

TANNING, UV RADIATION AND SKIN CANCER

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(7) Besides accelerated skin aging and sunburns, excessive exposure to ultraviolet radiation puts a person at risk of damaging their immune system, developing cataracts and getting skin cancer. The most common skin cancers are basal cell skin cancers and squamous cell skin cancers but these types of skin cancers are often easily treated because they rarely spread to other parts of the body. Melanoma (cancer of the melanocytes) is the rarest type of skin cancer as well as the deadliest because it can spread to other parts of the body. If melanoma is detected during the early stages and treated before it spreads, then there's a better survival rate. Melanoma rarely develops in people with dark skin.

(8) The most common cause for melanoma is excessive exposure to UVR. People who start to use tanning beds early in life (before the age of 35) greatly increase their risk of developing skin cancer. People who have pale skin and a poor tanning response (they burn easily) are also at more risk of developing skin cancer. Having multiple sunburns in childhood increases the risk of developing skin cancer later in life. Melanoma occurs more in men than in woman. For men it is usually found on the back and for women it is usually found on the back of the legs. Other risk factors include genetics. The MC1R gene is found in every person with red hair and this puts them at a 2-4 times greater risk of developing skin cancer.

Article Questions

- 1) What has caused Western populations to desire tans?
When tans became associated with a having a healthy active lifestyle and with the wealth that could fund frequent vacations to sunny destinations, tans became more desirable as status symbols and a sign of beauty.(1)
- 2) What function does melanin serve?
It functions to absorb UVR and blocks it from penetrating further into the skin and damaging the DNA.(3)
- 3) Besides how they produce a tan, describe 3 differences between UVA and UVB radiation.
 - UVA is more likely to produce skin aging while UVB is more likely to cause sunburns.
 - UVA has a longer wavelength than UVB. (320-400nm vs. 280-320nm)
 - UVA is not as easily blocked by the ozone layer as UVB.
 - UVA is less intense than UVB.
 - UVA is not blocked by sunscreens as well as UVB.
 - UVA can penetrate cloud cover and go through windows while UVB cannot. (4)

Any three of these.
- 4) How does UVA produce a tan?
UVA causes the oxidation of melanin which darkens the pigment.(5)
- 5) How does UVB produce a tan?
UVB stimulates more melanin production from the melanocytes.(6)
- 6) Describe one benefit of UVB exposure.
UVB stimulates the production of vitamin D.(6)
- 7) What is melanoma?
It is the rarest but deadliest form of skin cancer. It is cancer of the melanocytes. (7)
- 8) List all the factors that would put you at a higher risk of developing skin cancer.
 - Use of tanning beds before the age of 35.
 - Multiple sunburns as a child.
 - Fair skin and poor tanning response.
 - Being a redhead which means you have the MC1R gene.
 - Men are more prone to developing skin cancer than women. (8)