Decreases oxidative stress
Re-reduces crucial antioxidant molecules
Controls activity of many enzymes

Function

Glutaredoxins are small redox enzymes of approximately one hundred amino-acid residues which use glutathione as a cofactor. Glutaredoxins are oxidized by substrates and reduced non-enzymatically by glutathione. In contrast to Thioredoxins, which are reduced by Thioredoxin reductase, no oxidoreductase exists that specifically reduces Glutaredoxins. Instead, Glutaredoxins are reduced by the oxidation of glutathione and reduced glutathione is then regenerated by glutathione reductase. Together these components form the glutathione system.

Like Thioredoxin, which functions in a similar way, Glutaredoxin possesses an active center disulfide bond. It exists in either a reduced or an oxidized form where the two cysteine residues are linked in an intramolecular disulfide bond. Glutaredoxins function as electron carriers in the glutathione-dependent synthesis of deoxyribonucleotides by the enzyme ribonucleotide reductase. Moreover, Glutaredoxins act in antioxidant defence by reducing dehydroascorbate, peroxiredoxins and Methionyl Sulfoxide Reductase (also supplied by Skin Actives). Beside their function in antioxidant defense, bacterial and plant GRX were shown to bind iron-sulfur clusters and to deliver the cluster to enzymes on demand.

Applications

- Decreases oxidative stress
- Re-reduces crucial antioxidant molecules
- Controls activity of many enzymes

Use

- We suggest that our Glutaredoxin is used at a final concentration of 0.01 to 0.1% (w/v) and that it is used in conjunction with Glutathione, a cofactor.
- Avoid extremes of pH and alcohols, and add Glutaredoxin at the final stage, once the product has cooled down.

Technical Information

INCI: Glutaredoxin (Skin Conditioning Agent, Miscellaneous) Submitted to CTFA.
Molecular Weight: 12,400, containing 112 amino acids.
Purity: Purity is greater than 95% as determined by analysis using SDS-PAGE.
Production: Produced in E. coli and purified using proprietary chromatographic techniques.
Optimal Concentration: Should be determined for each specific application.
Storage: This suspension is stable at 2-8°C. Do not freeze.
Reconstitution: Add buffered (pH 7.5) saline solution to the protein suspension to re-dissolve GRX.

References