

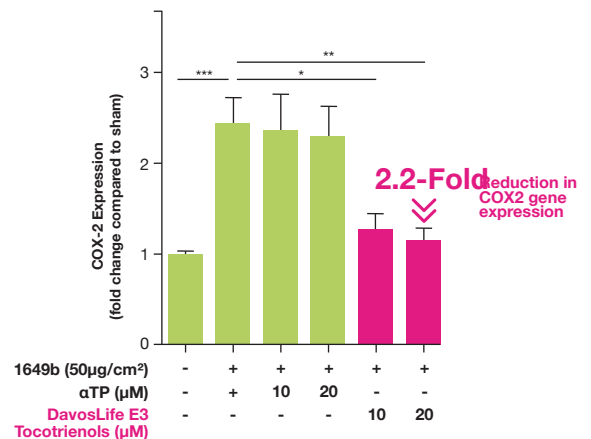
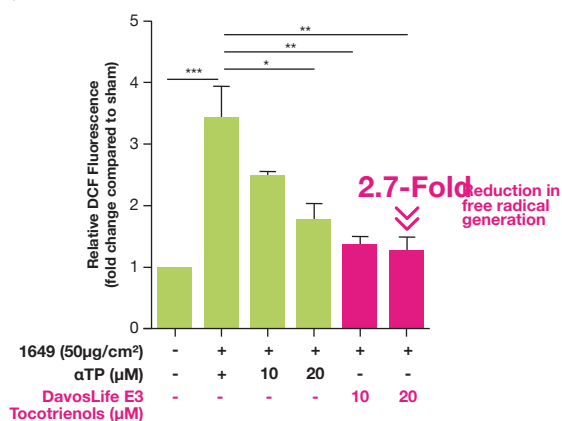
Tocotrienols: Powerful Bioactive for Anti-Pollution Skincare

Pollution (particulate matter) exposure induces excessive Reactive Oxygen Species (ROS), inflammatory cytokines and Matrix Metalloproteinases (MMPs) which trigger oxidative stress and inflammation in skin. These signalling cascades also increase the production of Prostaglandin E2 and COX2, subsequently decreasing filaggrin expression. This results in premature skin ageing, skin inflammation and the disruption of the skin's barrier function.

Davos Life Science studies have shown that Tocotrienols is a very effective bioactive to protect skin from the detrimental effects of pollution exposure and can help to promote healthy, plump, and elastic skin.



How Do Tocotrienols Protect Skin From Pollution?

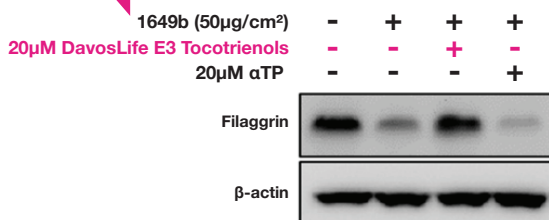


In our study, we evaluated the protective effects of DavosLife E3 Tocotrienols on PM2.5-induced skin damage using Human Dermal Fibroblast cells (HDF). HDF cells were treated with 50µg/ml PM2.5 in the presence or absence of DavosLife E3 Tocotrienols¹.

DavosLife E3 Tocotrienols inhibited PM2.5-induced free radical generation in HDF cells, and were more efficient at achieving this compared to alpha-Tocopherol¹.

DavosLife E3 Tocotrienols have a significant anti-inflammatory effect, as seen in the significant attenuation of PM2.5-induced up-regulation of COX2. However, treatment with alpha-Tocopherol did not show amelioration of inflammation¹.

How Do Tocotrienols Improve Skin Barrier Function?



Western blotting analysis revealed 20 µM DavosLife E3 Tocotrienols could potentially restore skin barrier function following exposure to PM2.5, based on the increased levels of Filaggrin protein expression. In contrast, this was not observed for alpha-Tocopherol when HDF cells were treated at the same concentration¹.

Sun Exposure Damages The Skin via Increased Oxidative Stress and Inflammation



Sunburn



Premature Ageing

Hyperpigmentation

How Do Tocotrienols Reduce the Impact of Sun Exposure?

