

Sunscreen: is it safe to make your own?

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Credit: Suzanne Tucker/Shutterstock

Using natural and organic products for skincare is increasingly popular—and that includes sunscreen. Many websites, including [Pinterest](#) and [Instagram](#), feature users' recipes for homemade sunscreens.

Judging from the commentary, the surge in interest for homemade sunscreens is because some people [fear the chemicals](#) in shop-bought sunscreens and believe that [natural products](#) mixed at home will be better at protecting them from the sun's harmful rays.

The fear originates from [recent news](#) that some sunscreen ingredients, such as oxybenzone and octinoxate, [seem to disrupt hormones](#). And using sunscreens that contain these ingredients may lead to them accumulating in the body at concentrations that [exceed the safety threshold established](#) by the US Food and Drug Administration (FDA).

The widespread use of oxybenzone and octinoxate has also been reported to be harmful to the environment and [sea life](#).

Many of the homemade sunscreen recipes contain ingredients like shea butter and cocoa butter as well as coconut, almond, avocado, lavender and vitamin E oils. The [sun protection factor](#) (SPF) values for these ingredients, according to the authors of these recipes, are between four and six. These SPF values, if true, are not enough to protect the skin against the harmful effects of sunlight.

Some recipes include carrot seed essential oil, which the authors claim to have an SPF of 35-40. But this is unlikely, given the small amount used in these recipes.

Perhaps the only valid component that is suggested in the recipes is zinc oxide. The recipes recommend using only the "uncoated", "non-nano" and "not micronised" zinc oxide preparations to avoid harming the environment. This is fine as long as the "non-nano" and "not micronised" zinc oxide particles' size and proportion are carefully studied and tested to provide the effective sun-filtering effect.

Any protection at all?

The sun's most harmful rays are ultraviolet (UV) radiation—notably UVB and UVA radiation. UVB has a shorter wavelength and doesn't penetrate far into the skin, but it is very dangerous as it can alter the DNA in skin cells and cause skin cancer.

UVA has a longer wavelength and can penetrate much deeper into the skin. UVA can cause harmful reactive oxygen molecules called "free radicals" to form. These molecules can damage fat, protein and DNA in the skin, thereby impairing the normal function of skin cells.

Shop-bought sunscreens contain approved UV-filtering compounds that block UVA and UVB rays. Zinc oxide is one of these UV filters. It has been extensively tested to determine the most effective size for blocking harmful rays. It is not clear whether the [zinc oxide](#) powder recommended for the homemade recipes conforms to the [recommended size or proportion](#) needed.

Shop-bought sunscreens also contain antioxidants, such as vitamin E and C, which neutralise the harmful effects of free radicals once they are formed by UVA rays in the skin. Here, DIY sunscreens do provide some benefit as they often include natural oils, such as vitamin E, which have antioxidant properties.

All sunscreens on the market have been extensively tested to demonstrate full UVA and UVB coverage, appropriate antioxidant property and water resistance. The FDA and the European Commission recommended SPF factor for moderate skin protection is 15-29 (and 30-50+ for high protection).

SPF mostly reflects the protection against UVB rays. For UVA rays, it is also required that the "UVA protection index" be labelled on the sunscreen containers. According to the European Recommendation, the UVA protection for each sunscreen should be at least a third of the labelled SPF. A product that achieves this requirement will be [labelled with a UVA logo](#) – the [letters "UVA" printed in a circle](#).

Consumers need to read the label and apply the recommended thickness of 2mg per square centimetre of skin. This is the thickness at which SPF

and UVA protection index is established by the FDA and EU recommendations to reduce the risk of skin cancer, especially in fair-skinned people.

These facts highlight the danger of using homemade [sunscreen](#) that lacks proper testing and protection. Also, the homemade recipes are not made in a sterile environment and so are prone to bacterial and fungal contamination, which can cause [skin](#) infections. The conclusion is simple: people are better off with shop-bought sunscreens.

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