
Abstract

Acidic electrolyzed oxidizing (EO) water, generated by electrolysis of a dilute salt solution, recently gained attention in the food industry as a nonthermal method for microbial inactivation. Our objective was to determine if EO water has potential to control foliar diseases in greenhouses. Test fungi suspended in distilled water were combined with EO water (1:9 water:EO water) for various time periods, the EO water was neutralized, and germination was assessed after 24 h. Germination of all 22 fungal species tested was significantly reduced or prevented by EO water. All relatively thin-walled species (e.g., Botrytis, Monilinia) were killed by incubation times of 30 s or less. Thicker-walled, pigmented fungi (e.g., Curvularia, Helminthosporium) required 2 min or longer for germination to be reduced significantly. Dilution of EO water with tap water at ratios of 1:4 and 1:9 (EO:tap water) decreased efficacy against Botrytis cinerea. The presence of Triton X-100 (all concentrations) and Tween 20 (1 and 10%) eliminated the activity of EO water against B. cinerea. EO water did not damage geranium leaf tissue and inhibited lesion development by B. cinerea when applied up to 24 h postinoculation. EO water has a wide fungicidal activity which could facilitate its use as a contact fungicide on aerial plant surfaces and for general sanitation in the greenhouse.