of the Test Sample.

Quasar Bio Apoio à Saúde Ltda

CNPJ: 37.702.406/0001-26.

Av. Escola Politécnica, s/n, Setor Cietec, Rio pequeno,  
CEP: 05350-000, São Paulo – SP. [quasarbio@gmail.com](mailto:quasarbio@gmail.com)

[www.quasarbio.com](http://www.quasarbio.com)

### 7. Conclusion

Fabricant:

**Comercial Mexicana de Pinturas SA de CV**

Products:


24370.1 Muestra 1. Pintura 1 (with antiviral technology) Vinimex Total Antiviral y Antibacterial  
24370.13 Muestra 1. Pintura 1 (Blank)

The product **24370.1 - Muestra 1. Pintura 1 (with antiviral technology) Vinimex Total Antiviral y Antibacterial**, as described above, was effective for the reduction of H1N1 viral particles by inactivation in the minimum percentage of:

- 99.99%, for the contact time of 10 minutes;
- 99.96%, for the contact time of 30 minutes;


São Paulo, September 03, 2021

Prepared and reviewed by:



Dr. Lúcio Freitas Junior  
Sócio e Responsável Técnico  
Quasar Bio Apoio À Saúde Ltda

Reviewed by:



Prof. Dr. Édison L. Durigon  
Professor Titular  
Instituto de Ciências Biomédicas II - USP