Multifunctional Active Ingredient

Product Information

CosmosPreserve

Product Features

- ✓ Antimicrobial active
- ✓ Antioxidant activity
- ✓ Anti-inflammatory activity
- ✓ Cytoprotective activity
- ✓ 100% Natural – certified COSMOS
- ✓ Performance tested

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The product line

Biolichen products cover many cosmetic functions

Biolichen products are natural active ingredients carefully developed for cosmetic formulations. **Biolichen** products draw from the benefits that arise from symbiotic lichen metabolic exchanges that are manifested in nature. Lichen metabolites are potent natural molecules that allow lichens to survive in harsh environmental conditions. Lichen metabolites are natural complex molecules comprehensively studied and validated for their therapeutic values. In cosmetic applications, lichen metabolites contribute antimicrobial, antioxidant, anti-inflammatory, cytoprotective, and anti-erythema activities.

CosmosPreserve

CosmosPreserve is an active ingredient to replace synthetic preservatives

CosmosPreserve is a multifunctional active ingredient based on a mixture of 100% natural components: Triethylcitrate, Cladonia stellaris, and Cladonia rangiferina. The broad-spectrum antimicrobial efficacy of **CosmosPreserve** is optimized for use in cosmetics, so that formulators can protect cosmetic formulations naturally. **CosmosPreserve** contains standardized potent anti-microbial lichen metabolites such as Usnic acid isomers and Atranorin. The mixture of the natural components in **CosmosPreserve** contributes to an excellent antimicrobial effect, thereby protecting against microorganisms. Constituent actives in **CosmosPreserve** work synergistically to effectively preserve cosmetics from microbial growth.

Typical Preservative Effectiveness testing results with 0.75% **CosmosPreserve**:

STRAIN	*E.coli*	*P.aeruginosa*	*S.aureus*	*C.albicans*	*A.brasiliensis*
CFU inoculum	**$2.8x10^5$**	**$1.1x10^5$**	**$5.2x10^5$**	**$4.7x10^5$**	**$2.5x10^5$**
CFU 7 days	<10	<10	<10	<10	39000
Microbial reduction (log)	>4.45	>4.04	>4.72	>4.67	0.81
Reduction effectiveness (%)	>99.99	>99.99	>99.99	>99.99	84.40
CFU 14 days	<10	<10	<10	<10	26000
Microbial reduction (log)	>4.45	>4.04	>4.72	>4.67	0.98
Reduction effectiveness (%)	>99.99	>99.99	>99.99	>99.99	89.60
CFU 28 days	<10	<10	<10	<10	2000
Microbial reduction (log)	>4.45	>4.04	>4.72	>4.67	2.10
Reduction effectiveness (%)	>99.99	>99.99	>99.99	>99.99	99.20

Results demonstrate that at a level of 0.75%, **CosmosPreserve** satisfies the requirements of the preservation efficacy test for topically used products according to USP regulation.

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CosmosPreserve contributes antioxidant, anti-inflammatory, and cytoprotective effects

Lichen metabolites found in Cladonia stellaris and Cladonia rangiferina have been studied for their therapeutic benefits for decades. Many peer-reviewed published scientific studies have demonstrated that lichen metabolites, Usnic acid and Atranorin, manifest antioxidant, anti-inflammatory, and cytoprotective activities*. As well, **CosmosPreserve** components have interesting UV screening effects around UV wavelengths 235nm, 250nm, and 285nm. The combination of these activities and effects compounds the value of **CosmosPreserve** to protect against harmful environmental conditions.

Application

CosmosPreserve is a transparent, thermostable, and lipo-soluble liquid that is preferably applied in O/W emulsions and surfactant systems, even at high temperatures. The pH usage recommended is pH 4 to 7.5. **CosmosPreserve** is typically dosed at 0.75-1% for anti-microbial effects and 1-4% for rejuvenating effects.

Characteristics of CosmosPreserve	
Appearance	Transparent yellow liquid
INCI Name	Triethylcitrate, Cladonia stellaris, Cladonia rangiferina
Recommended Dosage	0.75-4%
pH range	4-7.5
Analytical Assay (HPLC)	Total Usnic Acid isomers > 2.0 mg per gram, Atranorin > 0.3 mg per gram
Application guide	In hot emulsion: Preferably applied during the heated phase <60°C. In cold emulsion: Preferably applied in the lipid phase. In surfactant system: Applied in the final step.

References

Antioxidant Activity and Mechanisms of Action of Natural Compounds Isolated from Lichens: A Systematic Review. *Molecules* **2014**, *19*, 14496-14527.

Atranorin inhibits NLRP3 inflammasome activation by targeting ASC and protects NLRP3 inflammasome-driven diseases. *Acta Pharmacologica Sinica* (2023) 44:1687–1700.

Anti-inflammatory and toxicity studies of atranorin extracted from Cladina kalbii Ahti in rodents. *Brazilian Journal of Pharmaceutical Sciences* vol. 47, n. 4, Oct./Dec., 2011.

The antimicrobial activity of extracts of the lichen Cladonia foliacea and its (-)-usnic acid, atranorin, and fumarprotocetraric acid constituents. *Naturforsch*. **59c,** 249D254 (2004).

Redox properties and cytoprotective actions of atranorin, a lichen secondary metabolite. *Toxicology in Vitro* 25 (2011) 462–468.

Evaluation of wound healing activity of atranorin, a lichen secondary metabolite, on rodents*. Revista*
Brazilian Journal of Pharmacognosy 23(2): 310-319, Mar./Apr. 2013.

In Vitro and *in Silico* Studies of Lichen Compounds Atranorin and Salazinic Acid as Potential Antioxidant,
Antibacterial and Anticancer Agents. *Chem. Biodiversity* 2023, 20, e202301229

Usnic acid alleviates inflammatory responses and induces apoptotic signaling through inhibiting NF-κB expressions in human oral carcinoma cells. *Cell Biochem Funct*. 2024;42:e4074.

Usnic acid attenuates 7,12-dimethylbenz[a] anthracene (DMBA) induced oral carcinogenesis through inhibiting oxidative stress, inflammation, and cell proliferation in male golden Syrian hamster model*. J Biochem Mol Toxicol.* 2024;38:e23553.

Enantioselective activity of usnic acid: a comprehensive review and future perspectives. *Phytochem Rev*. April 2019.

Usnic acid derivatives as tau-aggregation and neuroinflammation Inhibitors. *European Journal of Medicinal Chemistry* 187 (2020) 111961.

Cladonia lichens and their major metabolites as possible natural antioxidant, antimicrobial and anticancer agents. *Food Science and Technology* 59 (2014) 518-525.