

AESTHETIC / SKIN

Glutathione

L-Glutathione, γ -Glutamyl-L-cysteinyl-glycine, GSH

CAS Number	70-18-8
Molecular Formula	$C_{10}H_{17}N_3O_6S$
Molecular Weight	307.32 g/mol
Category	Aesthetic / Skin
Available Specifications	400mg vial, 600mg vial, 1500mg vial, 5g powder

1. OVERVIEW

Glutathione is the body's master antioxidant, a tripeptide consisting of glutamic acid, cysteine, and glycine. It provides cellular protection against oxidative stress, supports liver detoxification, and promotes skin brightening and depigmentation. High-dose IV glutathione has become popular for skin lightening and anti-aging applications.

2. MECHANISM OF ACTION

Glutathione functions through multiple mechanisms: (1) direct free radical scavenging and ROS neutralization; (2) cofactor for glutathione S-transferases and glutathione peroxidase; (3) inhibition of tyrosinase enzyme, reducing melanin synthesis; (4) depletion of dopaquinone, a melanin precursor; (5) support of Phase I and Phase II hepatic detoxification; (6) mitochondrial protection and cellular energy optimization.

3. CLINICAL EVIDENCE & RESEARCH

Numerous studies document skin-lightening effects of high-dose IV glutathione (600-1500mg). Research shows significant reduction in skin hyperpigmentation and improved skin luminosity. Evidence supports enhanced detoxification and liver function support. Studies indicate antioxidant benefits against UV-induced damage and improved skin tone uniformity.

4. THERAPEUTIC BENEFITS

- Potent cellular antioxidant and free radical scavenger
- Skin brightening and melanin reduction
- Enhanced liver detoxification and support
- Anti-aging through cellular protection
- Immune system support and enhancement
- Enhanced NAD+ metabolism and mitochondrial function
- Neuroprotection and cognitive support
- Reduction of inflammation and oxidative stress

5. INDICATIONS

- Systemic antioxidant support
- Hyperpigmentation and melasma
- Skin aging and photodamage
- Liver support and detoxification
- Post-viral fatigue and recovery

- Neurological support
- Chronic inflammatory conditions
- Heavy metal and toxin burden

6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Skin brightening	600-1500mg	IV push/infusion	1-3x weekly	4-12 weeks
Liver support	400-600mg	IV/IM	Weekly	12 weeks
Antioxidant support	200-400mg	Oral/subcutaneous	Daily or 3-4x weekly	Ongoing
High-dose protocol	1500mg	IV infusion	Weekly	4-8 weeks

Reconstitution

Glutathione is supplied as powder or pre-filled vials. For IV use: reconstitute powder with sterile saline immediately before use. Do not use if discoloration is present. For IM/subcutaneous: reconstitute with bacteriostatic saline.

Administration

IV: Administer as slow push (5-10 min) or diluted infusion. IM/SC: Inject 0.5-1mL per injection site. Oral: Take on empty stomach for best absorption; liposomal or reduced forms show improved bioavailability. IV route provides superior bioavailability.

Protocol Notes

Most effective when combined with Vitamin C infusions. Skin lightening results typically emerge after 4-6 weeks. Dietary sources (cruciferous vegetables, whey protein) can support endogenous production. NAC (N-acetyl-cysteine) acts as a glutathione precursor and can be used orally.

7. SIDE EFFECTS & SAFETY PROFILE

- Minimal systemic side effects
- Local injection site reactions (mild)
- Rare allergic reactions
- GI upset with oral supplementation
- Potential darkening if dosing discontinued abruptly (rebound pigmentation)
- Transient fatigue or headache (detoxification response)

8. CONTRAINDICATIONS & PRECAUTIONS

- Severe sulfite sensitivity
- G6PD deficiency (use with caution)
- Asthma exacerbation risk
- Pregnancy (safety not established; limited data)
- Concurrent chemotherapy (may reduce efficacy)
- Uncontrolled diabetes

Drug Interactions

May enhance effects of other antioxidants. Avoid with high-dose vitamin E (potential antagonism). Can support methadone, warfarin, and other phase II metabolism. May reduce effectiveness of certain chemotherapy agents.

9. STORAGE & HANDLING

Store powder at 2-8°C in light-protective container. Reconstituted solutions should be used immediately or within 2 hours. Do not freeze. Protect from light and heat. Discard if yellowing occurs.

10. KEY REFERENCES

1. Arjinajarn, P., et al. (2015). "The efficacy of intravenous L-glutathione on skin brightening effects." *Journal of Cosmetic Dermatology*, 14(3), 218-225.
2. Weschawalit, S., et al. (2003). "Glutathione and its pro-drug, N-acetylcysteine, are useful supplements to reduce oxidative stress in atopic dermatitis." *Acta Dermato-Venerologica*, 83(3), 232-234.
3. Flohé, L. (1988). "Glutathione peroxidase brought into focus." *Free Radical Biology and Medicine*, 4(2), 85-95.

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