GlowZenGlutta™ (Glutathione)

Meteoric Cosmeceuticals
Beauty Meets Brilliance in Biotech

BIOTECH EDGE

Harnessed through **precision microbial fermentation and enzymatic synthesis,** Glutathione embodies the essence of advanced antioxidant biotechnology. This naturally occurring tripeptide is available in three biotechnologically refined **variants: L-Glutathione (Reduced), L-Glutathione (Oxidized), and Liposomal Glutathione. Among these, L-Glutathione (Reduced) is further available in three grades: an Enzymatic-based grade produced via controlled enzyme synthesis, a Fermentation-based grade obtained through optimized microbial fermentation, and an EP Sterile grade manufactured to European Pharmacopoeia standards for clinical and injectable applications.** Each variant offers unique molecular performance, designed for targeted efficacy and enhanced formulation flexibility. Through its bioengineered purity and optimized bioavailability, Glutathione supports the skin's intrinsic renewal processes, transforming cellular defence into luminous vitality.

Glutathione is a multifunctional tripeptide known for improving luminosity, refining skin tone, and strengthening defence against oxidative stress. **By modulating melanin pathways and neutralizing free radicals, it helps restore uniformity and radiance.** Biotechnological production ensures high purity, stability, and safety, while the availability of three distinct variants allows formulators to select the ideal format for desired performance and delivery systems in advanced skincare formulations.

PRODUCT DETAILS

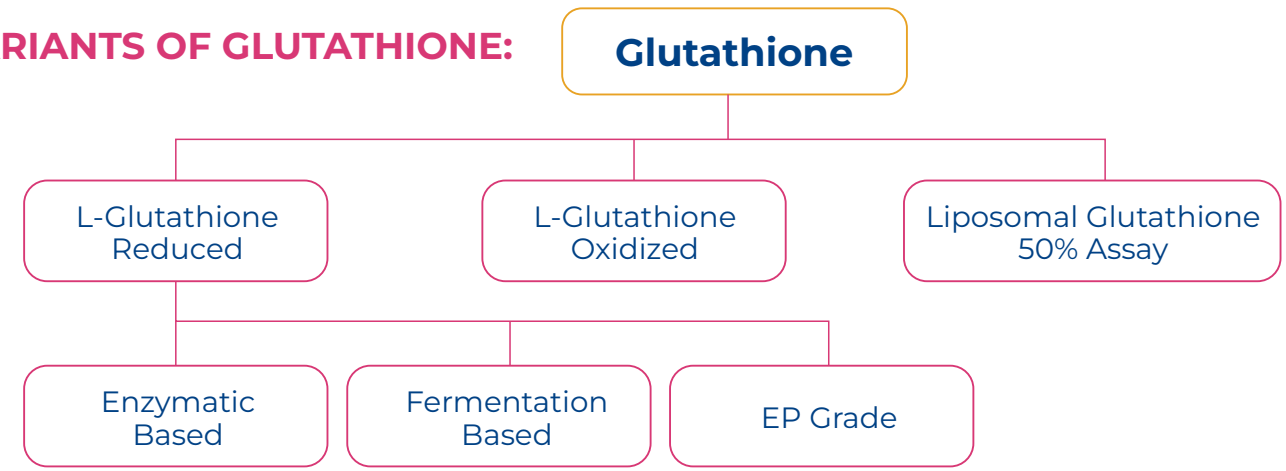
INCI name:
Glutathione

Recommended dosage:
0.1 – 2.0% depending on formulation type (serums, creams, gels, sheet masks)

Appearance:
White to off-white crystalline powder

Variants Available:
L-Glutathione Reduced (Enzymatic-Based, Fermentation-Based, EP Grade), L-Glutathione Oxidized, Liposomal Glutathione

VARIANTS OF GLUTATHIONE:



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L-GLUTATHIONE REDUCED (GSH)

FUNCTIONAL ROLE:

- Active antioxidant form that neutralizes free radicals and supports cellular detoxification.

PRODUCTION / GRADES:

- L-Glutathione Reduced is available in three grades to support cosmetic, dermocosmetic, and clinical requirements.

ENZYMATIC-BASED GRADE:

- Produced via glutathione synthetase, where the three amino acids are enzymatically assembled in a controlled manner, ensuring consistent purity and performance. This grade is widely preferred in cosmetic formulations.

FERMENTATION-BASED GRADE:

- Manufactured using optimized yeast or bacterial fermentation, where microorganisms naturally biosynthesize glutathione during growth, followed by recovery and refinement.

EP STERILE GRADE:

- European Pharmacopoeia compliant, parenteral-use quality glutathione with low endotoxin levels and absence of viable microorganisms.

KEY CHARACTERISTICS:

- Neutralizes free radicals
- Supports cellular detoxification
- Maintains antioxidant balance
- High purity and stability suitable for cosmetic and clinical formulations
- Enhances skin brightening and overall skin radiance

L-GLUTATHIONE OXIDIZED (GSSG)

FUNCTIONAL ROLE:

- The oxidized form of glutathione formed after free radical neutralization, contributing to cellular redox balance.

