Title Differences in fungicidal efficiency against *Aspergillus flavus* for neutralized and acidic electrolyzed oxidizing waters

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Abstract

Neutralized electrolyzed oxidizing water (NEW) and acidic electrolyzed oxidizing water (AcEW) are electrolyzed oxidizing waters (EOW) that have significantly different fungicidal efficiencies against *Aspergillus flavus* (*A. flavus*) (The actuation durations of no survival population to NEW and AcEW were 90 s and 120 s, respectively.), even when used at the same available chlorine concentration (30 ppm). It has been verified by our previous research. This study hypothesized that this difference did not originate from the structure of water but based on the *OH radical (*OH). It was proved by the UV spectroscopy, ^{17}O-NMR spectroscopy and electron spin resonance analysis. NEW contains more *OH compared with AcEW in the same available chlorine concentration level. The *OH that exists in NEW and AcEW was found to have an important fungicidal factor that destroys the cellular structures of the *A. flavus* conidia. It also damages the cellular normal function of *A. flavus* conidia that brought about K^+ and Mg^{2+} leakages. The levels of *OH that exist in NEW and AcEW could be the important reason that leads to significant fungicidal efficiencies against *A. flavus*.