Technical Bulletin

# Efficacy of Accelerated Hydrogen Peroxide®Disinfectant on Foot-and-Mouth Disease Virus, Swine Vesicular Disease Virus and Senecavirus A

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## ABSTRACT

**Since late 2014, vesicular disease linked to Senecavirus A (SVA) has been observed in pigs in Canada and the US, among other countries. The disease is linked to idiopathic vesicular diseases in swine, with lesions similar to those caused by foot-and-mouth disease virus (FMDV).**

**Swine vesicular disease virus (SVDV), FMDV and SVA are small, non-enveloped RNA viruses of the *Picornaviridae* family. FMDV is one of the most contagious animal pathogens infecting cloven-hoofed mammals. In FMD-free countries, an accidental release into the environment can cause an outbreak of disease leading to severe economic loss.**

**SVDV is stable at a pH as low as 2.5 and as high as 12, is more resistant to both heat and disinfectants than FMDV and thus survives for longer periods in the environment. A disinfectant capable of inactivating SVDV will most likely also inactivate FMDV, therefore SVDV can be used as a surrogate for FMDV during research investigations.**


## STUDY

The purpose of this study was to evaluate an accelerated hydrogen peroxide® (AHP®) - based disinfectant against high consequence foreign animal disease pathogens such as foot-and mouth disease virus (FMDV) and swine vesicular disease virus (SVDV), as well as Senecavirus A (SVA), which causes similar lesions as FMDV and SVDV. In FMD-free countries, only high containment laboratories are allowed to work with FMDV and related viruses. Therefore, proper disinfection is crucial in these laboratories and is routinely used to decontaminate work surfaces, animal cubicles, biosafety cabinets and equipment.

All viruses used for testing were kindly provided by Animal Research Services, Plum Island Animal Disease Center. Varying dilutions and contact times of AHP® were tested against FMDV, SVDV and SVA by standard US EPA and modified methods.

Virus diluted in media was spread as uniform thin films on duplicate sterile glass petri dishes. Films were either dried at ambient temperature for approximately 1 h (SVDV only) or treated as wet films (SVDV, FMDV and SVA), followed by the addition of diluted AHP® with a designated contact time. Cytotoxicity of disinfectant, neutralizer effectiveness and the virucidal effect of AHP® against SVDV by the Standard Test Method, virucidal effect of AHP® against the three viruses using Wet Films of Virus, and long term stability tested were all evaluated.

## RESULTS

AHP® (Prevail® Concentrate) used at the manufacturer recommended dilution of 1/40 is an effective disinfectant against SVDV when tested by the standard method. However, at 1/40 dilution, for laboratory practical purposes, it could be ineffective at completely disinfecting wet surfaces contaminated with SVDV. Nevertheless, at 1/20 dilution and 10 minutes contact time, AHP® has complete virucidal effect on wet films of SVDV, FMDV and SVA. Therefore, for laboratory, it is recommended to use AHP® at a 1/20 dilution with a contact time of at least 10 minutes. Furthermore, AHP® at 1/20 dilution stored in a sealed container is stable at room temperature for at least six weeks.

## STUDY CONCLUSION

**AHP® is an effective disinfectant against FMDV, SVDV and SVA, and can therefore be used in high containment laboratories working with FMDV, SVDV and related pathogens.**

## IMPLICATIONS FOR AHP®

**High containment laboratories require effective disinfectants to comply with their strict biosecurity measures. Proven effectiveness and acceptance of use in such restricted environments supports the use of AHP® in numerous environments including quarantine facilities, research facilities and veterinary diagnostic laboratories.**

**AHP® Disinfectants provide the perfect balance between safety and efficacy**

- AHP® has low levels of Hydrogen Peroxide at the in use dilution, lower even than some products used every day by

consumers to whiten teeth, clean contact lenses or even disinfect a wound, and therefore is designed to be easier on employees and occupants resulting in protocol compliance
- AHP® provides a HMIS rating of "0", meaning it has been proven to be non-toxic, non-irritating to eyes and skin and non-skin sensitizing and does not require the use of personal protective equipment to handle

**AHP® Disinfectants have realistic contact times**
- Short contact times ensure surfaces remain wet for the required contact time, providing comfort and confidence that disinfection has occurred

**AHP® Disinfectants are compatible**
- AHP® formulations are tested to ensure compatibility that preserve your investments in equipment and building surfaces

**AHP® Disinfectants are environmentally sustainable**
- AHP's® active ingredient, hydrogen peroxide, breaks down into water and oxygen leaving no active residues
- AHP® is formulated to ensure that it will not negatively impact indoor air quality

***REFERENCE***

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