danolyte
KILL THE GERMS. NOT THE PLANET.

Virucidal effect of acidic electrolyzed water and neutral electrolyzed water on avian influenza viruses

The virucidal effects of two types of electrolyzed water, acidic electrolyzed water (AEW) and neutral electrolyzed water (NEW), on avian influenza viruses were studied. Virus titers of the highly pathogenic H5N1 virus and the low-pathogenic H9N2 virus irreversibly decreased by >5-log at 1 min after the viruses were mixed with NEW containing ≥43 ppm free available chlorine (FAC), but not with NEW containing <17 ppm FAC. The minimum concentration of FAC for a virucidal effect of NEW was estimated at around 40 ppm. In contrast, the virus titers decreased by >5 log at 1 min after the viruses were mixed with AEW, in which the concentration of the FAC ranged from 72 to 0 ppm. Thus, the virucidal effect of AEW did not depend on the presence of FAC. Reverse transcription polymerase chain reaction amplified fragments of the M and NP genes, but not the complete M gene, from RNA extracted from the AEW-inactivated virus. Moderate morphological changes were found under the electron microscope, although no changes were observed in the electrophoresed proteins of the AEW-inactivated virus. No viral genes were amplified from the RNA extracted from the NEW-inactivated virus, regardless of the length of the targeted genes. No viral particles were detected under the electron microscope and no viral proteins were detected by electrophoresis for the NEW-inactivated virus. Thus, this study demonstrated potent virucidal effects of AEW and NEW and differences in the virucidal mechanism of the two types of electrolyzed water.