



SYNERGISTIC HERBAL BLENDS FOR SKIN HEALTH



Botaniplex™ BALANCE

Rebalances the skin's protective microbiome



Botaniplex™



Synergistic herbal blends promote skin health and self-healing

Botaniplex™ products are high-quality, potent, synergistic blends of herbal extracts developed to address specific skin conditions, treating them efficiently and safely.

The products are blended from herbal extracts produced at our own, dedicated, ISO9001 facility. The herbal raw materials, obtained from reliable suppliers, originate in regions of China that grow the best quality medicinal herbs. After incoming Quality Control (QC) tests, the herbal material is subjected to our own proprietary extraction and purification steps. This results in liquid extracts enriched in the desired phytochemicals and depleted of unwanted plant materials and contaminants. The extracts are subjected to rigorous QC tests before blending and further checks after formulation into Botaniplex™ products.

INCI Name:	Botaniplex™ BALANCE SA Glycerin, <i>Ailanthus altissima</i> bark extract, <i>Sanguisorba officinalis</i> root extract.	Botaniplex™ BALANCE SC Glycerin, <i>Phellodendron chinense</i> bark extract, <i>Chrysanthemum indicum</i> flower extract.
Description:	Orange-brown to dark brown aqueous liquid	
Free of:	Preservatives, heavy metals, pesticide residues	
Recommended dosage:	0.2 – 1 %	2 – 5 %
Formula proposals:	Creams, lotions, gels, shampoos, cleansers, masks	
Cosmetic applications:	Restores healthy balance to irritated, unbalanced, dry skin and scalp damaged by daily exposure to irritants and <i>Staphylococcus aureus</i> infected pimples, impetigo, boils, cellulitis, folliculitis, carbuncles, abscesses	Restores healthy balance to irritated, unbalanced, oily skin and scalp damaged by acne, fungal acne, dandruff, and seborrheic dermatitis associated with <i>Staphylococcus capitis</i>, <i>Cutibacterium acnes</i> and <i>Malassezia pathogenesis</i>
Patent:	Granted: "Synergistic herbal compositions with prebiotic properties for treatment of skin infections, allergies and inflammation" US20180169171A1	Granted: "Synergistic herbal compositions with prebiotic properties for treatment of acne" WO2018087766 A1

In vitro efficacy of Botaniplex™ BALANCE SC

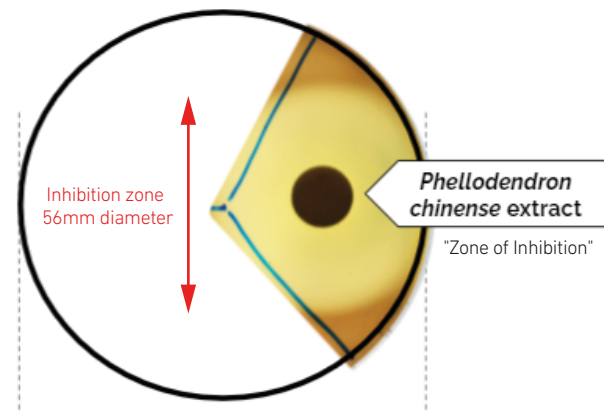
Microbiome balance

A microbiome is a complex ecological system that integrates numerous microbial species, their host, and all their interactions. Healthy skin is a balanced ecosystem, preserving normal function and fighting pathogens. Imbalance of the skin can be induced by excessive growth of bacteria, fungi and/ or other microbes, leading to skin disorders.

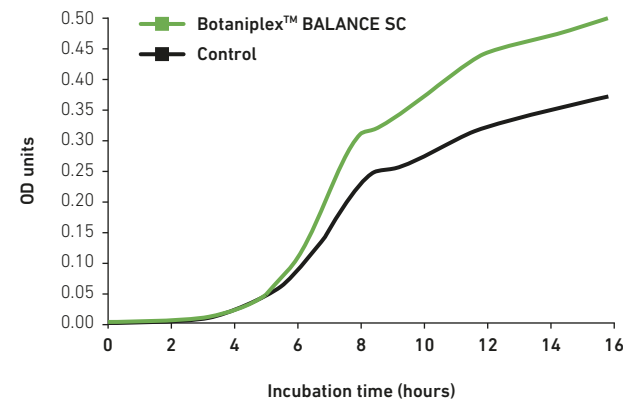
Acne and some types of dandruff result from an increase in sebum production that eventually results in inflammation. In dandruff, *Malassezia* and *Staphylococcus capitis* are two of the organisms whose overproliferation is thought responsible; in acne, excessive growth of *Cutibacterium acnes* is implicated. These pathogens then overpower beneficial organisms such as *Staphylococcus epidermidis* that protect the skin, throwing the skin microbiome out of balance.

