MELANOTAN - SUN, SEX AND SICKNESS.

Marie Claire Van Hout, PhD
Department of Health, Sport and Exercise Science
School of Health Sciences
Waterford Institute of Technology
Ireland
THE BODY BROWN AND BEAUTIFUL

- Contemporary public health challenges increasingly centre on the proliferation and consumerism of novel image enhancement products driven by distinct aesthetic and health ideals.
- Socio-cultural values placed on skin tanning equating with health and attractiveness are positively associated with appearance orientation in both males and females.
- Positive body image benefits when tanned are immediately salient when compared to the more distant prospect of skin cancer.
TANNING BEHAVIOURS AND RISKS

- Comparisons between excessive tanning and behavioural addictions.
- shared excessive engagement in (outdoor and artificial) tanning activities,
- obsessive and intrusive thoughts about tanning,
- preoccupation with deficits in appearance,
- continuation despite negative consequences,
- tanning past the point of desired appearances.

- Excessive tanning has been correlated with certain demographics, such being young, white and female.
- Development of cutaneous malignant melanoma, basal and squamous cell carcinomas is increasing among young adults and young women.
SYNTHETIC TANNING AGENTS

- Public concerns for cancer risks associated with UV exposure and recommended avoidance of excessive UV exposure.
- Development of synthetic agents containing α-melanocyte-stimulating hormone (α=MSH) synthetic analogues, which promote melanogenesis or pigmentation of the hair and skin in mammals.
- The first regulated and tested α-MSH analogue [Nle4-D-Phe7]-was called ‘afamelanotide’ which stimulates tanning by increasing production of eumelanin through interaction with the melanocortin 1 receptor (MC1R).
- Since ‘afamelanotide’, multiple unregulated α-MSH analogues are available.
- Melanotan I was the first of these unregulated chemicals with structure reportedly identical to ‘afamelanotide’, and with names often used interchangeably.
Melanotan I acts on melanocytes to stimulate melanin production, which is the body's pigment responsible for a photo protection of the skin.

It is currently under phase I and II clinical trials for the treatment of photosensitivity disorder and non-melanoma skin cancer.
MELANOTAN II AND BREMELANOTIDE

- Melanotan II has emerged in recent years and increases pigmentation at a lower cumulative doses than Melanotan I, with side effects relating to effects on satiety and sexual stimulation.
- Melanotan I and II are more than 1000 times more potent than endogenous a-MSH due to resistance to enzymatic breakdown.
- A third variant is ‘bremelanotide’ which was originally developed to enhance libido.
MELANOTAN I AND II

- (Source [www.melanotanforum.com](http://www.melanotanforum.com) accessed March 24th 2014)
- Melanotan user groups include aesthetically driven females, body dysmorphics and male bodybuilders.
- There is a lack of research addressing the long term effects of Melanotan I and II.
MELANOTAN I AND II: CLINICAL CASE PRESENTATIONS

- Individuals with melanoma risk factors are more likely to suffer dysplastic changes in existing nevi, or appearance of new lesions, and risk of melanoma development as consequence of Melanotan use.
- Difficulties in presenting causality between Melanotan use and melanoma development, as users are typically engaging in high risk UV related behaviours.
DERMATOLOGICAL EFFECTS
MELANOTAN DIFFUSION

- Widespread availability on the Internet, in tanning salons, gyms, beauty salons and cosmetic physicians.
- Forum postings on the popular synthetic tanning site www.melanotan.org (now replaced by www.melanotanforum.com) have indicated reports of injecting use of Melanotan products since 2004.
- Illegal manufacturing and use of subcutaneous injectables and nasal sprays is reported.
- Retailing within unauthorised sourcing networks and websites offers anonymity to consumers, and protects suppliers from regulatory controls.
- It is difficult to estimate prevalence of Melanotan use, amount of online and realtime vendors, counterfeiting of Melanotan products, product composition, presence of contaminants and quality of products purchased.
Nothing says “I love you mummy” like a contaminated Melanotan II injection.
MELANOTAN INJECTIONS AND NASAL SPRAYS ARE SOLD WITH NO INSTRUCTIONS, AS ‘RESEARCH CHEMICALS’ AND LABELLED ‘NOT FOR HUMAN CONSUMPTION’.
MELANOTAN USER FOCUSED RESEARCH


PRODUCTS AND PRACTICES

- Melanotan is described as sold as freeze dried peptide sealed containing very tiny crystals scattered throughout the white mass within in a sterile multi-use vial.
- Users are recommended not to contact vendors for questions around instructions for making up dosage and how to use, and instead seek out information around optimal usage from personal research, academic journals presenting human clinical findings on peptides, and online fora discussions.
- Use of bacteriostatic sodium chloride water solutions for storage and injecting, as opposed to sterile water injecting is described as stinging and causing localised site irritation.
- Reconstitution with bacteriostatic water (1-2ml) requires user diligence for results.
PREPARATION OF PRODUCTS

- Reconstitution Calculations.  [www.peptidecalculator.com](http://www.peptidecalculator.com) was used to plan and double check dosage and reconstitution math.

- Peptide Calculator

1ml syringe (U100), 1ml Bacteriostatic Water to Reconstitute Calculations for .5mg or 500mcg dose:

<table>
<thead>
<tr>
<th>Step</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>1ml</td>
</tr>
<tr>
<td>Step 2</td>
<td>10mg Melanotan II</td>
</tr>
<tr>
<td>Step 3</td>
<td>1ml Bacteriostatic Water</td>
</tr>
<tr>
<td>Step 4</td>
<td>500mcg Dose</td>
</tr>
</tbody>
</table>

5 units on your insulin syringe (approximately 1/20th of a U100 syringe).

