

Medical > In Vivo > Inflammatory Disease Research

20

Antioxidant-based topical formulations influence on the inflammatory response of Japanese skin: a clinical study using non-invasive techniques.

Wagemaker TA, Maia Campos PM, Shimizu K, Kyotani D, Yoshida D. *Eur J Pharm Biopharm.* 2017 Apr 3. pii: S0939-6411(17)30163-7. doi: 10.1016/j.ejpb.2017.03.025.

ABSTRACT

Cutaneous irritants exposure induces an excess of ROS in the skin and can ensue an inflammatory response. Topical antioxidant-based formulations can help to counteract ROS generation. This study evaluated the influence of antioxidant-based topical formulations on the inflammatory response of skin, using a combination of in vivo real-time non-invasive techniques. Nine test areas were defined on each volar forearm of the 25 Japanese volunteers. Measurements were performed before and after treatment with 15 μ L of a 5% sodium dodecyl sulfate solution and 15 μ L of the same based formulation or the vehicle with 1% of the antioxidants. Volunteers without antioxidant treatment showed more pronounced erythematous areas. Transepidermal water loss of areas treated with green tea polyphenol (GTP)-based formulation showed fully recovered skin. Skin barrier damage caused by repeated applications of SDS showed characteristic alterations, detectable by in vivo confocal microscopy such as desquamation, spongiosis and inflammatory infiltrates. The majority of confocal microscopy inflammation signs were found in skin without treatment followed by the vehicle. Ascorbyl tetraisopalmitate, Coenzyme Q10, GTP- and Resveratrol-based formulations reduced the anti-inflammatory cytokines release and attenuated inflammatory signs. The combination of techniques provides results that highlight the importance of antioxidant-based formulations for rapid skin recovery. Copyright © 2017. Published by Elsevier B.V. KEYWORDS: Biophysical techniques; Interleukin; Reflectance confocal microscopy; Skin inflammation; Topical antioxidants PMID:28385617 DOI:10.1016/j.ejpb.2017.03.025