Botaniplex™ BALANCE SC has prebiotic and antimicrobial effects that restore microbiome balance and eventually has a potency to alleviate both acne and dandruff.

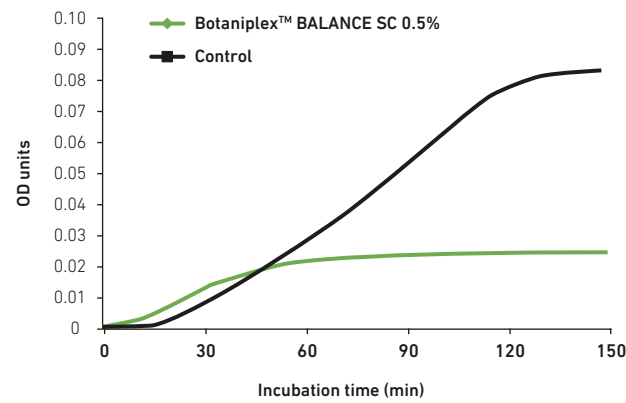
Antibiotic effect on pathogenic bacteria *C. acnes*



Prebiotic effect on commensal bacteria *S. epidermidis*



Antibiotic effect on pathogenic bacteria *S. capitis*



Antifungal effect on pathogenic fungi *Mallasezia furfur*



Botaniplex™ BALANCE SC	5%	2.5%	1.25%	0.63%	0.31%	0% (Control)
Growth level	+	+	+++	++++	+++++	+++++

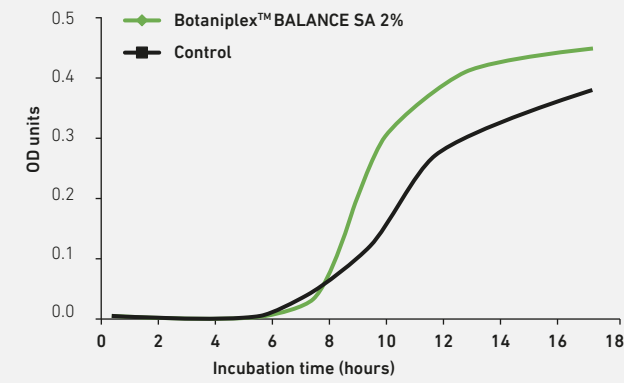
In vitro efficacy of Botaniplex™ BALANCE SA

Microbiome balance

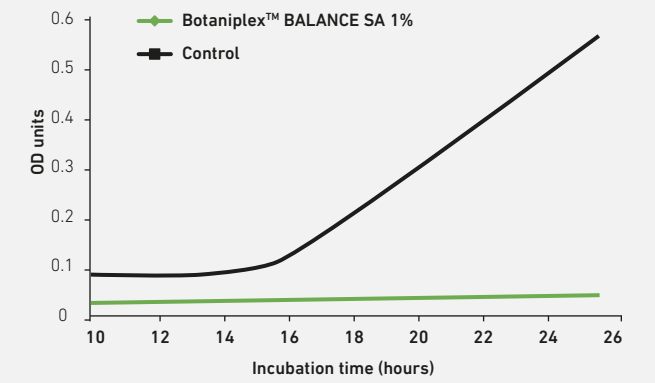
When the skin is damaged or infected, immune dysregulation and microbial dysbiosis that favors *Staphylococcus aureus* overgrowth both diminish the effectiveness of the skin barrier leading to itch, redness, swelling, scaling dehydration and infection.

Reduction of the pathogen growth and growth support of beneficial bacteria *Staphylococcus epidermidis* by Botaniplex™ BALANCE SA protects the skin and keep it balanced and healthy.

