

Vinegar helps bleach kill anthrax

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A cup of white vinegar gives diluted household bleach enough strength to kill almost any disease-causing microbe, including anthrax spores contaminating surfaces, according to a study by MicroChem Lab Inc.

Vinegar changes the character of household bleach from alkaline to acidic and makes it 80 to 200 times more effective at being an antimicrobial product, said Norman Miner, Microchem president and a researcher on the study [presented at the American Society for Microbiology Biodefense Research meeting in Washington](#).

Miner said household bleaches manufactured and sold in an alkaline state are relatively ineffective at killing disease-causing microbes. The vinegar gives bleach enough kick to fight bacteria, fungi, viruses and spores. The [recipe: dilute one cup of household bleach in one gallon of water and then add one cup of white vinegar](#).

"Bleach has been used as a disinfectant for decades. People just assume it will kill everything on a countertop," Miner said in an interview. "It's one of the myths."

Bleach can't be bottled in an acidic state because it's unstable, Miner said in an interview. After a day, it would start losing the chlorine that gives it its bleaching power.

Researchers tested the vinegar recipe on dried bacterial spores, considered the most resistant to disinfectants used on microbes, the Euless, Texas-based company said.

After researchers swabbed surfaces with the acidic dilution, all the spores were dead in 20 minutes, Miner said. An alkaline dilution left only 2.5 percent of the areas free of microbes after the same amount of time.

"In the event of an emergency involving *Bacillus anthracis* spores contaminating such environmental surfaces as counter tops, desk and table tops, and floors, for example, virtually every household has a sporicidal sterilant available in the form of diluted, acidified bleach," Miner said in a statement.

The vinegar-laced bleach also killed *aspergillus negri*, more commonly recognized as the black fungi that infect the tile grout of shower stalls, Miner said.

"Diluted bleach at an alkaline pH is a relatively poor disinfectant, but acidified diluted bleach will virtually kill anything in 10 to 20 minutes," Miner said.