

Melanotan II (MT-II) For Research Use Only

Community-reported doses below are unvalidated; no established cosmetic regimen

Melanotan II (MTII) is a synthetic melanocortin analogue with skin-darkening activity observed in a small human pilot study using subcutaneous (SC) injection. It activates pigment-producing melanocytes through melanocortin signaling and also affects other receptor subtypes. It also produces systemic effects, including erections and nausea. Reports of changing moles, melanoma, and serious acute toxicity raise safety concerns, i.e. melanoma concerns. [1,2,4–8,10]

☠ Possibly unsafe; serious adverse events reported. [5–8,14]

★ ★ Likely effective for skin darkening (small human pilot study). [1]

C C Caution with a history of melanoma or atypical moles; avoid unsupervised use with active cancer. This is precautionary advice, not proof that MTII promotes every cancer. [5,6,9,14]

Disclaimer: These notes are not authoritative and should not be interpreted as definitive scientific guidance. They are summaries, compilations and plausible extrapolations drawn from the most relevant research I was able to locate, and may omit nuances, conflicting data, or emerging evidence. The material reflects an attempt to organize and understand complex topics, not to provide clinical recommendations or expert interpretation.

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Common adverse effects were documented in small human studies; serious events have been reported after nonmedical use. Long-term human safety and the size of any melanoma risk remain unresolved, but because of adverse events cancer risks are more than a theoretical concern. Mechanistic findings are mixed. [1,2,5–9,12,14]

Skin darkening was measured in a very small pilot study, while erections were documented in a small placebo-controlled trial. [1,2]

Dose and Patterns

There is no evidence-based dose. Common community-reported doses and patterns are

- **100–250 mcg SC daily** for several days — an initial pattern to establish tolerance. Then,
- **250–500 mcg SC daily** — a “loading” pattern to achieve the desired effect, continued to achieve the desired cosmetic effect. Then,

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- **250–500 mcg SC once or twice weekly** — to maintain the cosmetic effect.

These community patterns should not be interpreted as instructions to titrate to a desired color, or that MT-II is safe. [3,4]

The small human pigmentation pilot studied slightly larger doses. It started at 0.01 mg/kg SC and escalated to 0.025–0.03 mg/kg, alternating MTII and saline over two weeks. The organic erectile-dysfunction crossover study used 0.025 mg/kg SC. These historical research exposures do not validate the community loading or maintenance schedules above. [1,2]

Benefits

- **Likely visible skin darkening** — (*human pilot evidence*) Two-thirds of the small pilot developed increased pigmentation after five MTII injections in the 1996 study. The small sample limits estimates of consistency, magnitude, and speed. [1]
- **Plausible partial photoprotection** — (*mechanistic extrapolation*) melanin and melanocortin biology support a protective hypothesis, but the cited MTII human study did not establish a minimal erythema dose or SPF benefit. Afamelanotide findings should not be attributed to MTII. [1,12,13]
- **Likely appetite suppression** — (*animal evidence*) MTII reduced feeding when administered into the brain in mouse experiments. This supports an appetite effect, not an established human weight-loss treatment. [11]
- **Erections in men with erectile dysfunction** — (*small controlled human trial*) ten men with organic risk factors received MTII and placebo in a crossover study; erections were reported after 12 of 19 MTII injections versus 1 of 21 placebo injections. Increased sexual desire was also reported. These results do not establish comparable benefit in women. [2]

Investigated and Reported Uses

- **Skin darkening and erectile responses** — investigated in small human studies. Cosmetic tanning is a reported nonmedical use of an unapproved product; “off-label” should not imply that MTII itself is an approved medicine. [1,2,4]

Clinical Cautions

- **Personal or family history of melanoma, or atypical moles** — (*precaution based on dermatologic concern*) changing lesions warrant assessment. [5,6]

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- **Uncontrolled cardiovascular disease** — (*clinical precaution*) systemic toxicity with tachycardia and elevated blood pressure has been reported, including after a large dose. [7]
- **Pregnancy and breastfeeding** — (*safety not established*) the cited human studies do not support use in these populations. [1,2]

