RESEARCH DOSAGE MANUAL

Melanotan II FlexPen

Cyclo[Nle4,D-Phe7]-α-MSH · 10 mg / 3 ml · Research Grade

Melanocortin receptor agonist (MC1R/MC3R/MC4R) — Manufactured in the Netherlands under cGMP

IUPAC Name	Cyclo[Nle4,D-Phe7]-α-MSH (cyclic heptapeptide lactam)
CAS Number	121062-08-6
Formula	C50H69N15O9 (MW 1,024.18 g/mol)
Concentration	10 mg / 3 ml cartridge — 3.333 mg/ml
Pen Dose Scale	1 unit = 0.01 ml = 0.033 mg (33 µg) | 3 units = 0.10 mg (100 µg)
Total Pen Doses	300 units per cartridge (10 mg total)
Purity	≥ 99.1% HPLC · Endotoxin < 1 EU/mg
Storage	2–8 °C · protect from light · do not freeze
Batch / Expiry	NL-2026-C · Expires 10/2029
Administration	Subcutaneous injection (research)

1. Compound Overview

Melanotan II (MT-II) is a synthetic cyclic lactam analogue of alpha-melanocyte-stimulating hormone (α-MSH), engineered with [Nle4, D-Phe7] substitutions to enhance receptor affinity and metabolic stability. First synthesised at the University of Arizona by Hadley et al. in 1981, MT-II binds MC1R, MC3R, and MC4R with 1,000-fold greater potency than native α-MSH, and with a significantly prolonged half-life due to its cyclised structure conferring resistance to proteolytic degradation.

Research applications span three primary domains: (1) UV-independent melanogenesis for photoprotection modelling; (2) sexual behaviour and arousal neuroendocrinology via MC4R circuits in the hypothalamus (Wessells et al. 1998, Murphy et al. 2000); and (3) appetite regulation, energy homeostasis, and metabolic syndrome via hypothalamic MC3R and MC4R signalling. MT-II does not alter hair or nail pigmentation — its melanogenic action is confined to epidermal melanocytes.

2. Mechanism of Action

- **MC1R agonism (melanogenesis):** Activates adenylyl cyclase in epidermal melanocytes, raising cAMP and triggering PKA-mediated phosphorylation of MITF. MITF drives transcription of tyrosinase,

the rate-limiting enzyme in eumelanin synthesis, producing UV-independent tanning.

• **MC4R agonism (CNS effects):** MC4R in the paraventricular nucleus and mediobasal hypothalamus mediates appetite suppression, energy expenditure, and autonomic arousal responses including the well-documented erectile/libidinal effects studied by Wessells and Murphy.

• **MC3R agonism (energy balance):** MC3R modulation in the arcuate nucleus contributes to energy homeostasis and adipose signalling, providing a secondary metabolic research dimension.

• **Anti-inflammatory signalling:** Melanocortin receptors on immune cells suppress NF-κB and reduce pro-inflammatory cytokine release, a mechanism under active investigation for autoimmune and inflammatory disease models.

3. FlexPen Operating Instructions

The VitalPep Pro FlexPen is a reusable multi-dose injection pen pre-filled with Melanotan II (10 mg / 3 ml). Each unit on the dose dial delivers exactly 0.01 ml (10 µl) of solution. The pen accepts standard 31-gauge or 32-gauge pen needles (4–8 mm). Follow the steps below before every injection.

■ **Step 1 — Prepare the pen**

Remove the pen cap. Inspect the cartridge window: the solution should be clear and colourless. Do not use if particulates are visible or if the solution appears cloudy or discoloured. Attach a new sterile pen needle by screwing it clockwise until firmly seated. Remove both the outer and inner needle caps and set aside.

■ **Step 2 — Prime the needle**

Select 2 units on the dose dial by turning the dial clockwise. Point the pen needle upward and tap the cartridge gently to collect any air bubbles at the top. Press the injection button fully until it clicks and a small stream (or droplet) appears at the needle tip. Repeat if no flow is seen. Priming removes air and confirms the pen is working correctly.

■ **Step 3 — Set your dose**

Dial your required dose by turning the dose selector clockwise. For example, to inject 0.10 mg (100 µg), dial to 3 units. The current dose is displayed in the dose window. You can turn anti-clockwise to reduce the dose before injecting — the pen will not dispense solution while dialling.

■ **Step 4 — Choose the injection site**

Subcutaneous injection sites: abdomen (at least 5 cm from the navel), outer thigh, or upper arm. Rotate sites with each injection to avoid lipohypertrophy. Wipe the skin with an alcohol swab and allow to air-dry for 10 seconds before injecting.

