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Do Chemicals in Sunscreens provide more skin protection from ultraviolet radiation or do they cause more harm?

It is known that *sunscreens* can protect people from certain types of skin cancer in addition to protecting the skin from sunburn, which is caused by *ultraviolet radiation*. However, the chemicals used to produce sunscreens can be harmful by increasing risks of other skin cancers and diminish people's health. Some of these chemicals interfere with the maintenance of healthy skin. Recent studies have proven that while sunscreens are essential in providing skin protection against ultraviolet radiation, there are other factors people must consider in order to understand safety measures in applying sunscreens.

Sunscreens and Skin Protection. First, people must understand how sunscreens work. The primary job of sunscreens is to protect the skin from sunburn which is caused by Ultraviolet B. However, not all sunscreens protect the skin from another type of radiation known as Ultraviolet A. Both can harm the skin abundantly, but in very different ways. The efficacy of sunscreen protection between Ultraviolet B and Ultraviolet A were measured as (1) Skin Cancer Prevention, application of sunscreens reduce the development of skin cancers such as *actinic keratosis* (crusty skin); *squamous cell carcinoma* (cancer of epidermal cells), and *melanoma* (cancer development in pigment cells); (2) Ultraviolet A (UVA), these are ultraviolet rays that are not protected by most sunscreens and damage cells under the dermis of the skin, which leads

to premature ageing and skin cancer; (3) Ultraviolet B (UVB), the cause of sunburn and damage to DNA and is prevented by the use of sunscreens; (4) Sun Protection Factor, also known as SPF, determines the amount of protection against UVB. People are misled to believe that the higher the SPF in sunscreens, the longer they can stay out in the sun and moreover lower the risks of skin cancer, when in contrast, the skin is more exposed to Ultraviolet A. (Hanranhan 148, 150)

People who use sunscreens need to be informed of proper application techniques to avoid further harm to the skin. To solve this problem, it is better for the consumer to read labels and determine what kind of sunscreen is suitable to use. It is worth searching for sunscreens that have chemicals to protect the skin against UVB and UVA, which would be sunscreens greater than an SPF of 20. (Fallon 429) However, some chemical ingredients that are used to produce broader spectrum of sunscreens such as SPF 50, are not entirely safe though they have the ability to block UV rays from passing through the skin. By looking at all these factors, it is certain that sunscreen users may not know if they are provided full protection coverage from the risks of skin cancer.

Sunscreen Chemicals. Chemicals in sunscreen are proven to penetrate the skin and further cause cancer development. Recent studies have shown that sunscreens do not fully protect the skin from sunburn and other skin cancers due to the negative effects from the ingredients and chemicals used to produce sunscreens. For example, Vitamin A, which is an ingredient that can be labeled in sunscreens as *retinyl palmitate or retinol*. Vitamin A in sunscreens is defined as retinol ingredients and is considered to be cancerous by manufacturers due to these reasons stated:

Vitamin A is used as an anti-oxidant that slows skin ageing. While that may be safe for lotions and night creams used indoors, the FDA recently conducted a

study of Vitamin A's photocarcinogenic properties-studying the possibility that it may promote cancerous tumors when used as skin exposed to sunlight.

(Douillard, par. 13)

Not only do such ingredients like Vitamin A are unsafe in the application of sunscreens, but because excessive use of sunscreens block sunlight from passing through the skin, Vitamin D is affected. Vitamin D is produced when the skin is exposed to sunlight and as a result, it maintains healthy bones by producing Calcium in the body. According to U.S. Department of Health and Human Services, though sunlight is essential for the body in consuming Vitamin D, the length of time the body should be exposed to the sun is limited because it increases the risk of skin cancer; people should wear protective clothing along with sunscreen use of SPF 8 or higher if the body is exposed to sunlight after a few minutes. ("Vitamin D Fact Sheet for Consumers") Besides cancer development, Vitamin D deficiency can cause other diseases such as heart disease and osteoporosis (thinning of the bones). However, there are other alternatives for Vitamin D intakes. The reason why these alternatives should be considered is to avoid excessive use of sunscreens and sun exposure that contribute to skin cancer. According to the Skin Cancer Foundation, "the safest way to obtain Vitamin D is through a combination of diet and Vitamin D supplements." ("If Recent Attacks on Sunscreen Concern You" 229) Therefore, the use of sunscreen chemicals can still be used in moderation to help block the harmful effects of UVB rays while supporting your body to produce Vitamin D. Other ways Vitamin D can be consumed is by the intake of tablets that are sold over-the-counter, drinking milk, and other foods or drinks that contain Vitamin D, and that is also suitable as consulted by a doctor.