(Source [www.melanotanforum.com](http://www.melanotanforum.com) accessed March 24th 2014)
INJECTING

- Typical needles were advised as 29-31 gauge X 1/2", 1 CC (100 unit) or Easy Touch U-100 Insulin syringes 30g X ½" 0.3cc and were used to mix and inject the tanning solution.
- Subcutaneous injection sites in the naval stomach area and in the gluteals, and chosen due to higher adipose tissue for optimal absorption.
- Darting, using a short needle, pinching the skin and angling the needle advised.
- Awareness of not using needles more than once, and subsequent dulling of sharps.
- Site rotation common in order to avoid track marks, swelling and scar tissue.
- Users generally don’t pre load their syringes in order to monitor dosage during loading and maintenance phase in response to satisfaction with skin colour.
INFORMED CHOICES AND REGIMES

- Decisions to use grounded in the achievement of darkened skin equating with heightened attractiveness and ability to avoid and resist burning (thereby protecting against skin cancer) when exposed to sunlight.
- Users strive to keep their use personal, and for the most part hidden from others in order to appear naturally tanned.
- Often full disclosure to medical professionals.
- User appear educated and well versed in the calculative and personal monitoring of dosage, and management of exposure to outdoor and indoor UV radiation (photo treatment).
- Negative outcomes were managed proactively with injecting and dosage management, administration of pharmaceuticals and restricted photo therapy.
SMART MELANOTAN

- SMART goals for Melanotan use, and user sensitivity to tanning level, and body responses to tanning a certain depth of colour.
- Prospective Melanotan users are advised to decide what skin type they are, whether they wish to use Melanotan as sunless tanner or sun tanner (sun or tanning bed).
- Attempts to become fully informed on how to use Melanotan centred on individual alignment of use with before and after pictures of users with similar skin tone/type.
- The Fitzpatrick skin type (1975) was widely promoted on the site; and is a numerical classification schema for the color of skin developed to assist clarification of the response of different types of skin to UV light.
REGIMES

- Skin types 1, 2 and 3 require lower initial dosing with most common routes of 10 day loading or desensitisation phases of 1mg daily in the absence of sun and tanning, followed by 10 days of continuous 1mg with sun/tanning, and culminating in 5 days of 1mg without sun and tanning.
- This cycle is advised to continue until the desired tone is achieved, and followed by a 1mg weekly maintenance regime.
- Irrespective of gender or body weight, low dosing, building tolerance combined with photo therapy to gain photo protection was described as the fundamental outline for a successful Melanotan strategy.
- Melanotan II dosage ranges from 100mcg - 1mg with starting doses were described as ranging from 0.25mg to >1mg per day in the loading phase.
- When in the loading phase of use, ‘freak outcomes’ typified by becoming ‘racially indeterminate’ are common and often in the second week of administration.
MELANOTAN I OR II?

- Building tolerance using Melanotan-I before progressing to Melanotan-II.
- Melanotan II targeting individuals who burn in the sun and who have higher concentrations of pheomelanin by boosting photo protection though melanin (eumelanin-black/brown pigment).
- Melanotan I favoured due to its milder effect, and lack of effect on hair colour.
- Individuals with sun damage in the form of reckless tanning behaviour or moles are particularly at risk of negative reactions, and are advised not to use Melanotan II.
- Melanotan II and UV exposure described as complimentary.
- Intermittant fasting and dosage of Melanotan-II observed to maintain the anorectic response.
**SIDE EFFECTS**

- Nervous, digestive and immune responses in the form of facial and chest flushing, severe constipation, blurred vision, muscle pains, lethargy, stomach cramping, nausea, vomiting, bloating, flatulence, back, liver and kidney pain. Hypersensitivities include asthmatic and bronchogenic symptoms.

- Negative aesthetic outcomes related to freckles, moles, darkened circles around the eyes, darkened facial and head hair, and darkened genital areas. Nail beds and joints turning an ‘almost purple colour’, and black marks in fingernail beds.

- **Management and poly pharming**

  - Injecting after food and before bed, use of zinc on lips to minimise darkening, avoidance of doses higher than 2mg in 24 hours, taking anti histamines 1-2 hours (loratadine, cetirizine, diphenhydramine) before injecting, wearing sun or tanning glasses, ‘tretinoin/retinal’ used to fade darkened freckles and benzodiazepines/cannabis to manage nausea.

  - Over exposure to UV rays not advised. Complete covering of the face and neck advised. Treatment for lesions includes cryotherapy, dermabrasion, pinch grafts of normally pigmented skin, topical steroids and cosmetic coverup.
Determination of how to respond effectively to market forces and cyber communities of users requires continued researcher, clinician, policy maker and practitioner dialogue, along with data monitoring of trends of sale, supply and use.

Given the covert nature in reality, and exhibitionist behaviour online, this has important repercussions for public health and harm reduction campaigns.

Continuation of use appears centralised in loading and maintenance regimes and intense monitoring of skin tone.

Growing online communities of synthetic tanning users, despite advocating a careful approach to use of Melanotan I and II, can potentially hinder online or national harm reduction initiatives.

A unique flow of populations of synthetic tanning agent users is likely to impact on uptake of cyber information exchange.

Impact is likely in terms of needle exchange service provision.
RESEARCH

- Purity and exact pharmacokinetic and toxicity profiles are largely unknown, and require investigation.
- Further clinical, prevalence and internet trend focused research is warranted.
CONCLUSION

Melanotan tanning agents are the quintessential habit-forming commodity given the social value attached to being tanned and contemporary commodification of so called ‘short cuts’ to achieving health and beauty.