

Sunburn alert: UVB does more damage to DNA than UVA

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As bombs burst in air this July 4, chances are that sunburn will be the red glare that most folks see – and feel. But unfortunately, even when there is no burn, the effects of the sun's ultraviolet (UV) rays can have deadly consequences.

Thanks to a new research study published in the July 2008 issue of *The FASEB Journal*, scientists now know why one type of UV light (UVB) is more likely to cause skin cancer than the other (UVA). This information should be useful to public health officials and government regulatory agencies in identifying specific criteria for exactly how effective consumer products, like sunscreen, are in preventing skin damage leading to skin cancer. It should also allow scientists to pursue new lines of research and treatment into repairing the damage caused by the sun's rays.

"Our study is novel in that it fills the gaps in knowledge of mechanisms involved in sunlight-associated skin cancers, which cover various aspects of DNA damage and repair and genetic alterations," said Ahmad Besaratinia, PhD, Assistant Research Scientist at City of Hope National Medical Center and first author on the report.

According to researchers from City of Hope National Medical Center in Duarte, California, UVB light is more harmful to our skin because our bodies are less able to repair the DNA damage it causes than the damage caused by UVA light. To reach their conclusions, scientists exposed three sets of cells to UVA light, UVB light and simulated sunlight. Then

they compared these cells to an unexposed control group to analyze how well these cells were able to repair the damage.

In addition, they analyzed published data on the genetics involved in human skin cancers. The researchers found that cells were more easily able to repair the damage caused by the UVA light, which explains why UVA light has been perceived as "safer" than UVB light. Despite this perception, scientists and public health experts caution that UVA light can and does cause serious damage that can and does lead to skin cancer.

"We know that sunlight causes skin cancer and that breakdown of the ozone layer exposes us to ever more ultraviolet radiation. This work tells us that both forms of UVA and UVB in sunlight cause damage to DNA. It forms a missing link in the chain of events from sun exposure to tumor formation," said Gerald Weissmann, MD, Editor-in-Chief of *The FASEB Journal*. "This research article gives us information that could lead to better sunscreens or effective 'after sun' products. It promises new ways to prevent - and perhaps to treat - the epidemic of skin cancer brought on by modern life."

Source: Federation of American Societies for Experimental Biology

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