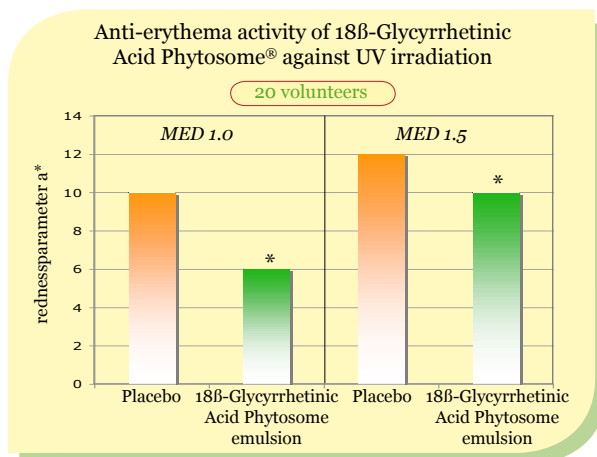




18 β -Glycyrrhetic Acid Phytosome[®]

Soothing, anti-irritant, anti-inflammatory

Proven efficacy on humans

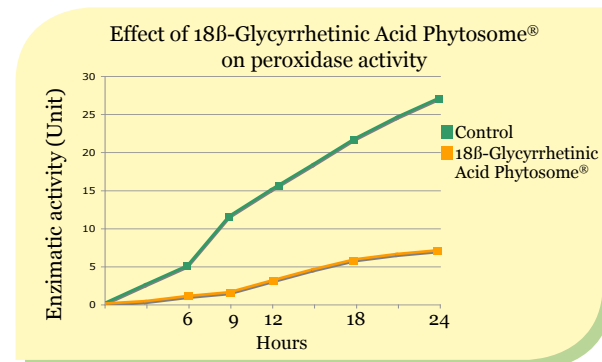


18 β -Glycyrrhetic Acid Phytosome[®] was tested for its anti-erythema activity on 20 healthy volunteers.¹ The erythema was induced by exposing the subjects to a 1.0 or 1.5 MED (Minimal Erythral Dose) radiation for 4 minutes, being MED the amount of UV energy necessary to induce a measurable erythema.

18 β -Glycyrrhetic Acid Phytosome[®], incorporated at 3% concentration in a oil/water emulsion, and the control formulation were applied on two different areas of the back immediately after radiation, and covered with an occlusive patch for 24 hours.

The reddening of the skin was then evaluated by using a chromometer. Statistically significant lowering of the skin reddening (measured as a* parameter) was observed in the 18 β -Glycyrrhetic Acid Phytosome[®] treated area compared to the placebo at both MED dosages 1.0 and 1.5.

Anti-inflammatory activity

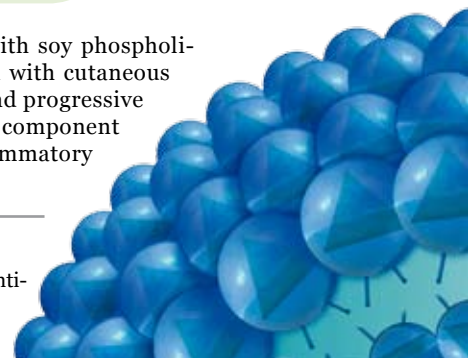


18 β -Glycyrrhetic Acid Phytosome[®] was tested for its ability to reduce inflammation cellular response.² In fact, inflammation, in particular during the acute phase, causes the migration of granulocytes towards the inflammation site by chemotaxis. It is also known that the degree of peroxidase activity is directly proportional to the number of granulocytes present in the tissue. By measuring a reduced activity of myeloperoxidase, one can conclude that the cellular response to inflammation is reduced accordingly. Still after 24 hours, the enzymatic activity of peroxidase was almost 75% lower than the activity measured with the control product.

Mechanism of action

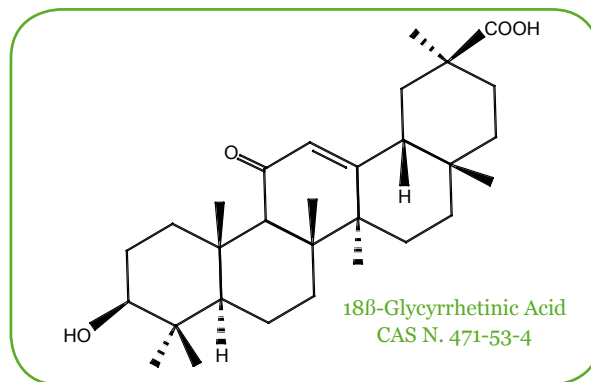
18 β -Glycyrrhetic Acid Phytosome[®] is the complexed form of 18 β -Glycyrrhetic Acid with soy phospholipids.³ The passage of the compound through the skin takes place through the interaction with cutaneous structures. In the reticular layer of the dermis, the complex is thought to undergo a slow and progressive decomplexation resulting in the *in situ* release of the free active constituent.¹ The active component 18 β -Glycyrrhetic Acid is structurally similar to cortisol, and potentiates the anti-inflammatory activity of cortisol by inhibiting its intracellular inactivation.