Prebiotic effect on commensal bacteria *S. epidermidis*



Antibiotic effect on pathogenic bacteria *S. aureus*



Immune support

Anti-microbial peptides (AMPs) such as defensins, are part of innate immunity defense system. Human skin cells constitutively produce low amounts of β -defensins that increase following infection and thus, play an important role in protecting the skin from invasion of pathogens.

However, when defensins are deficient, as evident in conditions such as atopic dermatitis, there are increases in infections, accompanied with robust inflammatory responses.

Botaniplex™ BALANCE SA stimulates defensins on the one hand while decreasing defensin-suppressing cytokines IL-4 and IL-13 on the other. This leads to reduced proinflammatory cytokines production, thus interrupting the inflammation cycle associated with this condition.

Activity associated with atopic dermatitis	Activity of Botaniplex™ BALANCE SA
↑ Increased expression of IL-13, IL-4 (β -defensin inhibitors)	↓ Down-regulates IL-13 expression
↓ Decreased expression of defensins - antimicrobial peptides	↑ Stimulates human β -defensin hBD-3 expression

Cosmetic claims	Substantiation	
	Botaniplex™ BALANCE SA	Botaniplex™ BALANCE SC
Improves microbiome balance	Prebiotic support for <i>Staphylococcus epidermidis</i> . Antibiotic activity against <i>Staphylococcus aureus</i> .	Prebiotic support for <i>Staphylococcus epidermidis</i> . Antibiotic activity against <i>Cutibacterium acnes</i> , <i>Staphylococcus capitis</i> . Antifungal activity against <i>Mallasezia furfur</i> .
Reduces redness and irritation	Decrease in secretion of pro-inflammatory cytokines Anti-oxidative activity	Decrease in secretion of pro-inflammatory cytokines Anti-oxidative activity
Stimulates the skin's natural defense mechanisms	Increase in expression of hBD-3 (defensin, antimicrobial peptide).	
Sebum regulation		Contains berberine that is known to reduce sebum production

Botaniplex™ CLEAR

Face the world again with CLEAR skin!

Acne vulgaris is one of the most common skin conditions in the world. The cause is multifactorial and includes pathophysiologic mechanisms related to altered sebaceous gland activity, induction of inflammation cascades, increased androgen production, microbial dysbiosis etc.

Botaniplex™ CLEAR is a potent herbal blend successfully treating not only acne lesions, but also fungal acne and pustular boils due to strong anti-inflammatory and antimicrobial (antibacterial, anti-fungal) properties.

Available in selected territories

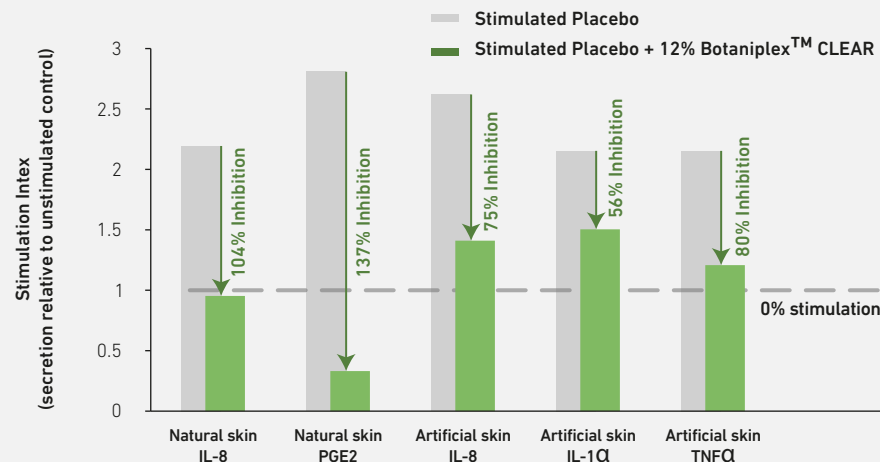


INCI Name:	Glycerin, <i>Phellodendron chinense</i> bark extract, <i>Sanguisorba officinalis</i> root extract, <i>Rheum palmatum</i> root extract, <i>Portulaca oleracea</i> extract, <i>Chrysanthemum indicum</i> flower extract, <i>Scutellaria baicalensis</i> root extract
Description:	Brown to dark brown aqueous liquid
Free of:	Preservatives, heavy metals, pesticide residues
Recommended dosage:	1 – 12 %
Formula proposals:	Creams, lotions, gels, masks, patches, soap bar
Cosmetic applications:	Inflamed, infected pimples on face and body in conditions such as acne, fungal acne, folliculitis, boils
Patent:	Granted: "Synergistic herbal compositions with prebiotic properties for treatment of acne" WO2018087766 A1

