Copper oxide impregnated wound dressing: biocidal and safety studies

Published December 2010

WOUNDS
A Compendium of Clinical Research and Practice

This study examines the impact of adding copper to a wound dressing, presenting the broad-spectrum antimicrobial and antifungal properties and a lack of adverse reactions.

As copper plays a key role in angiogenesis, the expression/stabilization of extracellular skin proteins, and exhibits broad biocidal properties, this study hypothesized that introducing copper into a wound dressing would reduce the risk of contamination and stimulate wound repair.

Non-stick dressings composed of a highly absorbent internal mesh fabric and an external non-woven fabric were fabricated, and impregnated with copper oxide microparticles.

Wounds inflicted in genetically engineered diabetic mice showed increased gene and in-situ upregulation of proangiogenic factors, increased blood vessel formation, and enhanced wound closure.

Prolonged efficacy was demonstrated by the dressing's capacity to reduce the microbial challenge by more than 99.9% even when spiked 5 consecutive times with a high bacterial titer.

The dressing's antimicrobial efficacy is exerted within minutes.

The dressing did not cause any skin irritation or sensitization to closed skin.

"...copper containing wound dressings hold significant promise in wound healing and their clinical use should be explored ."

Borkow et al (2010) Copper oxide impregnated wound dressing: biocidal and safety studies. Wounds 22: 301-310

Read the full text online: https://pubmed.ncbi.nlm.nih.gov/25901580/