Hydro-X

Hydrogen Peroxide 3% Efficacy

Mode of Action

Hydrogen peroxide works by producing destructive hydroxyl free radicals that can attack membrane lipids, DNA, and other essential cell components. Catalase, produced by aerobic organisms and facultative anaerobes that possess cytochrome systems, can protect cells from metabolically produced hydrogen peroxide by degrading hydrogen peroxide to water and oxygen. This defence is overwhelmed by the concentrations used for disinfection.

Microbicidal Activity

Hydrogen peroxide is active against a wide range of microorganisms, including bacteria, yeasts, fungi, viruses, and spores.

The use of 0.5% Hydrogen Peroxide has been shown to provide >4log reduction in HCoV Strain 229E (CCV) between within 1 minute.[1]

The effect of H2O2 on adenovirus types 3 and 6, adeno-associated virus type 4, rhinoviruses 1A, 1B, and type 7, myxo-viruses, influenza A and B, respiratory syncytial virus, strain Long, and coronavirus strain 229E was studied in vitro, using different H2O2 concentration and time of exposure. H2O2 in a 3 percent concentration inactivated all the viruses under study within 1--30 min. Coronavirus and influenza viruses were found to be most sensitive. Reoviruses, adenoviruses and adeno-associated virus were relatively stable. H2O2 is a convenient means for virus inactivation. [2]

Enveloped viruses such as Coronaviruses are the least resistant to inactivation by disinfection. The structure of these viruses includes a lipid envelope, which is easily compromised by most disinfectants. Once the lipid envelope is damaged, the integrity of the virus is compromised, thereby neutralizing its infectivity.

Stability

Under normal conditions, hydrogen peroxide is extremely stable when properly stored (e.g., in dark containers). The decomposition or loss of potency in small containers is less than 2% per year at ambient temperatures.

Uses

Commercially available 3% hydrogen peroxide is a stable and effective disinfectant when used on inanimate surfaces.

[1] G. Kampf, D. Todt, S. Pfaender, E. Steinmann. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents - 2020
[2] Vopr Virusol. 1977 Nov-Dec;(6):731-3 - Virus inactivation by hydrogen peroxide.