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 then using electrolysis to produce oxichlorine ions (Figure 1). Oxichlorine 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.

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]

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.

Table 1

<table>
<thead>
<tr>
<th>Title</th>
<th>Year Published</th>
<th>Published/ Presented</th>
<th>Type of Study</th>
<th>Methodology</th>
<th>Population</th>
<th>Sample Size</th>
<th>Results</th>
<th>Conclusion</th>
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</thead>
<tbody>
<tr>
<td>Reducing bacterial infectious complications from burn wounds: a look at the use of Oxsol Monomy 60 to treat wounds in Mexico.</td>
<td>2006</td>
<td>Retrospective</td>
<td>Pain control</td>
<td>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</td>
<td>Children with burn injuries</td>
<td>64</td>
<td>This paper only presented results of 2 out of the 94 cases being reviewed. The 2 children tolerated the spray well, and their wounds healed.</td>
<td>‘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.</td>
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<tr>
<td>Advanced wound care with stable, super-oxidized water</td>
<td>2006</td>
<td>Case-series</td>
<td>Unclear</td>
<td>Variety of patients with various wound types</td>
<td>28 patients with 30 wound types</td>
<td>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.</td>
<td>‘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.</td>
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<td>Super-oxidized solution (SOS) therapy for infected diabetic foot ulcers</td>
<td>2006</td>
<td>Quasi-experiment</td>
<td>Patients alternately assigned to receive SOS or Povidone Iodine solution with daily dressing changes.</td>
<td>Patients with diabetic foot lesions</td>
<td>218 Patients in the SOS group had significantly shorter median healing time than those in the Povidone Iodine group (43 days vs 55 days, P=0.002).</td>
<td>SOD is safe and effective in treating infected foot lesions when used as part of a comprehensive wound care regimen.</td>
<td>‘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.</td>
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<td>Effectiveness of electrolyzed Oxidized Water: Irrigation in a burn wound infection model</td>
<td>2000</td>
<td>Case-control</td>
<td>Experimental burn injury induced on rats 2 days after injury, infected with P aeruginosa.</td>
<td>Experimental burn injury induced on rats 2 days after injury, infected with P aeruginosa.</td>
<td>Sprague-Dawley rats 31 The survival rate of rats irrigated with Oxidized Water was significantly lower than for the other groups.</td>
<td>Irrigation and disinfection with electrolyzed oxidized water may become useful in preventing burn-wound sepsis.</td>
<td>‘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.</td>
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<tr>
<td>Mediatinal irrigation with superoxidized water after open-heart surgery: the safety and pitfalls of cardiovascular surgical application</td>
<td>2000</td>
<td>Case-series</td>
<td>Irrigation of the mediastinum with warm superoxidized water for 5 min immediately prior to internal closure</td>
<td>Patients undergoing cardio pulmonary bypass 25 Elevations noted during mediasinal irrigation in 11 patients.</td>
<td>Superoxidized water had no adverse effects on hemodynamics and was safe as an irrigation solution during cardiac surgery.</td>
<td>‘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.</td>
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