




Bench approaches to study the detrimental cutaneous impact of tropospheric ozone

Benedetta Petracca^{1,2} · Barbara Rothen-Rutishauser² · Giuseppe Valacchi^{3,4,5} · Marc Eeman¹ 

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Abstract

Being exposed to ground-level ozone (O_3), as it is often the case in polluted cities, is known to have a detrimental impact on skin. O_3 induces antioxidant depletion and lipid peroxidation in the upper skin layers and this effect has repercussions on deeper cellular layers, triggering a cascade of cellular stress and inflammatory responses. Repetitive exposure to high levels of O_3 may lead to chronic damages of the cutaneous tissue, cause premature skin aging and aggravate skin diseases such as contact dermatitis and urticaria. This review paper debates about the most relevant experimental approaches that must be considered to gather deeper insights about the complex biological processes that are activated when the skin is exposed to O_3 . Having a better understanding of O_3 effects on skin barrier properties and stress responses could help the whole dermatocosmetic industry to design innovative protective solutions and develop specific cosmetic regime to protect the skin of every citizen, especially those living in areas where exposure to high levels of O_3 is of concern to human health.

Keywords Environmental pollution · Skin · 3D skin tissue model · Oxidative stress · Skin protection