

Clorox EcoClean™ Disinfecting Cleaner

kills 99.9% of viruses and bacteria often in less time than traditional disinfectants

CLOROXPRO



Objective

To compare efficacy of Clorox EcoClean™ Disinfecting Cleaner, a lactic acid-based disinfectant to traditional disinfectant active ingredients, including quaternary ammonium chloride (quat), sodium hypochlorite (bleach), and hydrogen peroxide and to test the hypothesis that lactic acid disinfectants are as effective at killing viruses and bacteria as traditional disinfectants.

Background and Scope

More sustainable active ingredients are becoming common in EPA-registered disinfectants and sanitizers. As sustainability becomes a mainstream expectation from consumers and end-users, we anticipate an increase in products using these actives. The EPA Safer Choice program certifies disinfectants formulated from a limited selection of active ingredients, have no PPE requirements, and may be produced more sustainably¹. These EPA Design for the Environment (DfE) active ingredients are expected to kill viruses and bacteria similarly to traditional actives, which often work by disrupting the cell membrane or degrading virus proteins.

Research Methods

We compared the efficacy of DfE-certified Clorox EcoClean™ Disinfecting Cleaner (lactic acid-based) against several of our other disinfectants representing the traditional disinfectant actives: Clorox® Clean-Up® (sodium hypochlorite), Clorox® Total 360® Disinfectant Cleaner (quaternary ammonium chloride), and Clorox® Disinfecting BioStain and Odor Remover (hydrogen peroxide).

We tested each product against six viruses (SARS-CoV-2, Norovirus, Rhinovirus, Respiratory Syncytial Virus (RSV), and Hepatitis B virus) and four bacteria (Methicillin-resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa*, *Streptococcus pyogenes*, *Staphylococcus aureus*). We followed EPA testing requirements for determining microbicidal efficacy against each bacterium and virus and determined contact time required to kill 99.9% of the viruses and bacteria tested.

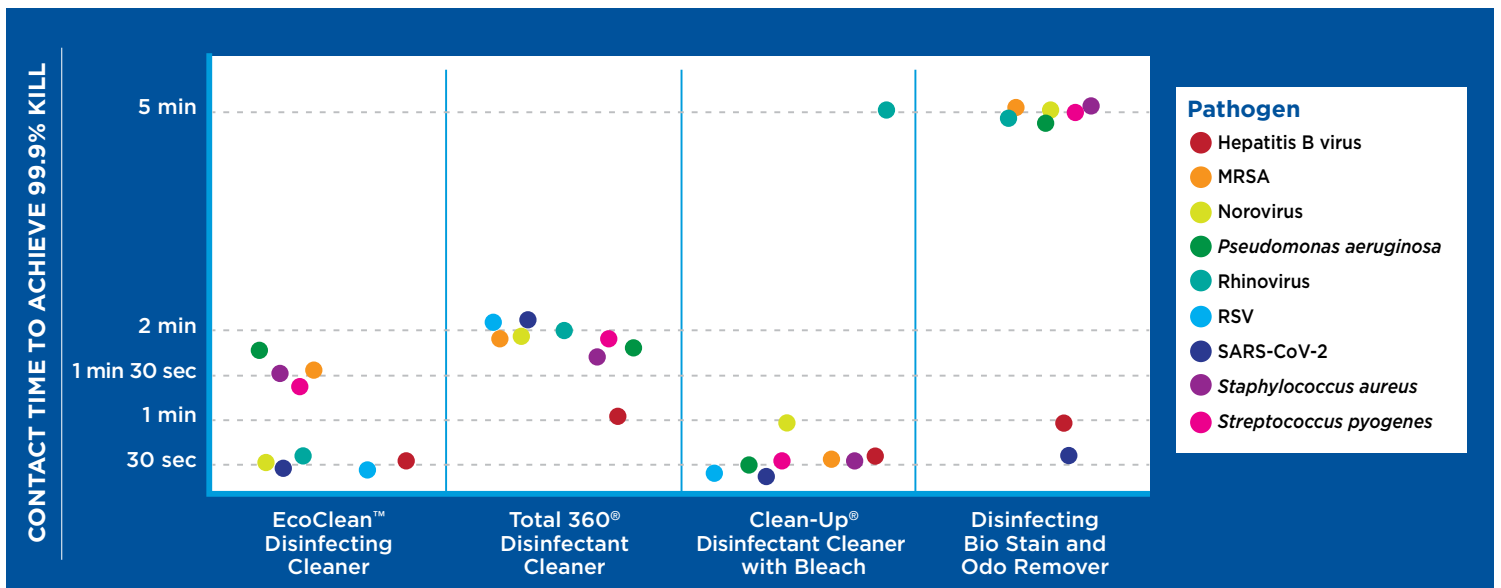
1. EPA Safer Choice Standard <https://www.epa.gov/saferchoice/standard>

Results

Lactic-acid based Clorox EcoClean™ Disinfecting Cleaner proven as effective as traditional disinfectants against viruses and bacteria.

Clorox EcoClean™ Disinfecting Cleaner effectively killed 99.9% of viruses and bacteria in under 2 minutes, including the harder to kill pathogens norovirus and rhinovirus. Lactic acids are expected to have similar efficacy as quaternary ammonium-based active ingredients, and in fact both Clorox EcoClean™ Disinfecting Cleaner and Clorox® Total 360® Disinfectant Cleaner were able to kill 99.9% of viruses and bacteria in 2 minutes or less, but Clorox EcoClean™ Disinfecting Cleaner killed 5 of the pathogens in about 30 seconds, whereas the fastest time for Clorox® Total 360® Disinfectant Cleaner was 1 minute. Clorox® Clean-Up® Disinfectant Cleaner with Bleach was overall the fastest, but one pathogen, Rhinovirus, took 5 minutes to kill, whereas Clorox EcoClean™ Disinfecting Cleaner killed Rhinovirus closer to 30 seconds.

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Discussion

The results of this study are consistent with the understanding of antimicrobial efficacy of products. The active ingredient in a product combined with the total formulation work together to create an effective disinfectant. Products approved under the EPA DfE certification should not be expected to have a lower efficacy against bacteria and viruses. In fact, more sustainable active ingredients in disinfectants can be as, if not more, effective than traditional disinfectants. More research is needed to determine effectiveness of other disinfectant active ingredients.

When following the directions for use and contact time, EPA DfE disinfectants are as effective as their traditional counterparts and can even perform better depending on the formulation.

Conclusion

We demonstrated that a disinfectant using lactic acid as an active ingredient was as effective as traditional disinfectants against multiple pathogens, including harder to kill viruses like norovirus and rhinovirus.

This study supports the use of more eco-conscious disinfectants without an efficacy tradeoff.