



## EXTREME PROTECT SPF 30 SUNSCREEN BY INNOVATIVE SKINCARE® AND THYMINE DIMER FORMATION

MatTek Inc.

### STUDY OBJECTIVE

Thymine dimer formation in skin exposed to sun was evaluated both with and without use of EXTREME PROTECT SPF 30 sunscreen by INNOVATIVE SKINCARE®.

### STUDY DESIGN

Human skin was exposed to full-spectrum sunlight (UVA and UVB) both with the pre-application of EXTREME PROTECT SPF 30 sunscreen and without EXTREME PROTECT SPF 30 sunscreen (control). Thymine dimer production was measured in the skin samples. Photomicrographs of all samples also were made after staining of the thymine dimers with H & E (hematoxylin and eosin) counterstain.

### SIGNIFICANCE OF STUDY

Thymine dimers (also termed cyclopymidine dimers or CPDs) are formed when nuclear DNA within chromosomes of the cell experience damage from free radicals. Solar rays (both UVA and UVB) are a particularly rich source of free radicals that damage skin at all levels. Chemical bonds are formed between thymine bases of DNA (thymine-thymine bonds) as free radical strikes occur. Aging is accelerated and cancer occurs as this DNA damage progresses.

Quantitative measurements of thymine dimers after sun exposure and other free radical "hits" serve as indicators toward cancer development in the skin. A decrease in thymine dimer formation with application of EXTREME PROTECT SPF 30 sunscreen shows protection from the forces encouraging cancer development, aging, and severe genetic damage within the skin cell.

### RESULTS AND CONCLUSIONS

Application of EXTREME PROTECT SPF 30 sunscreen before full-spectrum solar exposure (UVA and UVB) provided complete protection against thymine dimer formation. This finding is illustrated in figures 1 and 2, the photomicrographs below, as well as in the quantitative measurement of thymine dimers in tissue.

In figure 1 below, skin exposed to the sun's rays was examined under a microscope. The brown areas are cells containing thymine dimers and damaged DNA. The arrow points to the epidermis, where these cells are easily seen. The photograph illustrates considerable cancer risk.

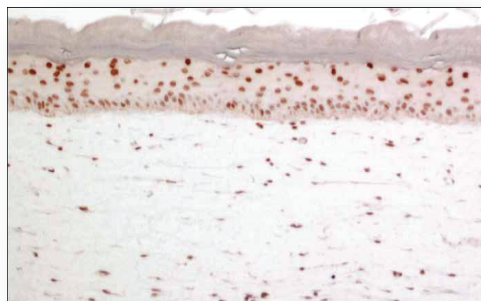


Figure 1. Thymine Dimers in skin exposed to solar radiation with no product.



In figure 2 below, EXTREME PROTECT SPF 30 sunscreen was applied to the skin before sun exposure. No brown cells can be seen in the epidermis, indicating complete protection from DNA damage. The arrow points to the important layer where no thymine dimers were found when EXTREME PROTECT SPF 30 sunscreen was used.

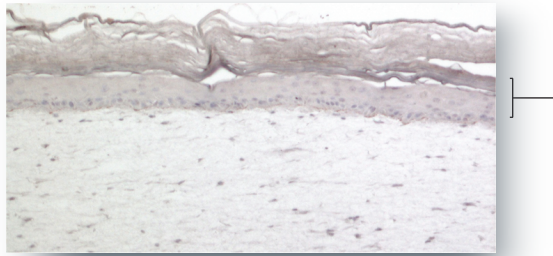


Figure 2. Thymine Dimers in skin exposed to solar radiation after application of EXTREME PROTECT SPF 30

Figures 1 and 2 show that EXTREME PROTECT SPF 30 sunscreen shelters healthy collagen against sun exposure and aging. It contains powerful DNA protectants that combat the tendency toward skin cancer caused by sun damage. It maintains and preserves healthy skin even during environmental exposure and aging.

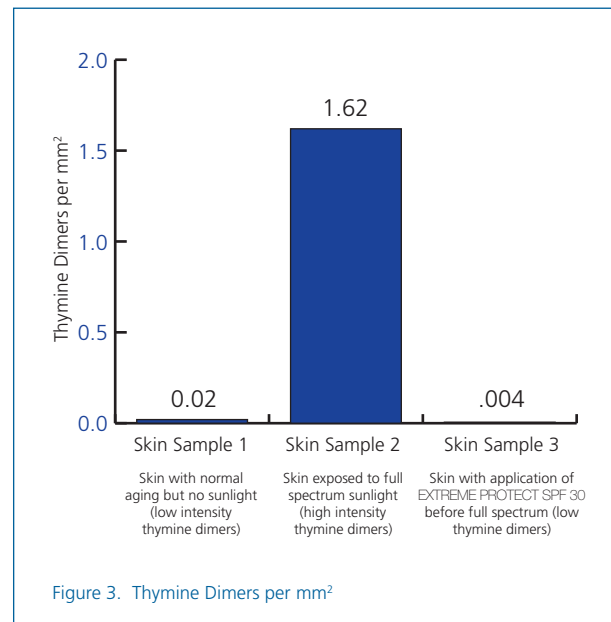


Figure 3. Thymine Dimers per mm²

Figure 3. The graph above indicates a number consistent with high-intensity thymine dimer formation when skin is exposed to full-spectrum light but without application of EXTREME PROTECT SPF 30 sunscreen (skin sample 2). The skin samples without sunlight exposure (skin sample 1) and with sunlight exposure after use of EXTREME PROTECT SPF 30 sunscreen (skin sample 3), respectively, both indicate low-intensity thymine dimer formation. In fact, with use of EXTREME PROTECT SPF 30 sunscreen before exposure to full-spectrum sunlight, there were zero thymine dimers produced.