

Sunscreen and cancer

Origin of the myth

Some companies have advertised that their sunscreen products do not contain the carcinogenic (cancer-causing) substances which other sunscreens contain. In particular, manufacturers of *holistic* and *all-natural* sunscreen make this claim. The substances suggested of being carcinogenic are titanium dioxides, zinc oxide, octyl methoxycimamate, oxybenzone and 4-methyl-benzylidene.

In addition, some people believe that reducing their exposure to sunlight can cause Vitamin D deficiencies, which may also lead to cancer.

Current evidence

Sunscreen

The Report on Carcinogens is a list of known or reasonably anticipated human carcinogens (cancer causing substances). None of the suspect ingredients, listed above, are included in this list.¹ The International Agency for Research in Cancer (IARC) also does not recognise these ingredients as carcinogenic.² None of these chemicals has been banned by the Food and Drug Administration in the US or by the European Union.

In response to claims that sunscreen causes skin cancer, a 2003 review examined the link between sunscreen use and melanoma. No evidence for increased risk of melanoma with sunscreen use was found. The research suggested that sun-sensitive people who have higher risk of melanoma are more likely to use sunscreens.³

A study published in 1999 examined the incidence of two types of skin cancer in 1621 residents of Nambour, in southeast Queensland. Participants were randomly assigned to either apply SPF 15+ sunscreen daily or not for four and a half years. No harmful effect of daily sunscreen use was reported. Participants who used sunscreen daily experienced a significant decrease in squamous-cell carcinoma, and no change in incidence of basal-cell carcinoma.⁴

The Department of Health and Ageing in Australia did a review of studies on the safety of the titanium dioxide and zinc oxide in sunscreen. The review found that these substances remain on the surface of the skin and in the outer dead layer, and do not penetrate into living skin cells. Hence, even if titanium dioxide and zinc oxide were found to cause cancer (and there is no evidence for this) they are unlikely to reach and damage living cells.⁵ In another review, IARC concluded that titanium dioxide is *possibly carcinogenic to humans*.⁶

Vitamin D

There has been some concern recently as reducing exposure to sunlight through measures such as using sunscreen may lower vitamin D levels in the body. Vitamin D is thought to prevent cancer is produced in response to UVB radiation, which is blocked from being absorbed by the skin when sunscreen is used. However, research indicates that a incidental protected exposure on the face and back of hands is enough to produce the required amounts of Vitamin D.^{7,8}

Summary

There is no evidence that use of sunscreens increases the risk of skin cancer or causes Vitamin D deficiency.^{9,10} Meanwhile, there is definite evidence that sun exposure increases the risk of skin cancer. Solar radiation is classified as a known human carcinogen in the Report on Carcinogens.¹ IARC also classifies solar radiation as carcinogenic to humans.¹¹

Further reading

- Choosing and using sunscreen
The Cancer Council WA
<http://www.cancerwa.asn.au/resources/publications/prevention/#sun>
- Use of SPF30+ sunscreens
The Cancer Council Australia
<http://www.cancer.org.au/Healthprofessionals/PositionStatements/sunsmart/useofsunscreens.htm>

References

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6. International Agency for Research on Cancer (IARC), *Carbon Black, Titanium Dioxide and Non-Asbestiform Talc*, in *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans*, IARC, Editor. 2006: Lyon, France.
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11. International Agency for Research on Cancer (IARC), *Solar and ultraviolet radiation*, in *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans*. 1997, IARC: Lyon, France.