Is 'Super-Oxidized' Water Effective as an Antiseptic in Wound Care?

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Introduction

'Super-Oxidized' Water is a novel antiseptic solution, sold over-the-counter, under the brand name of Dermacyn™ in pharmacies in Singapore. Studies have shown that 'Super-Oxidized' Water can be used to inhibit the growth of harmful viruses, fungi and bacteria in wounds. Coghlan (2007) stated that 'Super-Oxidized' Water is produced by exposing sodium chloride through a semi-permeable membrane and than using electrolysis to produce oxychlorine ions (Figure 1). Oxychlorine ions can rapidly infiltrate the walls of free-living microbes while sparing human cells as they are tightly bound together in a matrix. Besides being a relatively unknown product in Singapore, the retail price of 'Super-Oxidized' Water is much higher than conventional antiseptic solutions.

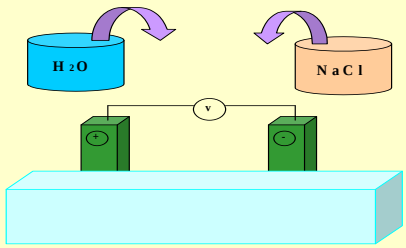

Figure 1: Production of Electrolyzed Water

Objective

The objective of this rapid HTA is to evaluate the evidence for and against the use of 'Super-Oxidized' Water as an antiseptic agent in wound care.

Population	Patients with acute/chronic wounds, ulcers, cuts, abrasions and burns.
Intervention	Spray, immersion or irrigation with 'Super-Oxidized' Water.
Comparison	Antiseptics used on wounds such as Iodine Compounds, Hydrogen Peroxide, Chlorhexidine, Silver Compounds.
Outcomes	Safety and Effect on Healing eg days to re-epithelization, healing rate. Effect on Infection eg bacterial counts, infection rates.

Methodology

A systematic review was conducted using the databases of Medscape, CINAHL, Science Direct and Google Scholar. The search was limited to in-vivo studies.

Search terms include:

•[Super-Oxidised Water] or [Brand names of leading products] and [Healing or Infection or Toxicity]

Results

5 primary studies and one grey literature were found. Table 1 summarized the 5 primary studies. The grey literature described a randomized, single-blind clinical study whereby 45 patients were enrolled. Soap and 'Super-Oxidized' Water was used in placed of povidone iodine and saline.

Table 1

Title	Year Published/ Presented	Type of Study	Methodology	Population	Sample Size	Results	Conclusion
Reducing bacterial infectious complications from burn wounds: a look at the use of Oculus Microcyn 60 to treat wounds in Mexico.	2006	Retrospective Paired control	•After debridement, wound were moistened with 'Super-Oxidized' Water 3 times a day using a spray trigger. •Control Group—Retrospective analysis of paired cases with similar burns	Children with burn injuries	64	This paper only presented results of 2 out of the 64 cases being reviewed. The 2 children tolerated the spray well, and their wounds healed.	'Super-Oxidized' Water was efficient and safe for prevention of partial and full thickness burn infections in children. The use of 'Super-Oxidized' Water was cost-effective as the length of hospital stay was reduced by half. Children reported less pain and application was easy and inexpensive.
Advanced wound care with stable, super-oxidized water	2006	Case-series	Unclear	Variety of patients with various wound types	26 patients with 30 wound types	No reported cases of toxicity or side effects with 'Super-Oxidized' Water. Solution appears to be effective in the moistening and debriding of wounds and as an antiseptic agent.	'Super-Oxidized' Water can be used to treat a variety of wounds, both as a wound irrigation at simple dressing changes, and as the solution with which to moisten the gauze used to dress the wound.
Super-oxidized solution (SOS) therapy for infected diabetic foot ulcers	2006	Quasi-Experiment	•Patients alternately assigned to receive SOS or Povidone Iodine solution with daily dressing changes.	Patients with diabetic foot lesions	218	Patients in the SOS group had significantly shorter median healing time than those in the Providone Iodine group (43 days vs 55 days, P<0.0001)	SOS is safe and effective in treating infected foot lesions when used as part of a comprehensive wound care regimen.
Effectiveness of electrolyzed Oxidized Water Irrigation in a burn-wound infection model	2000	Case-control	•Experimental burn injury induced on rats •2 days after injury, infected with P aeruginosa. •Assigned to no irrigation, irrigation with saline or irrigation with Oxidized Water.	Sprague-Dawley rats	31	The survival rate of rats irrigated with Oxidized Water was significantly lower than for the other groups.	Irrigation and disinfection with electrolysed ovidized water may become useful in preventing burn-wound sepsis.
Mediastinal irrigation with superoxidized water after open-heart surgery: the safety and pitfalls of cardiovascular surgical application	2000	Case-series	•Irrigation of the mediastinum with warm superoxidized water for 5 min immediately prior to sternal closure	Patients undergoing cardiopulmonary bypass	25	ST elevation was noted during mediastinal irrigation in 11 patients.	Superoxidized water had no adverse effects on hemodynamics and was safe as an irrigation solution during cardiac surgery.

Conclusion

Preliminary results of studies done, indicated that 'Super-Oxidized' Water is suitable as an irrigation and cleansing agent in wound care. Nonetheless, more large-scale studies is necessary to establish the safety, efficacy and cost-effectiveness of 'Super-Oxidized' Water in preventing and treating wound infections, as well as in promoting wound healing.

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