

RESEARCH MONOGRAPH . COMPOUND PROFILE

Melanotan II

A cyclic alpha-MSH analog with both skin pigmentation and sexual response effects, sold as a research chemical with significant safety concerns.

DOCUMENT	KDC-MN-093
ISSUED	2026-05-09
REVISION	1.0
AUTHOR	Kodiac bioLabs Research
COMPOUND CLASS	Cyclic alpha-MSH analog

RESEARCH USE ONLY

ABSTRACT

Melanotan II (MT-II; CAS 121062-08-6; molecular formula C₅₀H₆₉N₁₅O₉; molecular weight 1024.18) is a cyclic heptapeptide alpha-MSH analog developed at the University of Arizona in parallel with Melanotan I. The compound shows higher receptor affinity than the linear Melanotan I but with non-selective melanocortin receptor activity (MC1, MC3, MC4, MC5). The clinical effect profile combines the skin pigmentation of MC1 activation with the sexual response effects of MC4 activation; this dual activity led to development of the more selective bremelanotide for sexual function applications and sustained pigmentation via Melanotan I. Melanotan II is not approved by any regulatory authority and is sold as a research chemical with significant safety concerns: the non-selective receptor activity produces reliable adverse events including nausea, flushing, blood pressure elevation, and concerning case reports of melanocyte dysplasia and atypical mole development. The compound should be regarded as substantially more hazardous than the more selective marketed melanocortin agonists.

1. Compound Identification

Melanotan II is described as cyclic alpha-msh analog. A cyclic alpha-MSH analog with both skin pigmentation and sexual response effects, sold as a research chemical with significant safety concerns.

1.1 Class summary

Cyclic alpha-MSH analog

1.2 Subtitle

A cyclic alpha-MSH analog with both skin pigmentation and sexual response effects, sold as a research chemical with significant safety concerns.

2. Abstract

Melanotan II (MT-II; CAS 121062-08-6; molecular formula C₅₀H₆₉N₁₅O₉; molecular weight 1024.18) is a cyclic heptapeptide alpha-MSH analog developed at the University of Arizona in parallel with Melanotan I. The compound shows higher receptor affinity than the linear Melanotan I but with non-selective melanocortin receptor activity (MC1, MC3, MC4, MC5). The clinical effect profile combines the skin pigmentation of MC1 activation with the sexual response effects of MC4 activation; this dual activity led to development of the more selective bremelanotide for sexual function applications and sustained pigmentation via Melanotan I. Melanotan II is not approved by any regulatory authority and is sold as a research chemical with significant safety concerns: the non-selective receptor activity produces reliable adverse events including nausea, flushing, blood pressure elevation, and concerning case reports of melanocyte dysplasia and atypical mole development. The compound should be regarded as substantially more hazardous than the more selective marketed melanocortin agonists.

3. Mechanism of Action

Non-selective cyclic alpha-MSH analog; both pigmentation (MC1) and sexual response (MC4) effects. Higher affinity than Melanotan I.

The mechanistic profile described above represents the consensus position from peer-reviewed literature where available; for compounds with sparse formal characterization, this section reflects vendor-grade reports and structurally-related class pharmacology and should be interpreted with appropriate caution.

4. Pharmacokinetics and Routes of Administration

Pharmacokinetic data are summarized within the abstract for compounds with formal Phase 1 records. Compounds without published human pharmacokinetic studies are noted as such; investigators should treat the absence of data as a research limitation.

5. Reported Research Dose Ranges

0.25 to 1 mg SC per administration (research-grade); significant safety concerns.

Doses are scaled from clinical use where the compound is approved as a medicine, from Phase 2/3 trials where development advanced, or from rodent dose-response data scaled by allometric assumptions where the compound has no human clinical record. Investigators should treat dose ranges from research-chemical-grade vendors as starting points for their own pharmacokinetic and tolerability characterization rather than validated dosing recommendations.

6. Sourcing and Quality Verification

Investigators should obtain analytical confirmation of identity (mass spectrometry; for peptides, additionally amino acid analysis or N-terminal sequencing) and purity (HPLC area-percent, ideally greater than 95 percent) on every lot. Vendor certificates of analysis vary in quality; third-party analytical confirmation through independent laboratories (e.g., Janoshik Analytical, Anabolic Lab) is the gold standard for research-grade peptides and small molecules.

For compounds with established pharmaceutical-grade marketing in any jurisdiction, sourcing from the marketed product (where legal and accessible) provides the highest quality assurance.

7. Reconstitution and Handling

Peptides should be reconstituted in bacteriostatic water or sterile water for injection in the volume appropriate to the desired concentration; lyophilized peptides should be allowed to come to room temperature before reconstitution to minimize precipitation. Reconstituted peptides should be stored refrigerated and used within the timeframe specified by the manufacturer (typically 14 to 30 days for bacteriostatic water reconstitutions, shorter for sterile water).

Small molecules: storage conditions vary by compound; consult the certificate of analysis for the specific product. Most are stable at room temperature in dry, dark conditions; oxidation-sensitive compounds (e.g., catecholamine precursors) require cool storage and protection from light.

8. Stack Interaction Considerations

Investigators combining this compound with other research substances should consider receptor-level interactions (additive effects at shared targets), enzyme-level interactions (CYP-mediated drug-drug interactions where applicable), and pharmacodynamic interactions (additive sedation, additive serotonergic activity, additive hemodynamic effects).

The stack interaction section in published monographs of well-characterized compounds is necessarily incomplete for any specific combination; investigators should treat novel combinations with elevated caution and titrate gradually.

9. References

1. Wessells H, et al. Synthetic melanotropic peptide initiates erections in men with psychogenic erectile dysfunction. J Urol 1998.

This monograph is provided for research use only. Not for medical, diagnostic, or therapeutic purposes. Not for human consumption. Compound class generalizations are noted where compound-specific data are sparse; investigators should weight the evidence accordingly.