Media Release

Medical finding: Tanning is physiologically addictive

See “Tanning Mom” www.youtube.com/watch?v=awZwgC4PwIu

Anyone tanning regularly, especially through these cooler months of the year, because "they like the way it feels" take note: it may be because you are physiologically addicted to tanning in much the same way regular drug users become addicted to drugs.

The startling findings, which show that addictive 'feel-good' endorphins flood the body and brain as a result of UV hitting human skin, are revealed in research being presented at the Annual Scientific Meeting of the Australasian College of Dermatologists in Melbourne this week.

According to a leading US researcher and educator, Professor Steve Feldman, tanning can be powerfully addictive and future government health campaigns to reduce skin cancers in Australia need to consider warning people of the dangers of getting hooked, because of the severe potential health consequences.

“We used to think people who tanned regularly did so in order to look good, but now we know there's a much more sinister physiologic compulsion at play that's identical in its chemistry to what happens in drug addiction.

In fact, we have shown that when tanning addicts are deprived of the endorphins they get from UV, they typically show narcotic-like withdrawal symptoms including nausea and body tremors," Professor Feldman said.

The team were initially baffled by why men and women, who claimed they wanted to look good, spent so much time tanning, prematurely ageing their skin and making themselves look bad, while massively increasing their likelihood of developing skin cancer.

"For a long time it didn’t really click. But it turns out that when skin cells in culture are exposed to UV light, they release hormones which produce the natural ‘feel-good’ molecule, endorphin, using the same receptors that morphine and heroin bind to and make you feel good.

"When you put it all together it makes total sense. Why do people go out to the beach when it’s crowded? They don’t go at 6pm when it’s peaceful - no, they go at the middle of the day when it’s stinking hot and uncomfortable and crowded – but that’s also when UV rays are at their highest!

"So my team began investigating the idea that unhealthy tanning behaviours are an addiction to the endorphins coming from tanning. One was surveying beach-goers and asking them survey questions like
“Can you help yourself from going, and do you go even though you know you shouldn’t?” In these surveys, people reported addictive-like behaviours.

Then we got two tanning beds and in one we replaced the acrylic filter, that’s made to let the UV light pass through, with a UV blocking filter. Though both beds looked identical, put out the same amount of light and warmth, only one bed let the UV through, and the other had a clear transparent UV blocking device that prevented UV reaching the skin. So one bed gave UV, the other didn’t.

And we put frequent tanners in both beds on Monday and both beds on Wednesday and on Friday we’d say – ‘heck – you can get in whichever bed you want!’ And 95% of the time they’d pick the bed that gave them UV, though we didn’t tell them one bed didn’t have UV, and which was which.

They said to us ‘This one is more relaxing than the other,’ and for us that was fairly definitive proof that the UV has a physiologic effect that people can feel and it drives their behaviour.”

To show that this effect is mediated by endorphins, the experiment was repeated after giving subjects the narcotic endorphin blocker, Naltrexone. By giving people an endorphin blocker before they went into the bed, if the 95% are choosing the UV bed because they’re getting an endorphin-hit, by giving them an endorphin-blocker we reasoned we should be able to block their preference for the UV bed. Naltrexone blocked one subject’s preference for the UV bed and two other subjects unexpectedly developed narcotic withdrawal symptoms.

Fascinated by this, the research team began a controlled trial. Subjects were given either a placebo or the endorphin blocker, and NONE of the people who had the placebo had any symptoms suggestive of a withdrawal, but half the people who had the endorphin blocker had either nausea or trembling symptoms consistent with going into withdrawal. The ones who got the endorphin blocker had a reduced preference for the UV bed. Though it was a very small study, the data were very supportive of the proposition that the tanning addiction phenomena, and physiologic effects that people experience, is mediated by endorphins that are released by UV light exposure.

Other researchers did functional brain imaging studies to see what happens to your brain when you’re exposed to the UV light and compared that with what happens under the ‘sham UV’ light. The UV light specifically lit-up the pleasure sensors in the brain in much the same ways that you see with other addictive behaviours. So this showed that the physiologic effect of tanning involves a central effect in the brain.

“This research is significant because it shows that people tan not necessarily to darken their skin colour, but often because of the very powerful motivator of how it makes them feel. Efforts to reduce tanning UV exposure to avoid skin cancer and overall damage to skin need to take this risk of drug-like addiction to tanning into account,” Professor Feldman said.

Steven Feldman, MD, PhD, is a Professor of Dermatology, Pathology and Public Health Sciences at Wake Forest University School of Medicine, Winston Salem, North Carolina, USA.

Professor Feldman is available for interview at The 47th Annual Scientific Meeting of the Australasian College of Dermatologists at the Melbourne Convention and Exhibition Centre (MCEC), 1 Convention Centre Place, South Wharf – Melbourne. For all telephone interviews, please phone Peter Cassuben on mobile: 0417 980 009 or Prof. Steve Feldman on 0410 158 694