Another chemical that is known to be most effective in the prevention of skin cancer is *Nanoparticles*. There are two types of Nanoparticles: *Zinc Oxide* and *Titanium*. These

substances can range from small to large and the size of the particles do have an effect on skin protection. According to *EWG's Guide to Sunscreens*, "the form of zinc oxide most often used in sunscreens is larger and provides greater UVA protection than the titanium dioxide products that appear clear on the skin." ("Nanoparticles in Sunscreens") There have been many concerns regarding the safety nanoparticles, but researchers find that they do not penetrate the skin and they are very essential in blocking UVB and UVA rays, without causing allergic reactions. However, EWG's guide highly recommends people to refrain from loose powder and sunscreen sprays containing titanium dioxide and zinc oxide of any particle size due to the fact that the inhalation of these chemicals is toxic to the lungs.

One of the chemicals that researchers have found to penetrate the skin, is *Oxybenzone*. Oxybenzone is a hormone that can be absorbed by the body and is believed to interfere with other hormones in the body. However, according to The Skin Cancer Foundation's Photobiology Committee, and The Food Drug Administration Act (FDA), recent studies have shown that though oxybenzone can be absorbed by the body, it does not accumulate and pass through organic tissues in the body and is therefore safe to be used by humans. (Morison et al., par. 10) *Reliability of Sunscreens*. From the research that has been done on sunscreens, there is much to say of how useful sunscreens are as well as the disadvantages that people need to learn to refrain from. Due to those results, sunscreens are not the most recommended product against sunburn and skin cancer though it is proven to provide protection to some degree, "along with sunscreens, you should also wear hats, protective SPF-rated clothing, and seek shade during the hours of most intense sunlight." (Collins, par. 23) This is a clear resolution due to the fact sunscreens do not work 'alone' to fight against skin cancer and sunburn. It would be wise to use other safety measures that can assist sunscreens in providing skin protection. Due to the side

effects associated with sunscreens, they are highly recommended to be used with other sun safety agents against skin cancer and sunburn. Berwick states:

Both the American Cancer Society and the US Centers for Disease Control and Prevention promote the use of clothing to protect individuals from sunburn, and thus skin cancer, before the application of sunscreen. (Berwick 31)

For the most part, sunscreens are not disregarded to protect the skin against ultraviolet rays and decrease the risks of cancer, but they are also proven to be insufficient and toxic if people do not carefully examine the extent of their usability on human skin, under sunlight exposure. If it is not considered, unhealthy risks are increased and the body becomes vulnerable. Sunscreens can become more toxic than they should be if people continue to take more advantage of the health benefits and overlook the boundaries that secure health safety. This is why other protective measures should be considered in order to balance the way the human body should normally absorb sunlight.

Conclusion

The best way to evaluate the efficacy of sunscreens in determining if they are more protective to the skin or cause more harm, is by evaluating how studies are provided abundantly compared to other sources or individuals who don't provide much feedback, except to give reasons based on the information they receive. Many of these studies are done through experiments and testing of the chemicals that are proposed to researchers and scientists.

It is not to say sunscreens should not be used because of the side effects caused by some of the chemicals and ingredients, but nor can sunscreens be fully trusted in providing the ultimate skin protection. As with any substance, people who use sunscreens must learn to take caution and be

able to distinguish how safety measures will be used depending on how long they want to remain under the sun and what their physical needs are in terms of the vitamins they lack. If people wear sunscreens of an SPF with a large spectrum of 50 just to assume they are fully covered, they are in danger and to prevent risks of diseases and cancer development, they need to read the labels on sunscreens before purchasing them and take responsibility of the support they are applying to their own health.

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