



## Role of Super Oxidised Solution in the Management of Thermal Burn Wounds

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### Abstract

Proper dressing and preparation of thermal burns wounds are vital not just for infection prevention but also for potential surgical intervention. This article discusses our evaluation of the efficacy of Super Oxidized Solution in locally treating thermal burns wounds. In the case report performed on a 46 year old male with thermal burns over the chest, abdomen, lateral aspect of face, right ear, right upper limb and left upper limb, right lower limb. Super Oxidized solution facilitated wound healing and prepared wounds for definitive coverage by promoting granulation and reducing infection, which are the prerequisites for surgery.

**Keywords:** Superoxidized solution, thermal burns, wound management, Wound irrigation, Burns.

### Introduction

Various agents such as Povidone Iodine, EUSOL, Acetic acid, hydrogen peroxide, silver sulfadiazine, and local antibiotic ointments have traditionally been employed in managing thermal burns<sup>1</sup>. These dressings serve the purpose of preventing infection, reducing bacterial load, and promoting granulation to facilitate wound healing. The utilization of Super Oxidized Solution represents a novel approach to wound management. This solution, characterized by a hypotonic nature with an osmolarity of 13 mOsm/kg, contains components like Hypochlorous acid, Sodium hypochlorite, Chlorine dioxide, Ozone, Hydrogen peroxide, and Sodium chloride. Manufactured through an electrochemical process involving pure water and sodium chloride, Super Oxidized Solution generates reactive oxygen and chlorine species during electrolysis. These released species disrupt the cell membrane's integrity, leading to lipid and protein denaturation in single-celled organisms due to osmolarity imbalances. Unlike single-celled organisms, multicellular organisms are less susceptible to such osmolarity changes<sup>2</sup>.

### Materials and Methods

In this study, a 46 year old male with thermal burns over the chest, abdomen, lateral aspect of face, right ear, right upper limb and left upper limb, right lower limb (Figure 1) was enrolled and managed at the Department of Plastic Surgery, JIPMER, Puducherry, India in September 2025 for a duration of 45 days. The study was ethical approved by the institutional review board.

He underwent thorough clinical examination, and essential investigations, resuscitation debridement procedures and NPWT application. Additionally, wound swabs were cultured to identify the type of organism and its antibiotic sensitivity.

The wounds received daily once irrigation with Super Oxidized Solution (Figure 2) and were dressed with gauze soaked in the same solution. Irrigation was continued for around 1 week.

The wounds responded to treatment with Super Oxidized Solution, and exhibited healthy granulation following local treatment with Super Oxidized Solution. The study documented the status of bacterial growth, time required for wound sterility, granulation appearance, healing duration, and any associated complications.



**Figure 1:** Showing thermal burn wound over left hand at time of presentation



**Figure 2:** Showing application of super oxidized solution over thermal burn over the left hand region



**Figure 3:** Figure showing condition of the wound after utilization of super oxidized regenerative therapy (BJWAT wound score - 18)

## Results

Wound healing was found to be hastened by application of super oxidized solution, proving the efficacy of using superoxidized solution in treatment for wound healing. The condition of the wounds improved following utilization of super oxidised solution regularly. The wound score improved from 32 to 18.

## Discussion

The prevalence of thermal burns is quite high especially accidentally. Managing thermal burns and its complications requires a multidisciplinary approach, as it affects various organs and systems in the body. Thermal burns wounds pose a significant challenge to clinicians in their everyday practice and have historically been treated with various local dressings and agents<sup>3</sup>.

Super Oxidized Solution represents a newer approach to wound management. It has been investigated by researchers worldwide as a disinfectant for instruments and has been used on humans for various indications, including ulcers, mediastinal irrigation, peritoneal lavage, and hand washing<sup>4,5</sup>. Approved by the European CE KEMA as a Medical Device Class IIb in 2004 and by the FDA in 2005, this solution has garnered positive results in wound management across various etiologies, with no reported reactions or complications in the literature<sup>6</sup>.

In our study, we focused on thermal burns wounds and utilized Super Oxidized Solution for cleansing and sterilization. Following 5 days of Super Oxidized Solution application, the wound achieved sterility.

Consistent with previous literature, our study found no noticeable complications associated with the use of Super Oxidized Solution<sup>7,8,9</sup>. This solution aids in debriding necrotic tissue, reducing microbial load, promoting granulation, and accelerating healing time without causing harm to normal tissue. For patients with small superficial ulcers or those unsuitable for definitive surgery, conservative management with Super Oxidized Solution alone may be sufficient. The moisturizing effect and minimal toxicity of Super Oxidized Solution make it a favorable option for managing thermal burns ulcers. However, further controlled trials are needed to fully elucidate its antimicrobial, anti-inflammatory, and wound-healing effects<sup>10,11</sup>.

## Conclusion

Super oxidized solution proves beneficial in promoting wound healing in across a spectrum of cases, regardless of whether they are acute or chronic and irrespective of their underlying causes. Its utility extends to burn injuries as well as within the realm of cosmetic surgery. Our case report findings affirm that super-oxidized solution contributes to enhanced wound healing across diverse wound types.

## References

1. Tanaka, N., Tanaka, N., & Fujisawa, T. (2000). The use of electrolyzed solution for the cleansing and disinfecting of dialyzers. *Artificial Organs*, 24(12), 921–928.
2. Nelson, D. (2000). Newer technologies for endoscope disinfection: Electrolyzed acid water and disposable-component endoscope system. *Gastrointestinal Endoscopy Clinics of North America*, 10(2), 319–328.
3. Park, H., Hung, Y.-C., & Kim, C. (2002). Effectiveness of electrolyzed water as a sanitizer for treating different surfaces. *Journal of Food Protection*, 65(8), 1276–1280.
4. Inoue, Y., Endo, S., Kondo, K., et al. (1997). Trial of electrolyzed strong acid aqueous solution lavage in the treatment of peritonitis and intraperitoneal abscess. *Artificial Organs*, 21(1), 28–31.
5. Sakashita, M., Iwasawa, A., & Nakamura, Y. (2002). Antimicrobial effects and efficacy on habitual hand-washing of strong acidic electrolyzed water: A comparative study of alcoholic antiseptics and soap and tap water. *Kansenshogaku Zasshi*, 76(5), 373–377.
6. Meschter, C. (2005). *Safety and efficacy of treatment for cutaneous wound study* (Comparative Biosciences, Inc. Study No. 8212-04).
7. Yahagi, N., Kono, M., Kitahara, M., et al. (2000). Effect of electrolyzed water on wound healing. *Artificial Organs*, 24(12), 984–987.
8. Landa-Solis, C., González-Espinosa, D., Guzmán-Soriano, B., et al. (2005). Microcyn: A novel super-oxidized water with neutral pH and disinfectant activity. *Journal of Hospital Infection*, 61(4), 291–299.
9. Sekiya, S., Ohmori, K., & Harii, K. (1997). Treatment of infectious skin diseases or ulcers with electrolyzed strong acid aqueous solution. *Artificial Organs*, 21(1), 32–38.
10. Dalla Paola, L., Brocco, E., Senesi, A., et al. (2005). Use of Dermacyn, a new antiseptic agent for the local treatment of diabetic foot ulcers. *Journal of Wound Healing*, 2, 201.
11. Dang, C. N., Prasad, Y. D., Boulton, A. J. M., & Jude, E. B. (2003). Methicillin-resistant *Staphylococcus aureus* in the diabetic foot clinic: A worsening problem. *Diabetic Medicine*, 20(2), 159–161.

#### CITATION

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