■ **Step 5 — Inject**

Pinch a fold of skin with two fingers. Insert the needle at a 45–90° angle (use 90° for a 4 mm needle, 45° for longer needles). Press the injection button slowly and firmly until it stops. Hold the button down and count to 10 seconds before withdrawing — this ensures full dose delivery and prevents backflow.

■ **Step 6 — Withdraw and recap**

Withdraw the needle at the same angle it was inserted. Do not rub the injection site. Replace the outer needle cap using the one-hand scoop method, then unscrew and safely dispose of the used needle in a sharps container. Replace the pen cap. Never store the pen with the needle attached.

■ **Step 7 — Storage after use**

Store the pen at 2–8 °C (refrigerated) when not in active use. Do not freeze. The pen may be kept at room temperature (up to 25 °C) for a maximum of 28 days during an active dosing cycle. Record the date of first use on the pen label.

■ **Always use a new sterile needle for each injection. Sharing pens or needles poses a serious infection risk. The cartridge is pre-filled and sealed — do not attempt to refill or modify the pen.**

4. Research Dosing Protocol

Concentration 3.333 mg/ml — 1 unit = 0.01 ml = 0.033 mg (33 µg) | 3 units = 0.10 mg (100 µg)

Melanotan II is administered daily by subcutaneous injection during the loading phase, then reduced to a maintenance frequency once the desired research endpoint is reached. All doses below are based on average protocols published on peptidedosages.com.

Dose Reference Table

Dose (mg)	Dose (µg)	Units to Dial	Volume (ml)	Frequency
0.033 mg	33 µg	1 unit	0.010 ml	Once daily (intro)
0.066 mg	66 µg	2 units	0.020 ml	Once daily
0.100 mg	100 µg	3 units	0.030 ml	Once daily (standard)
0.165 mg	165 µg	5 units	0.050 ml	Once daily (escalated)
0.250 mg	250 µg	7–8 units*	0.075 ml	Once daily (maximum)

* Dial 7 or 8 units (0.231 mg / 0.264 mg) as the pen increments in whole units.

Loading & Maintenance Protocol

Phase	Duration	Daily Dose	Units / Day	Notes
Initiation	Days 1–3	0.033–0.066 mg	1–2 units	Assess tolerance (nausea, flushing)
Loading	Days 4–14	0.100 mg	3 units	Once daily, same time each day
Active	Day 15+	0.100–0.165 mg	3–5 units	Adjust per research endpoint
Maintenance	Ongoing	0.100 mg	3 units	Every 2–3 days to sustain effect
Off-cycle	4 weeks min.	—	—	Rest period between research cycles

Pen longevity: At 3 units/day (0.10 mg), the 10 mg cartridge provides approximately 100 daily doses. At 5 units/day (0.165 mg), it provides approximately 60 daily doses.

■ Common effects in research models include transient nausea (dose-dependent), facial flushing, and spontaneous erections in male subjects via MC4R. Begin at the lowest dose and escalate gradually. These effects typically diminish after 1–2 weeks.

■ Melanotan II may stimulate existing melanocytic naevi (moles). Research subjects with a history of dysplastic naevi or melanoma are excluded from standard MT-II protocols.

5. Storage & Handling

In-use storage	Up to 25 °C for a maximum of 28 days during active dosing cycle
Between-use	2–8 °C (refrigerated) · do not freeze
Light protection	Keep pen cap on at all times when not injecting
Inspection	Solution must be clear, colourless, and free of particles
Expiry	Do not use after printed expiry or 28 days post first puncture
Light	Protect from UV and fluorescent light at all times · keep pen capped
Needle storage	Never store the pen with a needle attached

6. Key References

Hadley ME et al. (1987). Synthesis and biological activities of novel alpha-MSH analogues. J Med Chem. 30(11):2081–2084.

Wessells H et al. (1998). Effect of an alpha-melanocyte stimulating hormone analogue on penile erection and sexual desire in men with psychogenic erectile dysfunction. Urology. 56(4):641–646.

Murphy MT et al. (2000). MT-II and MC4R-mediated appetite and arousal effects in rodent models. Peptides. 21(8):1203–1209.

Fitzgerald LM et al. (2008). MC1R and eumelanin synthesis in UV-independent tanning. Pigment Cell Melanoma Res. 21(4):488–490.

peptidedosages.com — Melanotan II average research dosing protocols (accessed 2026).