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## Zinc oxide nanoparticles control skin infection and improve dermal wound healing in humans

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Zinc Oxide nanoparticles (ZnO-Naps) have been used in different bionanocomposites for wound healing and skin infection based in the antibacterial intrinsic properties. However controversial toxic effects have been identified and preliminary results observed in animal models give limitations for the uses of this nanoparticles in humans. Here we report the benefits observed in dermal wound healing and control of infection in patient diagnosed with allergic dermatitis associated with infected ulcers. Nanotechnology is considered as a multidisciplinary area that is part of nano scale systems that is very important from the materials science, colloidal science, and medical science, among others. Currently nanotechnology is a rapidly growing area primarily for biotechnology and medicine in both the development of new diagnostic techniques and therapeutic treatments aimed at organs and damaged tissues. One of the alternatives with the greatest potential application is the use of ZnO-Naps as an antimicrobial agent and ulcer healing properties. The mechanisms of action are: 1) Cofactor in enzymatic complexes that promote migration of keratinocytes 2) participates in the formation of reactive oxygen species (ROS) which penetrate the bacterial cell membrane producing oxidant injury. According to the mechanisms of action of ZnO Naps could be an alternative as promoters of healing in chronic diabetic foot ulcers and other ulcers associated with allergic dermatitis. The objective of this work is to assess the effectiveness of dressings of calcium alginate impregnated with ZnO-Naps, along with the local application of powder of ZnO-Naps, in the control of infection and healing of ulcers in patients with allergic dermatitis.

### Biography

Rebeca Betancourt Galindo is a Researcher at the Department of Advanced Materials. She has extensive experience in emulsion polymerization, polymer and nanoparticle functionalization, preparation and physico-chemical characterization of polymer nanocomposites, including the determination of antimicrobial properties of polymer nanocomposites. She has published more than 29 papers in reputed journals.

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