

Effects of TLC-Ag dressings on skin inflammation

J-F. Bisson¹, S. Hidalgo-Lucas¹, L. Thomassin², M. Bouschbacher²

Message:

Silver in various oxidation states (as Ag⁰ which is present in nanocrystalline silver dressings or Ag⁺ that is present in some antimicrobial barrier dressings) is known to elicit anti-inflammatory response. In a comparative experimental study, it is shown that the silver lipido-colloid dressing, UrgoTul™ Ag, is comparable in its anti-inflammatory properties to the nanocrystalline silver dressing Acticoat®. This has important clinical implications because many chronic wounds are chronically inflamed and dressings that reduce inflammation can be very effective in managing these wounds.

Methods:

Hairless mice were exposed to a potent inflammatory agent, TPA* over a period of 14 days. On day 7, the inflamed skin on the backs of the animals were treated with several treatments, including two types of silver dressings TLC-Ag (UrgoTul Ag) and Nanocrystalline Silver Dressing SN (Acticoat). Gauze, the lipido-colloid product without silver, TLC (UrgoTul), and desonide cream (DC), a steroid treatment for inflammation) were used as controls. The skin was scored macroscopically using a validated scale for inflammation for Chronic Skin Inflammation (CSI). After 8 days of treatment, on day 15, skin samples were collected, and analyzed histopathologically. Chronic Skin Inflammation (CSI) was again scored using validated histological scores. The evolution of the inflammation (CSI) was plotted over time, both from macroscopic and microscopic analysis.

Results:

The gauze and the TLC dressings, which do not have anti-inflammatory silver ions present in them, did not resolve the inflammation in both the microscopic and the macroscopic analysis. In contrast, the nanocrystalline silver dressing, the lipido-colloid silver dressing, and the steroid ointment reduced inflammation significantly compared to gauze or the lipido-colloid dressing without silver in both the microscopic and the macroscopic models. No significant differences observed between the two silver dressings in macroscopic analysis. In microscopic analysis of CSI, the same pattern was confirmed. Though the steroid ointment was able to best resolve the inflammation, it is well known there are negative effects of using steroids on skin. Fig 1 shows the macroscopic changes and Fig 2 shows the microscopic changes in inflammation seen in the inflamed skin over time with the various treatments.

*TPA: 12-O-tetradecanoylphorbol-13-acetate (TPA)

Conclusion:

Anti-inflammatory effects are important in chronic wounds, which have high levels of inflammation. The silver species, whether nanocrystalline or ionic, elicits the same level of anti-inflammatory response. This has important implications in clinical management of inflamed, chronic wounds and based on this data, one can use either of the silver dressings as an effective treatment of skin inflammation.

FIGURE 1

Effects of treatments on the evolution of global macroscopic scores of TPA-induced CSI between Day 8 and Day 15 (Mean \pm SEM of 6 mice per group)

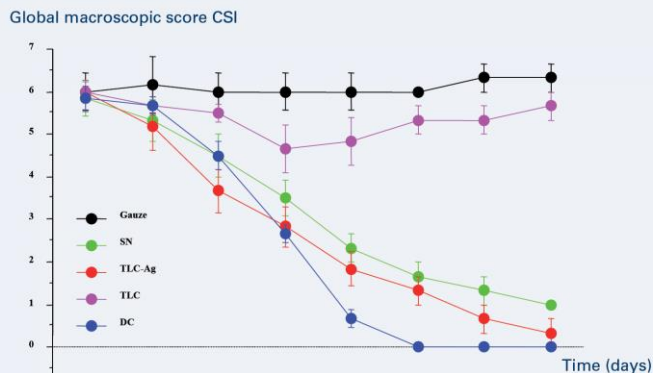
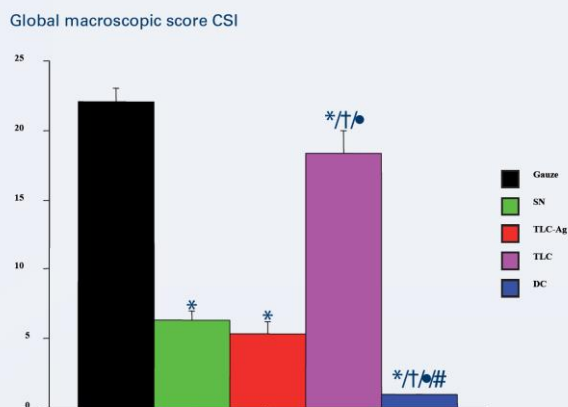


FIGURE 2

Effects of treatments on global macroscopic scores of TPA-induced CSI on Day 15 (Mean \pm SEM of 6 mice per group)



*P < 0.05 compared with Gauze treated group (Mann-Whitney U-test). †P < 0.05 compared with SN treated group (Mann-Whitney U-test). #P < 0.05 compared with TLC-Ag treated group (Mann-Whitney U-test).



Distributed in USA & Canada by:
URGO Medical North America, LLC
 3801 Hulen Street, Suite 251,
 Fort Worth, TX 76107
 US Tel. 1-855-888-8273
 Canada Tel. 1-888-446-4143
www.urgomedical.us

Authors' Affiliation:

¹Department of Cancerology, Human Pathologies and Toxicology,
 ETAP Research Centre, Vandoeuvre-lès-Nancy, France.

²Laboratoires Urgo, Chenôve, France

Published in:

Journal of Dermatology,
 2013, 40 (1-8)