Side effects

- **Nausea, yawning, stretching, fatigue, and sleepiness** — (*human studies*) adverse effects occurred during early MTII testing. [1,2,14]
- **Spontaneous or prolonged erections** — (*human trial and case-report evidence*) erections may be unwanted; ischemic priapism has required emergency treatment. [2,8]
- **Likely appetite reduction and possible cardiovascular effects** — (*animal feeding experiments; human toxicity reports*) reduced intake, tachycardia, and blood-pressure changes [7,11]
- **Darkening or appearance of atypical moles** — (*case reports*) new or changing pigmented lesions have occurred after use. Melanoma has also been reported in association. [5,6]
- **Serious systemic toxicity** — (*case-report evidence*) rhabdomyolysis and kidney dysfunction were documented after a 6 mg injection; FDA also notes reports of posterior reversible encephalopathy syndrome. [7,14]

Clinical and Regulatory Status

MTII has early human research but no established cosmetic treatment regimen. Australia's TGA states that no MTII product is approved for supply there and advises consumers to stop using MTII tanning products. FDA identifies potential immunogenicity and serious reported adverse events in its compounding safety assessment. [4,14]

Biological mechanism

MTII is a cyclic α -MSH analogue and a nonselective agonist at MC1R, MC3R, MC4R, and MC5R. Its melanocortin receptor profile excludes the ACTH-selective MC2R. Receptor experiments demonstrate MTII-induced cyclic-AMP signaling. **MC1R activation supports pigmentation**, while central melanocortin pathways provide a biological explanation for appetite and erectile effects. The receptor data, animal experiments, and human outcomes represent different levels of evidence. [1,2,10,11]

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Pigmentation and UV Protection

Darker skin does not establish a measured protection level. MTII-induced pigmentation is a human observation; a reliable increase in human minimal erythema dose (MED), an SPF value, or reduced skin-cancer incidence has not been established by the MTII evidence cited here. [1]

Related compounds must be distinguished. A 2026 study of nine participants found a reduced UV-erythema response after afamelanotide, a different melanocortin analogue. Its MED increase was not statistically significant. These findings cannot be relabeled as MTII clinical evidence. [13]

Plausible protection is not a sunscreen substitute. Laboratory melanocortin research supports pigment-related and cellular protective mechanisms, but does not determine the net clinical effect of injected MTII. Continue sunscreen, protective clothing, and shade; do not increase UV exposure because pigmentation has increased. [12,15]

Melanotan II and Cancer

MTII use has been associated with atypical moles and melanoma. These reports are safety signals, but cannot establish anumerical estimate of risk. **A recommendation to avoid cosmetic use is justified by the overall uncertainties and adverse-event evidence** without claiming proven carcinogenicity. [4–8,14]

Safety Evidence summary

- **Human observations:** Published reports include melanoma in situ and rapidly appearing atypical moles after melanotan exposure. Case reports cannot separate drug effects from baseline susceptibility, UV exposure, coincidental disease, or uncertain product composition. [3,5,6]
- **Mechanistic evidence is not uniformly cancer-promoting.** α -MSH experiments in cultured human melanocytes found reduced UV-related DNA damage, while topical MTII suppressed established melanoma growth in a mouse model. The latter is a preclinical, route-specific finding, not evidence that injected MTII prevents or treats human melanoma. MC1R stimulation alone therefore does not establish either increased or decreased human cancer risk. [9,12]

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Practical recommendations

- **Avoid unsupervised cosmetic MTII use**, particularly with active cancer, prior melanoma, many atypical moles, or other substantial skin-cancer risk. This is precautionary advice rather than a validated drug-label contraindication list. [4–6,14]
- **After use, obtain clinical assessment of new or changing lesions.** Tell the clinician about MTII exposure and UV exposure; the clinician can determine whether a full skin examination and ongoing surveillance are appropriate. Monitoring does not make continued use safe. [5,6]
- **Do not use MTII as a skin-cancer prevention strategy.** Maintain ordinary sun protection and avoid intentional excess UV exposure. [4,12,15]

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