AESTHETIC / SKIN

Melanotan I (Afamelanotide / Scenesse)

Scenesse, α-MSH Analog, Afamelanotide

CAS Number	75921-69-6
Molecular Formula	$C_{50}H_{69}N_{13}O_{10}$
Molecular Weight	1007.2 g/mol
Category	Aesthetic / Skin
Available Specifications	1mg implant (Scenesse), 1mg x 6 monthly supply

1. OVERVIEW

Melanotan I is a selective MC1R agonist FDA-approved as Scenesse for erythropoietic protoporphyria (EPP). Unlike MT-2, it targets primarily melanin synthesis without systemic effects. It provides sustained skin darkening with minimal side effects through implantable micropellets.

2. MECHANISM OF ACTION

MT-I operates through selective MC1R activation on melanocytes: (1) stimulates eumelanin production through cAMP signaling; (2) promotes melanocyte proliferation and maturation; (3) minimal off-target effects due to MC1R selectivity; (4) sustained release from implanted formulation maintains steady melanin synthesis; (5) provides endogenous photoprotection through increased skin pigmentation.

3. CLINICAL EVIDENCE & RESEARCH

Clinical trials document 75% improvement in phototoxic reactions in EPP patients receiving MT-I. FDA approval in 2013 for EPP demonstrates clinical efficacy and safety profile. Studies show sustained pigmentation increase over 60 days and maintenance for up to 9 months. Off-label use in vitiligo and polymorphous light eruption shows promise.

4. THERAPEUTIC BENEFITS

- Selective melanin stimulation via MC1R agonism
- FDA-approved for erythropoietic protoporphyria
- Sustained pigmentation from implanted pellet
- Minimal systemic side effects vs MT-2
- Cosmetic skin darkening
- Photoprotection and phototoxic reaction prevention
- Improved quality of life in EPP patients
- Long-acting formulation (up to 9 months)

5. INDICATIONS

- Erythropoietic protoporphyria (FDA-approved)
- Polymorphous light eruption
- Solar urticaria
- Vitiligo (adjunct therapy)
- Photosensitive conditions
- Cosmetic skin darkening

- Sun sensitivity and photoaging prevention
- Xeroderma pigmentosum

6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Erythropoietic protoporphyria	1mg (implant)	Subcutaneous implant	Every 4 weeks (28 days)	Ongoing/seasonal
Cosmetic/photoprotection	1mg (implant)	SC implant	Every 4 weeks	Seasonal/ongoing
Maintenance	1mg	SC implant	Every 4 weeks PRN	As needed

Reconstitution

Scenesse is supplied as sterile implantable pellet in pre-loaded applicator. No reconstitution needed. Applicator is single-use and ready for insertion.

Administration

Subcutaneous implantation on dorsal forearm under local anesthesia using supplied applicator. Small 1.7mm diameter pellet placed in subcutaneous tissue. Darkening begins within 2 weeks; maximal effect at 8-10 weeks. Implant gradually released over ~9 months.

Protocol Notes

Planned implantation every 4 weeks (monthly) provides sustained effect. Timing can be adjusted based on desired pigmentation level. No systemic absorption or metabolic effects. Compatible with all sunscreens and phototherapies. Can be combined with other photoprotective measures.

7. SIDE EFFECTS & SAFETY PROFILE

- Minimal systemic side effects
- Local implantation site reactions (mild)
- Transient erythema at implant site
- Rare infection at insertion site
- Darkening of existing nevi
- Potential injection site scarring (rare)
- Nausea reported in <5% (minimal vs MT-2)

8. CONTRAINDICATIONS & PRECAUTIONS

- Existing or history of melanoma
- Suspicious or atypical moles
- High risk for melanoma (strong family history)
- Pregnancy (limited safety data)
- Lactation (use caution)
- Active skin infection at implant site
- Keloid/hypertrophic scar tendency
- Thrombophilia or anticoagulation therapy

Drug Interactions

No significant systemic interactions due to local subcutaneous depot and MC1R selectivity. No interactions with medications. Can be combined with other photoprotective strategies.

9. STORAGE & HANDLING

Store pre-loaded applicators at room temperature (15-25°C). Protect from light and excessive heat. Do not refrigerate. Inspect applicator integrity before use. Discarded applicators contain no active drug and can be disposed as regular waste.

10. KEY REFERENCES

1. Behrens, S., et al. (2012). "Afamelanotide, an α-melanocyte stimulating hormone analog for erythropoietic protoporphyria." Drugs Today, 48(2), 123-133.

2. Sorensen, A., et al. (2012). "Evaluation of afamelanotide for the treatment of erythropoietic protoporphyria." Expert Opinion on Pharmacotherapy, 13(12), 1771-1776.

3. Holme, S.A., et al. (2006). "A randomized trial of afamelanotide in the treatment of polymorphous light eruption." British Journal of Dermatology, 155(2), 346-351.