

Gorgonian Extract®

Care for Sensitive Skin, Sustainably



KEY BENEFITS:

- Prevent and overcome irritations caused by active ingredients such as AHA's and BHA's, fragrances, antioxidants, and preservatives
- Overcome irritations caused by exfoliation and treatment with physical or chemical keratolytic agents
- Ideal for products intended for sensitive skin
- Ideal for products designed to treat rashes and other minor skin irritations
- Approved for use in global formulations

THE CONCEPT:

Soothing skin care products are crucial to treating sensitive skin types. Many consumers believe they have sensitive skin and are often seeking products targeted towards resolving this condition. Redness, itchiness, swelling and flakiness are all symptoms of irritated skin. These symptoms are often caused by the environment around us. The extremes of seasonal weather, the sun, pollution, various ingredients found in daily use cosmetic products such as fragrance, anti-bacterial hand sanitizers, soaps, or the many other chemicals in the environment can all cause sensitivities and irritation to the skin by triggering an inflammatory response.

Calming and soothing sensitive skin can be accomplished by preventing an inflammatory phenomenon before it even begins. Adding anti-inflammatory ingredients to formulations is the fundamental step needed to accomplish this task.

Stop redness and irritation before it starts with Gorgonian Extract®!



A Vantage Specialty Chemicals Business

ACTIVE INGREDIENTS

GORGONIAN EXTRACT® Care for Sensitive Skin, Sustainably



WHAT IS GORGONIAN EXTRACT®?

Gorgonian Extract® is a natural anti-inflammatory ingredient that is safe, effective, sustainable and environmentally friendly. It is an extract from the marine organism *Pseudopterogorgia elisabethae* (sea whip), a renewable resource, which consists primarily of powerful anti-inflammatory compounds called pseudopterosins.¹

The extraordinary anti-inflammatory properties of extracts from the sea whip *Pseudopterogorgia elisabethae* were first discovered in the 1980's by scientists from the University of California.^{2,3,4} These scientists isolated the active components from the crude extracts and determined their chemical structures using spectroscopic and crystallographic techniques. They found that the active compounds were a mixture of chemically-related diterpene glycosides and named them pseudopterosins. They also determined that their powerful anti-inflammatory activity was due to their ability to modify two arms of the inflammatory response: the inhibition of two enzymes in the arachidonic acid cascade and the

interference of receptor activities. Over the next several years the University of California researchers, as well as scientists from other universities, isolated many other active pseudopterosins from the sea whip and gained an understanding of the biological basis of their activity.^{5,6}

Through an exclusive license from the University of California, Lipo Chemicals brought this powerful anti-inflammatory extract to the personal care industry. We have performed studies to demonstrate its topical activity in a personal care emulsion and the sustainability of our harvest methods.

WHAT DOES GORGONIAN EXTRACT® DO?

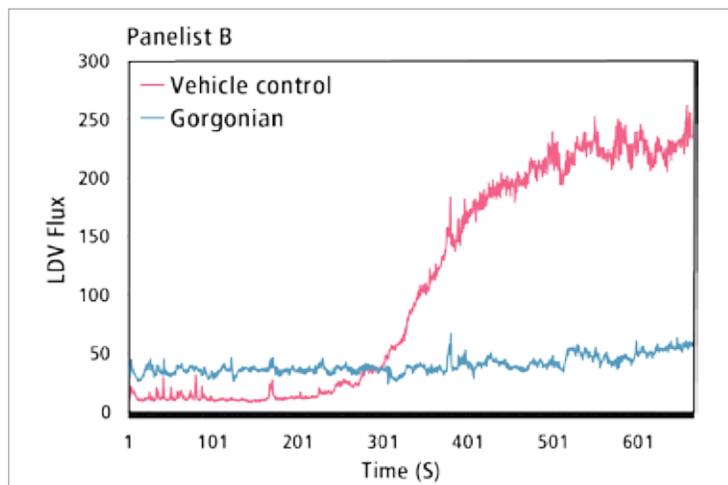
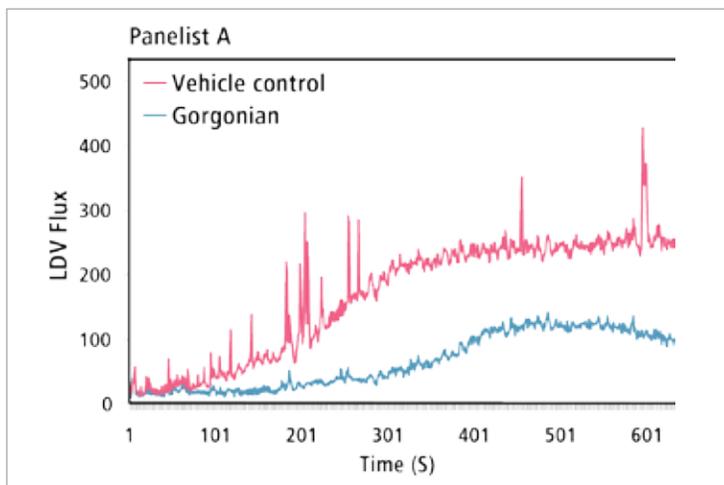
Anti-inflammatory Activity of Pseudopterosins Measured by Laser Doppler Blood Flow Evaluation

