Evidence Refutes Sunscreen/Skin Cancer Link

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In spite of an alarming report earlier this year from the National Cancer Prevention Working Group, an analysis of human and animal studies found little support for the assertion that sunscreens containing retinyl palmitate cause skin cancer. In a commentary published online, Dr. Steven Q. Wang of Memorial Sloan-Kettering Cancer Center, New York, and his colleagues evaluated the compound from several points of view, and concluded that “there is no convincing evidence” that retinyl palmitate, a form of vitamin A, is carcinogenic in sunscreens (J. Amer. Acad. Dermatol. 2010; doi:10.1016/j.jaad.2010.07.015).

In fact, clinical observations spanning over 40 years in the field show that these compounds are helpful in skin cancer chemoprevention, the authors wrote. “Correcting this false impression is an important and necessary step to ensure that the public continues to use sunscreen as a component of photoprotective strategy.”

The suggestion by the Environmental Working Group, a nonprofit public health research and advocacy organization, that retinyl palmitate in sunscreens may cause skin cancer garnered widespread media attention, because 41% of sunscreens on the market contain this compound. Retinyl palmitate, an antioxidant, does not directly provide sun protection, but instead is added as an cosmetic ingredient.

Dr. Wang and his colleagues noted that retinyl palmitate and related closely related compounds are natural com-ponents of human skin. In 2000, the compound was referred to the National Institutes of Health’s National Toxicology Program (NTP) for phototoxicity and photocarcinogenic testing, along with many other common ingredients such as alpha- and beta-carotene, yellow; and, nanoscale titanium dioxide and zinc oxide.

Between 2002 and 2009, the FDA published eight in vitro studies and three animal studies of retinyl palmitate. Several of these studies showed that the combination of retinyl palmitate and UV light induced reactive oxygen species. In addition, an NTP study involving 430 SKH-1 hairless mice examined two concentrations of retinyl palmitate and placebo at three levels of solar radiation.

There were no deaths. However, there was no peer review, but some of the data are available online, and Dr. Wang and his colleagues analyzed them. The only statistically significant results were an apparent increase in neoplasms in animals given the higher concentration (0.5%) of retinyl palmitate at an intermediate level of simulated solar radiation (6.75 cm²/m²). Higher levels of solar radiation resulted in no significant increase in neoplasms, so the authors concluded that the study failed to provide conclusive evidence indicating that the combination of retinyl palmitate and UV radiation is carcinogenic.

In addition, that study had several limitations, including the fact that the SKH-1 strain of hairless mice is highly susceptible to the development of skin cancer. In fact, at the higher level of solar radiation, 82% of the mice developed malignant skin lesions when given the placebo.

Although no similar studies in humans have been published, Dr. Wang and his colleagues noted that humans have been prescribing topical retinoids for more than 40 years, and have published no evidence suggesting that these compounds increase cancer risk.