

What is Melanotan-II, the drug that consumers are urged to avoid?

January 30 2023, by Maddie Massy-Westropp



Credit: Unsplash/CC0 Public Domain

A TikTok influencer grins into the camera. Shirtless, his bronzed skin contrasts on a light background.

"Let's talk about Melanotan-II and the wonders it did for me," he says in the video over upbeat music.

"Essentially, what this stuff is going to do is allow you to get way tanner, way quicker."

This is one of many similar videos promoting the drug Melanotan-II found on TikTok, Instagram and other social media platforms. And despite the drug being banned in Australia, it is easy to find websites where you can buy Melanotan-II as a nasal spray or injectable vial, and have it delivered to your home.

Dubbed the "Barbie drug," Melanotan-II promises users a rapid tan without long hours in the sun. This, along with other effects including weight loss, has contributed to strong interest in Melanotan-II online.

However, Melanotan-II is far from a harmless drug. Medical experts from UNSW Sydney warn that Melanotan-II can cause [serious side effects](#), and potentially even cause melanoma.

How does Melanotan-II work?

Melanotan-II is a synthetic version of α -Melanocyte-stimulating-hormone (α -MSH), which is produced in the pituitary gland of the brain and is naturally present in our bodies. The α -MSH acts on specialized [skin cells](#) responsible for producing pigment.

The drug hacks the body's regulation of [pigment cells](#), tricking the body into tanning itself.

"In our skin, we have pigment cells and we have hormones that regulate the activity of those pigment cells. So what Melanotan-II does is mimic the action of those hormones and upregulate the activity of our pigment

cells," said Associate Professor Deshan Sebaratnam, who is a dermatologist at Liverpool Hospital and Conjoint Associate Professor at UNSW Medicine & Health.

"It means that our pigment cells produce more melanin and that's what gives you your tan."

If injected or used as a [nasal spray](#), Melanotan-II can cause dramatic skin darkening in just days. The drug can also suppress appetite and lead to [weight loss](#), another effect that some users find desirable.

Potential to cause melanoma

Serious safety concerns have surrounded Melanotan-II since it was first developed at the University of Arizona in the 1990s. Chief among those is the drug's potential to induce melanoma, the deadliest form of skin cancer.

"You're stimulating pigment cells with Melanotan-II. If you do that enough, you can cause abnormal proliferation of the cells," said Dr. John Frew, who is a dermatologist at Liverpool Hospital and Conjoint Senior Lecturer at UNSW Medicine & Health. "And this can jumpstart the progression to the possible development of melanoma."

Previous case reports have shown some Melanotan-II users develop skin-based complications, including melanoma, however the evidence is still limited.

"Case reports have described melanomas emerging from existing moles either during or shortly after the use of Melanotan-II," said Professor Bernard Stewart from UNSW Medicine & Health, who is an internationally recognized expert in environmental carcinogenesis (cancer causation). "However, evidence for causal associations is

lacking... Definitive proof is yet to be established."

Another lesser-known danger of Melanotan-II is its neurological effects. As well as affecting pigment cells in the skin, the drug can bind to receptors in the brain and influence processes like appetite and sexual function.

"There are a few strange neurological effects reported with Melanotan-II. Typically, the nausea, vomiting and [facial flushing](#) are more prominent... There are also reports of priapism [prolonged erections] and yawning," Dr. Frew said.

Beware of social media advertising

Melanotan-II is not approved for use in Australia by the Therapeutics Goods Administration (TGA).

According to a TGA spokesperson, "its development as a potential medicine was halted some years ago due to safety reasons."

And yet, some Australians continue to use Melanotan-II for tanning, despite continued warnings from the TGA. This could be driven by the numerous endorsements and testimonials from users on [social media platforms](#) including TikTok and Instagram.

Advertising and supplying Melanotan-II to the public are illegal and the TGA says it is working with social media and [digital platforms](#) to address allegedly unlawful advertising by users.

A TikTok spokesperson said at the time of the latest TGA warning that videos promoting or selling nasal tanning sprays and melanotan breached the platform's rules and had been removed.

"We have also banned hashtags including #tanningnasalspray #melanotan and #melanotan2."

Meta, which owns Instagram, also prohibits content on its platforms which promotes [illegal products](#), though videos featuring Melanotan-II continue to appear, with measures taken to avoid the restrictions such as using generic hashtags like #tanning.

Dr. Frew said that questions remain about how to protect social media users from the advertising of illegal and harmful products, and the responsibilities of social platforms.

"The reach of the TGA is obviously quite limited in terms of what happens on TikTok and Instagram. That's a big problem with no clear solution."

Provided by University of New South Wales

Citation: What is Melanotan-II, the drug that consumers are urged to avoid? (2023, January 30) retrieved 27 April 2024 from <https://medicalxpress.com/news/2023-01-melanotan-ii-drug-consumers-urged.html>

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