PRODUCTION:

- Manufactured by controlled oxidation of Reduced L-Glutathione (GSH), forming a disulfide-linked dimer of two GSH molecules under defined conditions.

KEY CHARACTERISTICS:

- Maintains cellular redox homeostasis
- Acts as an indicator of oxidative stress
- Reconverted to active GSH by glutathione reductase using NADPH
- Supports skin protection against oxidative damage and stress

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LIPOSOMAL GLUTATHIONE

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FUNCTIONAL ROLE:

- An advanced delivery form in which L-Glutathione (typically GSH) is encapsulated within phospholipid liposomes to enhance stability, bioavailability, and cellular uptake.

PRODUCTION:

- Developed using a phospholipid-based liposomal encapsulation system that protects Glutathione from oxidation and improves delivery efficiency.

KEY CHARACTERISTICS:

- Improved bioavailability
- Enhanced stability against oxidation (GSH → GSSG)
- Superior cellular absorption
- Promotes skin brightening, anti-aging, and dermocosmetic efficacy

Variant	Key Description	Advantages	Points to Consider
L-Glutathione (Reduced)	Active antioxidant form supporting detoxification and free radical neutralization; available in Enzymatic-based (enzyme-driven synthesis), Fermentation-based (microbial biosynthesis), and EP Sterile grade (European Pharmacopoeia compliant)	Active form that demonstrates immediate efficacy upon application	Hydrophobic molecule with limited penetration and surface stability
L-Glutathione (Oxidized)	Oxidized form formed after free radical neutralization, maintaining cellular redox balance	Less hydrophobic with improved penetration and stability	Requires additional time to convert into active reduced form for displaying efficacy
Liposomal Glutathione	Phospholipid encapsulated glutathione designed for enhanced stability and cellular uptake	Encapsulated in lipoidal liposomes (50–150 nm) with highest stability and delivery potential	Formulation may require emulsifier compatibility adjustment

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APPLICATIONS:

- Skin-brightening serums and creams
- Anti-ageing formulations
- After-sun recovery and soothing gels
- Blemish Lotion
- Spot Clearing Gel
- Pre and post-procedure dermatological care
- Hyperpigmentation and spot-correcting solutions

KEY FEATURES :

- Derived from vegan sources using advanced microbial bio-fermentation
- Biotech-stabilized antioxidant that supports continuous cellular protection
- Free from allergens, heavy metals, and toxic residues
- Clean-label, eco-conscious ingredient supporting next-generation dermocosmetic concepts
- Formulators can customize their finished formulations to harness the advantage of our L-Glutathione product variants:

WHAT IT BRINGS TO YOUR FORMULATION :

- Stable, fermentation-derived antioxidant suitable for clean and natural-positioned skincare
- Water-soluble and easy to incorporate into serums, gels, and emulsions
- Compatible with sensitive-skin formulations due to excellent skin tolerance
- Combines brightening and anti-ageing performance in one multifunctional ingredient
- Provides flexibility to choose among three Glutathione variants, enabling formulators to optimize efficacy, stability, and delivery performance

EFFICACY STUDIES :

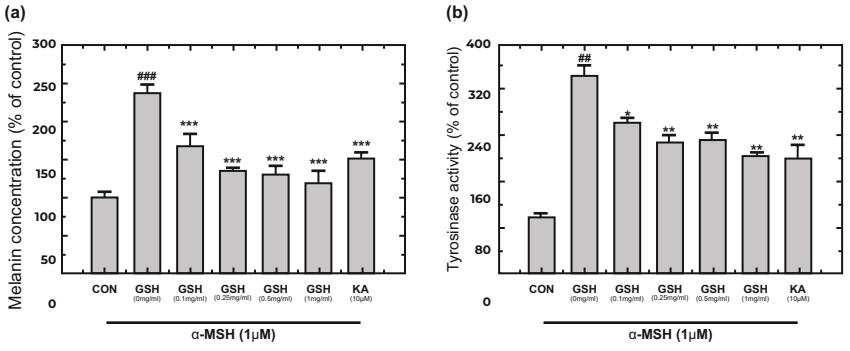

Fig 1: L-Glutathione reduced (GSH) was found effective in highly significant reduction of melanin (a) and inhibition of tyrosinase (b) in vitro in -MSH stimulated B16F10 cells (mouse skin cells). Compared to Kojik acid (positive control), GSH was found better in melanin reduction and had comparable efficacy for inhibition of tyrosinase activity [1].

PROVEN BENEFITS :

- Demonstrates antiaging property through its excellent antioxidant potential
- Neutralizes ROS generated by UV and Pollution to protect skin cell damage.
- Modulates the distribution of melanin to reduce dark spots
- Reduces melanin synthesis to impart skin brightening effects

CERTIFICATION:

Verified by ECOCERT

Reference:
[1] Lee, Yechan, et al. "Odorless glutathione microneedle patches for skin whitening." Pharmaceutics 12.2 (2020): 100

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