

JHI response

Not all Super-Oxidised waters are the same

By MN Sampson & AVG Muir

Sir

I read with interest the recent study reported in the JHI by Fujita and Co-workers on the Nosocomial contamination by *Mycobacterium gordonae* in hospital water supply and the use of Super-Oxidized water as a disinfection system.

As a significant number of hospitals in the UK and mainland Europe are now using a member of the "super-oxidised water" family (Sterilox), to re-process flexible endoscopes, I feel it is important to clarify the wide variation in biocidal properties of the different types of superoxidised water biocides that have been discussed in the literature or are available commercially. Also known as electrolysed water, electrolysed strong acid aqueous solution, mixed oxidant solutions and acid electrolytic solution, this class of biocides is generated by the electrolysis of a dilute salt solution. The main active chemical species generated during the electrochemical process are hypochlorous acid (HOCl) and hypochlorite (OCl⁻), which constitute Available Free Chlorine (AFC). Super-oxidised water has rapid antimicrobial activity (1, 2) and is used in a wide range of disinfection applications including water treatment (3), fruit and vegetable washing (4), disinfecting haemodialysis equipment (5) and the reprocessing of endoscopes (2).

As with any biocide, the efficacy of Super-Oxidised water is strongly affected by the active concentration of the germicidal product. The active concentration (AFC) of different Super- Oxidised solutions reported in the literature ranges between 7 ppm (6), 30 ppm AFC (5), 70 ppm (7) and 180 ppm (2).

A number of studies have reported that the pH of Super-Oxidised water solutions also has a profound effect on its efficacy as a disinfectant (4,8). The reported pH ranges of the different super-oxidised waters vary widely, between pH 2.3-2.7 (1), 5.6-6.5 (2) and pH 9-10 (7).

The appropriate active concentration is dependant on the level of disinfection level required in a particular application. Although these biocides are all produced by a similar electrolysis process, the variation in active concentration and pH of the different final solution produces anti-microbial agents with distinctive differences in biocidal activity. For example, the reported active concentration of the different electrolysed solutions used in the disinfection of endoscopes varies from 7 ppm AFC (6) to 180 ppm AFC (2).

In conclusion, super-oxidised water is commonly used as a generic term for a range of distinct saline electrolysed solutions with a wide range of microbiocidal activity. Potential users should satisfy themselves that the solution is appropriate for their own individual needs.

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