Thiotaine

**DESCRIPTION**

Thiotaine is a synthetic form of the botanical amino acid L-ergothioneine (EGT) with a molecular weight of 229. It is a clear, tasteless and colorless solution with a concentration of 2mM with two functional groups: L-Thiol Group (1) and Quaternary Ammonium Group (2).

![Thiotaine Structure](image)

**PROPERTIES**

Due to the quaternary group, Thiotaine resembles carnitine and reacts similarly. It is a carrier of fatty acids. Thiotaine increases fatty acids in the mitochondria allowing a higher efficiency in oxygen metabolism, therefore increasing ATP (energy) levels in cells.

Thiotaine's anti-oxidant activities are derived from its Thione (C=S). Thiotaine scavenges superoxide anion and singlet oxygen better than Coenzyme Q10 and Idebenone. In vitro tests have demonstrated that Thiotaine also has strong copper chelating power; it potentially can inhibit tyrosinase activity.

There is a natural transporter of ergothioneine named OCTN-1. It is a transporter of ergothioneine across the membrane that has been readily identified this year in fibroblasts, keratinocytes and the nucleus. This means that ergothioneine is a desirable molecule for the skin and is not a sensitizer. **Thiotaine is an ideal companion to BV-OSC which will deliver Vitamin C in the cell. Ergothioneine recycles Vitamin C like Vitamin E would do.**

**FORMULATION**

Suggested use level is 1%. Thiotaine is stable at a pH level of 4.0 - 7.0. It is soluble in water; compatible with hydrogel, carbomer, emulsifier, triethanolamine, dimethicone, sunscreen and sunblock and phenoxyethanol. Suggest this is added to the end of the production batch during the cooling phase. In addition we recommend adding citric acid (0.05%) to help with long term stability.

**LEGISLATION**

INCI Name: Ergothioneine  
JMHW: Approved  
CAS: 497-30-3  
EINECS: 207-843-5
Thiotaine

Thiotaine Scavenges Superoxide Anion

Thiotaine Scavenges Singlet Oxygen

Ergothioneine Neutralizes Ozone

Inhibition of Purified Tyrosinase of B16 Cells

Tyrosinase Inhibition @ 50% is achieved with 150 um/ml.

Inhibition of Melanogenesis in Mouse Cloudman S91 Cells

50% inhibition with 200 ppm Thiotaine

All test results are available in detail upon request of the dossier.

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