EFFECT OF INNOVATIVE SKINCARE® EXTREME PROTECT SPF 30 ON PREVENTION OF SOLAR UV INDUCED SUNBURN CELL FORMATION

MatTek Inc.

STUDY OBJECTIVE

This study evaluated the ability of INNOVATIVE SKINCARE® EXTREME PROTECT SPF 30 to protect against sunburn cell formation when skin was exposed to full-spectrum solar radiation.

STUDY DESIGN

Skin was irradiated with full-spectrum solar light including full wavelengths of UVA and UVB using a research-standard solar simulator. INNOVATIVE SKINCARE® EXTREME PROTECT SPF 30 was applied to the skin prior to irradiation. Biopsies of the skin were then evaluated for the presence of sunburn cells. Photomicrographs were taken to document experimental results. Positive and negative controls were also done.

SIGNIFICANCE OF STUDY

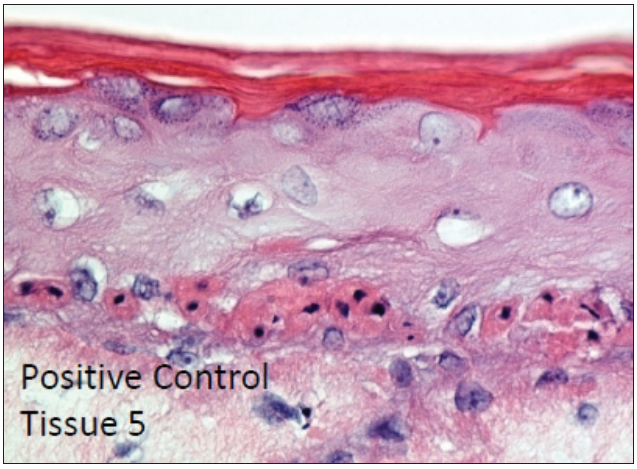
Sunlight contains a full spectrum of UVA and UVB radiation. Solar energy consists of packets of free radicals termed photons. As these free radicals strike the skin, a number of free radical oxidant reactions occur resulting in the skin changes associated with photoaging. DNA damage within skin cells, also occurring with solar exposure, is a primary factor in the development of skin cancer. DNA damage is a major determinant of sunburn cell formation.

Sunburn cells are regarded as an example of the apoptotic cell, i.e. a cell with such heavily damaged DNA and internal chromosomal material that it is scheduled for controlled individual cell death. Some apoptotic cells escape programmed cell death, however, and result in a cancer-prone genotype and phenotype. The deregulation of the balance of programmed cell death (apoptosis) and cells that escape this process is related to the amount of UV exposure.

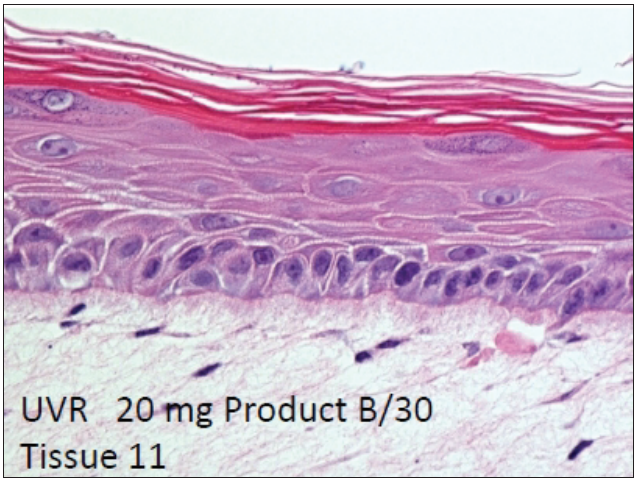
Sunburn cells can be easily seen under the microscope. Sunburn cells occur with solar exposure and are severely injured cells with damaged DNA. This DNA damage is associated with malignant potential. INNOVATIVE SKINCARE® EXTREME PROTECT SPF 30 was applied to skin that was then radiated with full-spectrum solar light. Counting the sunburn cells under the microscope then provided a measurement of the amount of protection given the skin by this product.

RESULTS AND CONCLUSIONS

Many sunburn cells were formed when skin to which no product had been applied was radiated with full-spectrum UVA and UVB light. These visualized sunburn cells are pyknotic, i.e. they exhibit deep pink cytoplasm and very dark nuclei, findings consistent with severe UV damage. When skin was first protected by the application of INNOVATIVE SKINCARE® EXTREME PROTECT SPF 30 and then exposed to full-spectrum UVA and UVB light, no sunburn cells were formed. This indicates dramatic protection from the effects of solar damage, including chromosomal DNA damage to the interior of the cell. These findings are also consistent with protection against solar radiation encouraging the development of skin cancer.



The microscopic slide above shows numerous sunburn cells which appeared after full spectrum UVA and UVB solar exposure. These cells are seen in he middle layer of the slide and are deep pink with very dark purple nuclei. No product was applied to this skin. Sunburn cells have sustained severe DNA damage. They will die prematurely via apoptosis and have a propensity for malignant transformation.



In the microscopic slide of skin shown above, zero sunburn cells are seen. INNOVATIVE SKINCARE® EXTREME PROTECT SPF 30 was applied to this skin prior to full spectrum UVA and UVB solar radiation. This indicates dramatic protection from solar DNA damage with use of the product.