Tocotrienols do not block UV radiation the way more common sunscreens do. Instead, tocotrienols help to soothe the skin by reducing inflammation and by scavenging oxidative species. Clinical trials have confirmed tocotrienols' efficiency in reducing skin redness and pigmentation following UV irradiation⁵.

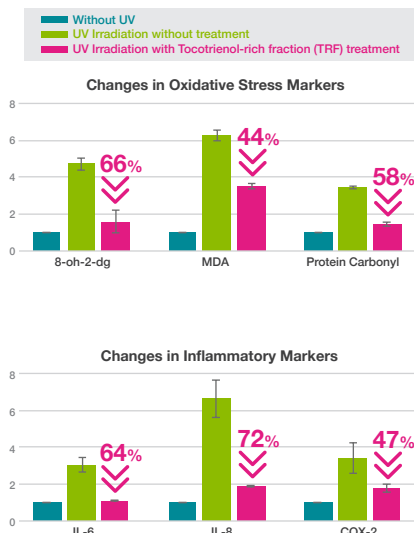


Figure 1: Changes in oxidative stress and inflammatory markers in human keratinocyte cells treated with TRF (Yap WN, 2017).

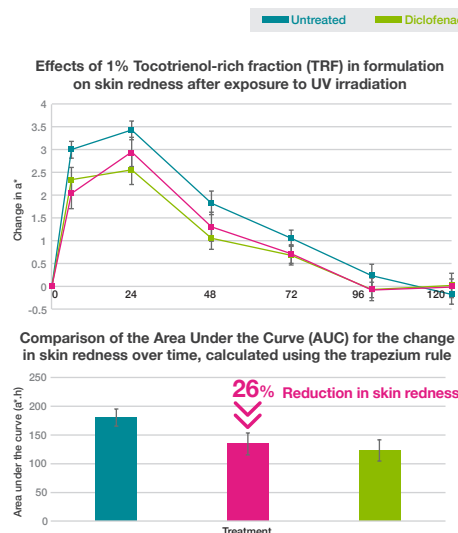


Figure 2: Change in skin redness.

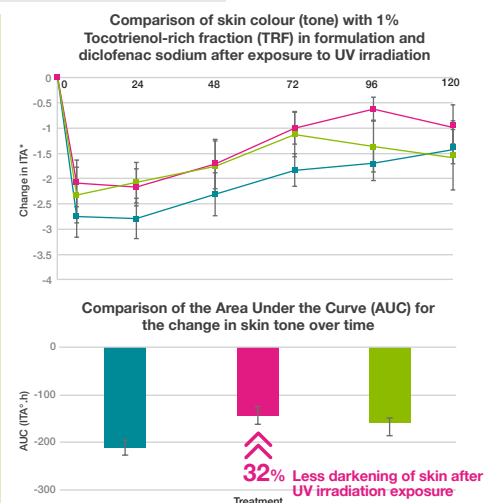


Figure 3: Changes in skin tone.

How Do Tocotrienols Reduce Hyperpigmentation?

Tocotrienols reduce hyperpigmentation by two actions.

First, it inhibits production of the enzyme tyrosinase, thereby reducing the amount of melanin produced⁶.

Second, it promotes the breakdown of melanin⁷.

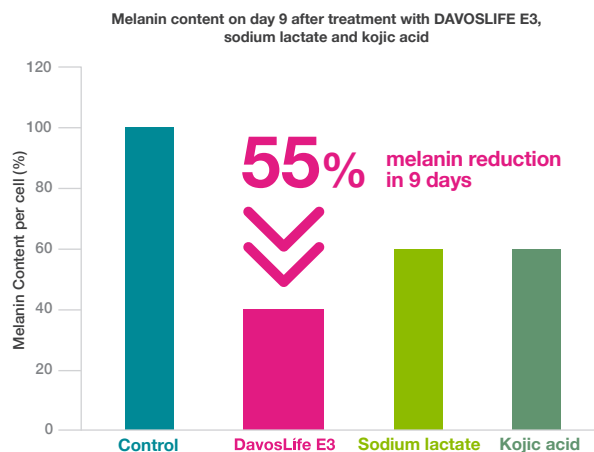


Figure 4: Reduction in melanin content in B16-F1 cells after treatment with different skin lightening actives⁸.

