

## Silver Nanoparticles and Skin Burns

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Burns were one of the most common and devastating forms of trauma. Patients with thermal injury require immediate specialized care in order to minimize morbidity and mortality. Data from the National Center for Injury Prevention and Control in the United States show that approximately 2 million fires are reported each year which result in 1.2 million people with burn injuries [1,2]. The purpose of clinical treatment for burn wounds was to provide healing of the wound as soon as possible in order to prevent infections [3,4]. Nanotechnology was a highly promising field for generating new applications in environmental remediation, medical health-care and consumer products [5,6].

Silver nanoparticles have come up to the market by many industries with diverse medical applications ranging from silver based dressings to silver coated medical devices in catheter cover, wound dressing etc [7,8]. Due to their large surface area and high reactivity compared with a bulk solid, nano-sized metal particles exhibited excellent physical, chemical and biological properties [9,10]. Previous evidence suggested that Ag-NPs have had potent anti-inflammatory effects [11-13] and accelerated wound healing [14,15]. The ultimate goal for wound healing was a speedy recovery with minimal scarring and maximal function [16].

### Bibliography

1. Roth JJ and WB Hughes. "The Essential Burn Unit Handbook" 50 (2004): 141.
2. Benn TM and P Westerhoff. "Nanoparticle silver released into water from commercially available sock fabrics". *Environmental Science Technology* 42.11 (2008): 4133-4139.
3. Dibrov P., et al. "Chemiosmotic mechanism of antimicrobial activity of Ag(+) in *Vibrio cholerae*". *Antimicrobial Agents and Chemotherapy* 46.8 (2002): 2668-2670.
4. Salas Campos L., et al. "[Topical chemotherapy for the treatment of burns]". *Revista Enfermagem* 28.5 (2005): 67-70.
5. Oberdorster G., et al. "Nanotoxicology: an emerging discipline evolving from studies of ultrafine particles". *Environmental Health Perspectives* 113.7 (2005): 823-839.
6. Singh N., et al. "NanoGenotoxicology: the DNA damaging potential of engineered nanomaterials". *Biomaterials* 30.23-24 (2009): 3891-3914.
7. Sondi I and B Salopek-Sondi "Silver nanoparticles as antimicrobial agent: a case study on *E. coli* as a model for Gram-negative bacteria". *Journal of Colloid and Interface Science* 275.1 (2004): 177-182.
8. Crosera M., et al. "Nanoparticle dermal absorption and toxicity: a review of the literature". *International Archives of Occupational and Environmental Health* 82.9 (2009): 1043-1055.
9. Dobrovolskaia MA and SE McNeil "Immunological properties of engineered nanomaterials". *Nature Nanotechnology* 2.8 (2007): 469-478.
10. Hirano S. "A current overview of health effect research on nanoparticles". *Environmental and Health Preventive Medicine* 14.4 (2009): 223-225.
11. Sibbald RG., et al. "Bacteriology, inflammation, and healing: a study of nanocrystalline silver dressings in chronic venous leg ulcers". *Advances in Skin and Wound Care* 20.10 (2007): 549-558.
12. Tian J., et al. "Topical delivery of silver nanoparticles promotes wound healing". *ChemMedChem* 2.1 (2007): 129-136.
13. Nadworny PL., et al. "Anti-inflammatory activity of nanocrystalline silver in a porcine contact dermatitis model". *Nanomedicine* 4.3 (2008): 241-251.

14. Wright JB., *et al.* "Early healing events in a porcine model of contaminated wounds: effects of nanocrystalline silver on matrix metalloproteinases, cell apoptosis, and healing". *Wound Repair and Regeneration* 10.3 (2002): 141-151.
15. Huang Y., *et al.* "A randomized comparative trial between Acticoat and SD-Ag in the treatment of residual burn wounds, including safety analysis". *Burns* 33.2 (2007): 161-166.
16. Hendi A. "Silver nanoparticles mediate differential responses in some of liver and kidney functions during skin wound healing". *Journal of King Saud University - Science* 23.1 (2011): 47-52.

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