1. Bombardelli E., Cristoni A., Morazzoni P., "Phytosome[®] in functional cosmetics", *Fitoterapia LXV* (5), 387-401 (1994). - 2. Bombardelli E., Curri S.B., Della Loggia R., Del Negro P., Tubaro A., Gariboldi P. "Anti-inflammatory activity of 18 β -glycyrrhetic acid in PHYTOSOME[®] form", *Fitoterapia LX*, Suppl. of issue 1-1989, 29-37 (1989). - 3. USP Patent 5,147,859.



Safety data

18β-Glycyrrhetic Acid Phytosome® has been tested for tolerability on human volunteers by the means of application of an occlusive patch. It was proven to be void of irritant action on human skin and did not give rise to any sensitization phenomenon.



Characteristics

18β-Glycyrrhetic Acid Phytosome®	Available Documentation
HPLC content of 18β-Glycyrrhetic Acid: 27.0-31.0% Form: light yellow fine powder Stability: retesting date after 5 years Level of use: 0.5 - 2% pH: 6 - 7 in aqueous suspension (c=1) Solubility*: soluble in Ethoxydiglycol, Isopropyl Miristate, C ₁₀₋₁₈ Triglycerides, C ₁₂₋₁₅ Alkyl Benzoate, <i>Triticum vulgare</i> (Wheat Germ Oil), Caprylic/Capric Triglycerides	Botanical Certificate Methods of Analysis Reference Standard Declaration GMO free Safety Data Sheet Confidential Documentation

*solubility has been tested at 50 mg in 10 g at 40-50°C

Formulation examples

Aftersun Lotion	Formulative tips																						
<table border="0"> <tr><td>Glyceryl Stearate (and)PEG-20 Glyceryl Stearate</td><td>8.00%</td></tr> <tr><td>Wheat Germ Oil</td><td>2.00%</td></tr> <tr><td>Hydroxylated Lanolin</td><td>0.50%</td></tr> <tr><td>C₁₀₋₁₈ Triglycerides</td><td>8.00%</td></tr> <tr><td>Dimethicone</td><td>0.50%</td></tr> <tr><td>Antioxidants</td><td>q.s.</td></tr> <tr><td>18β-GLYCYRRHETINIC ACID PHYTOSOME®</td><td>3.00%</td></tr> <tr><td>Hectorite (and) Hydroxyethylcellulose</td><td>0.40%</td></tr> <tr><td>PPG-25-Laureth-25</td><td>2.00%</td></tr> <tr><td>Purified Water</td><td>as needed to 100</td></tr> <tr><td>Fragrance</td><td>q.s.</td></tr> </table>	Glyceryl Stearate (and)PEG-20 Glyceryl Stearate	8.00%	Wheat Germ Oil	2.00%	Hydroxylated Lanolin	0.50%	C ₁₀₋₁₈ Triglycerides	8.00%	Dimethicone	0.50%	Antioxidants	q.s.	18β-GLYCYRRHETINIC ACID PHYTOSOME®	3.00%	Hectorite (and) Hydroxyethylcellulose	0.40%	PPG-25-Laureth-25	2.00%	Purified Water	as needed to 100	Fragrance	q.s.	<p>The physico-chemical characteristics of 18β-Glycyrrhetic Acid Phytosome® and its ready dispersibility in water and oil virtually pose no limitations to the preparations of cosmetic formulations. 18β-Glycyrrhetic Acid Phytosome®, dispersed in aqueous phase by a homomixer or a turboemulsifier, is suitable for incorporation into monophasic and biphasic systems at a temperature lower than 40°C in order to avoid thermal stress that might damage the phospholipidic chain.</p> <p>Also suitable for:</p> <p>After sun, after shave, lotions for insect bites, bodycare and after peeling, after depilation: all conditions where the skin may be irritated. A cosmetic formulation development study indicated 18β-Glycyrrhetic Acid Phytosome® to be suitable for a broad range of different formulations.</p>
Glyceryl Stearate (and)PEG-20 Glyceryl Stearate	8.00%																						
Wheat Germ Oil	2.00%																						
Hydroxylated Lanolin	0.50%																						
C ₁₀₋₁₈ Triglycerides	8.00%																						
Dimethicone	0.50%																						
Antioxidants	q.s.																						
18β-GLYCYRRHETINIC ACID PHYTOSOME®	3.00%																						
Hectorite (and) Hydroxyethylcellulose	0.40%																						
PPG-25-Laureth-25	2.00%																						
Purified Water	as needed to 100																						
Fragrance	q.s.																						

Did you know...

18β-Glycyrrhetic Acid is a metabolite of Glycyrrhizin, a saponin found in licorice (*Glycyrrhiza glabra*) root. The licorice plant is a legume related to beans and peas and derives its name from the word "liquorice", the ancient Greek for "sweet root". The sweet principle is Glycyrrhizin, a sweetener 50 times sweeter than sucrose.

TRADE NAME	INCI (CTFA)	INCI (E.U.)	EINECS N.	CAS N.	INDENA CODE
18β-Glycyrrhetic Acid Phytosome®	Lecithin (syn. Phosphatidylcholine) (and) Glycyrrhetic Acid	Lecithin (syn. Phosphatidylcholine)	232 - 302 - 2	8002 - 43 - 5	9001000
		Glycyrrhetic Acid	207 - 444 - 6	471 - 53 - 4	