A double blind, placebo controlled clinical study was performed to evaluate the *in vivo* anti-inflammatory activity of Gorgonian Extract® using 16 subjects.⁷ Four sites, two each on each volar forearm, were designated for challenge for each subject. The irritant ethyl nicotinate was used to provoke inflammation and the blood flow rate at the application site was measured using Laser Doppler velocimetry (LDV). LDV is a technique to measure cutaneous micro-circulation caused as a result of inflammation induced by topical irritants.

It evaluates induced inflammation in terms of Laser Doppler Flux - a parameter that represents the speed and concentration of moving red blood cells.

Gorgonian Extract® was incorporated into a personal care emulsion at a level of 0.5%, and the skin was either pretreated twice daily for four days before ethyl nicotinate application or treated by a single application after ethyl nicotinate application. The magnitudes and times of the laser Doppler flux were measured as indicators of inflammation.

EXAMPLES OF LASER DOPPLER FLUX MEASUREMENTS FOR TWO PANELISTS



Results

■ Prevention of inflammation by pre-treatment with Gorgonian Extract®.

Treatment reduced the magnitude of the laser Doppler flux by 50% (Fig. 1) compared to a blank placebo emulsion.

■ Reduction of inflammation by post-treatment with Gorgonian Extract®.

Treatment post ethyl nicotinate challenge reduced the flux by 41% (Fig. 2) compared to a blank placebo emulsion.

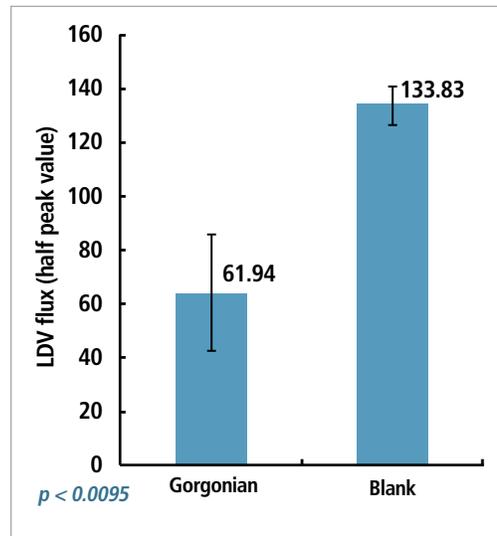


Fig. 1

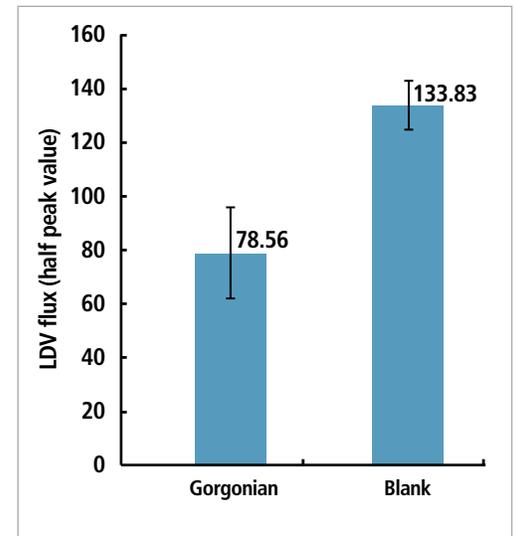


Fig. 2

Sustainability is the Key!

