

Assessment of the Inactivation of Feline Calicivirus by SaniGuard

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Charles P. Gerba, Ph.D.

**Department of Soil, Water and Environmental Science
University of Arizona
Tucson, AZ 85721**

Purpose: To assess the ability of SaniGuard to inactivate norovirus on stainless steel surfaces. Feline calicivirus is used for a model for the human norovirus to assess disinfectants since the human norovirus does not grow in animal cell culture. Growth in animal cell culture is necessary to assess the infectivity of animal viruses.

Material and Methods: Feline calicivirus (strain F9) was grown and assayed in the Crandell Feline Kidney (CRFK). They were both obtained from the American Type Culture Collection (Rockville, MD). After 90% destruction of the cell monolayer the virus was released from the cells by three freeze thaws. The supernatant was centrifuged at 10,000 x g at 4⁰C to remove cell debris. Further purification and concentration was accomplished by polyethylene glycol precipitation as described by Thurston-Enriquez et al (2003).

The virus was added to the surface of one square inch square stainless steel coupons in 10 microliter drops and allowed to dry at room temperature for 30 minutes. A total of 0.5 mL was added to the coupon. The surface of the metal was then sprayed with

SaniGuard by holding the spray bottle 6 inches from the surface of the stainless steel for five seconds. The liquid was allowed to dry on the surface for 30 minutes. One coupon with the virus serves as a control and was not sprayed. The surface of the stainless steel was swabbed a transport swab to remove the virus and placed in one mL of Tris buffered saline (Sigma Chemical, Sigma Chemical, St. Louis, MO) containing 0.2 mL of D/E neutralizer.

Assay of the virus was done by inoculating cell monolayers in 24 well plastic plates with various dilutions of the sample (0.1 mL per well) and observing for the production of cytopathogenic effects (e.g. destruction of the cell monolayer). The virus concentration was calculated using the Reed-Muench (1938) formula and reported as TCID₅₀ (Tissue Culture Infectious Dose) using four wells per dilution All tests were performed in duplicate.

Results:

Sample	Titer TCID ₅₀	% Reduction
Applied Concentration	2.2 X 10 ⁷	-
Control – no spray	6.3 X 10 ⁵	-
Sprayed	3.3 X 10 ³	99.48

SaniGuard was capable of reducing the norovirus surrogate by at least 99% when used according to the manufacture's instructions.

References:

Thurston-Enriquez, J. A. et al 2003. Chlorine inactivation of adenovirus type 40 and feline calicivirus. *Appl. Environ. Microbial.* 69:3979-3985.

Reed, L. J. and H. Muench. 1938. A simple method of estimating fifty percent endpoints. *Am. J. Hygiene* 24:231-256.