Sustainably sourced ingredients are of utmost importance now and into the future. By sourcing Gorgonian sustainably we help protect this precious and unique resource, while ensuring security of supply. To prove the sustainable harvest of Gorgonian, a study was performed jointly by the University at Buffalo and Lipo Chemicals.⁸ This study found that ten years of harvesting *Pseudopterogorgia elisabethae* has been performed sustainably. *P. elisabethae* is harvested by divers at select locations who have been trained to recognize the species and to harvest colonies in a manner that allows regrowth. The harvesters prune colonies to leave branches to ensure re-growth (see Figure 3). The site of pruning on the harvested colony heals in several days, and subsequent growth includes both extension of the remaining branches and generation of new branches. Also, equally important is the time interval between harvests. This interval provides time for the colonies to replace pruned branches and for the colony to reproduce and generate new growth. The existing data is consistent with a harvest that is at or near a sustainable level.



Fig. 3 Branches in white show the appearance of sea whip after it was pruned; the full size demonstrates re-growth after 18 months

HOW DO I USE GORGONIAN EXTRACT®?

Solubility and Use:

Gorgonian Extract® GC is soluble in oils, esters or alcohols and insoluble in water and glycols. Gorgonian Extract® GC is recommended for use in emulsions.

Gorgonian Extract® PTG and BG is soluble in ethanol, isopropanol and glycols. It is insoluble in most organic esters and all cosmetic oils. It is dispersible/miscible in water. Gorgonian Extract® PTG and BG are recommended for use in clear systems.

Incorporation:

Since pseudopterosins are highly active molecules it is important to prevent their degradation during the formulation process.

- It is recommended that Gorgonian Extract® BC, GC or PTG be added to a formulation, after emulsification below 40°- 45°C.
- The optimal pH range is 4.0-7.0. Basic pH can cause deacetylation of the sugar group, and acidic pH can cleave off the sugar.

Stability:

Incompatibilities: potent oxidizing agents, such as hydrogen peroxide, can damage the pseudopterosin molecule.

Recommended use level: 0.30% - 2.00%



GORGONIAN EXTRACT® Care for Sensitive Skin, Sustainably

GORGONIAN EXTRACT® IDEAL FOR USE IN:

- Skin treatment products with the potential to irritate
- Sun and after sun products
- After-shave products
- Lotions, creams, and gels
- Sensitive skin products
- Post treatment after exfoliation



PRODUCT: Gorgonian Extract® BG

INCI NAME: Butylene Glycol (and) Sea Whip Extract

EINECS #: 203-529-7 (and) Not Assigned

CAS #: 107-88-0 (and) 244058-54-6

PRODUCT: Gorgonian Extract® GC

INCI NAME: Caprylic/Capric Triglyceride (and) Sea Whip Extract

EINECS #: 265-724-3 or 277-452-2 (and) Not Assigned

CAS #: 5381-09-1 or 73398-61-5 (and) 244058-54-6

PRODUCT: Gorgonian Extract® PTG

INCI NAME: Pentylene Glycol (and) Sea Whip Extract

EINECS #: 226-258-3 (and) Not Assigned

CAS #: 5343-92-0 (and) 244058-54-6

TYPICAL PROPERTIES

GORGONIAN EXTRACT® BG

GORGONIAN EXTRACT® GC

GORGONIAN EXTRACT® PTG

Appearance	Clear to slight hazy amber liquid	Clear to slight hazy amber liquid	Light amber to brown liquid
Odor	Characteristic	Characteristic	Characteristic
Total % Weight of Ps. Powder	3.0-4.0	3.0-4.0	3.0-4.0
Refractive Index (25° C)	1.4300-1.4500	1.4475-1.4530	1.4300-1.4500
Solubility	Soluble in water	Insoluble in water and glycols	Soluble in water
Recommended Use Level	0.3-2.0%	0.3-2.0%	0.3-2.0%

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- 6 Abad, Maria J.; Bedoya, Luis Miguel; Bermejo, Paulina, Natural Marine Anti-inflammatory Products, Mini Reviews in Medicinal Chemistry, Volume 8, Number 8, July 2008, pp. 740-754(15)
- 7 Nava Dayan, Gary Grove and Rajarajeswari Sivalenka, Anti-inflammatory activity of Pseudopterosins by laser doppler blood flow evaluation, International Journal of Cosmetic Science, Volume 31, Issue 6, page 480
- 8 N Dayan, A Babic, T Higgs and H. Lasker, The Harvest of Marine-derived Cosmetic Ingredients: A Case Study of *Pseudopteroergorgia elisabethae*, Cosm & Toil 126(8) (2011)

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ACTIVE INGREDIENTS

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