In vitro efficacy

Anti - inflammatory 3D skin inflammation models

Botaniplex™ CLEAR decreases secretion of pro-inflammatory mediators from natural and artificial skin subjected to inflammation-like stimulus



In vivo efficacy

Efficacy and Safety of Acne Spot Treatment gel containing 12% Botaniplex™ CLEAR

Design: interventional, randomized, investigator-blinded, split-face, vs. untreated control.

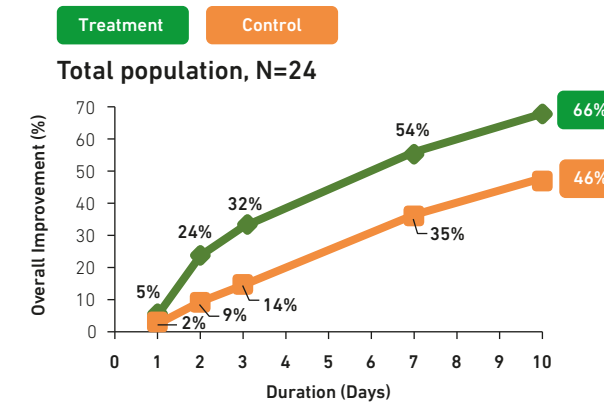
Study Population: 24 adult volunteers with mild to moderate acne.

Publication: Barak-Shinar D, Draelos ZD. J Drugs Dermatol. 2017 Jun 1;16(6):599-603.

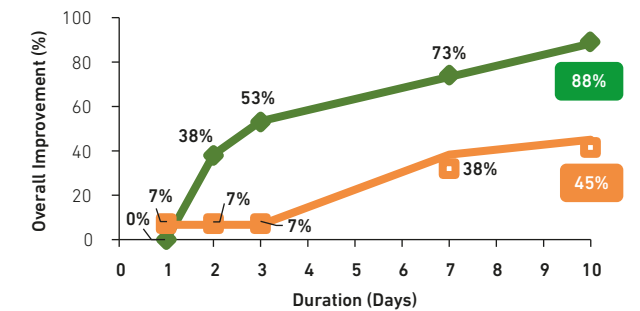
Results:

- Effective after just 5 applications (36 hours/ 1.5 days).
- Shows dramatic reduction of visible acne.
- Reduction of redness (erythema) especially inflammatory lesions.

Overall improvement of inflamed lesions



Females under 18, N=5



Efficacy and Safety of Acne Patch containing 3% Botaniplex™ CLEAR

Design: interventional, open-label.

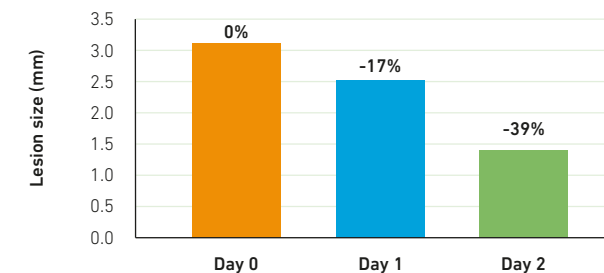
Population: 10 volunteers with acne.

Results:

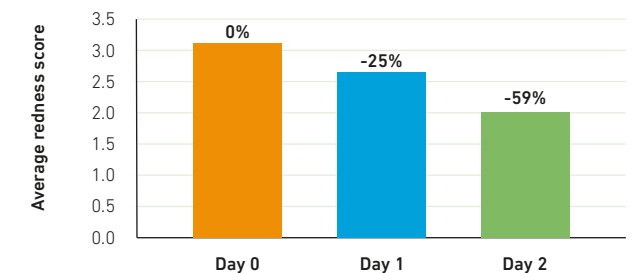
- The once-a-day application of patch containing 3% Botaniplex™ CLEAR is effective and safe in treating inflammatory lesions just after one and two days.
- 100% satisfaction of the product.



Reduction of lesion size



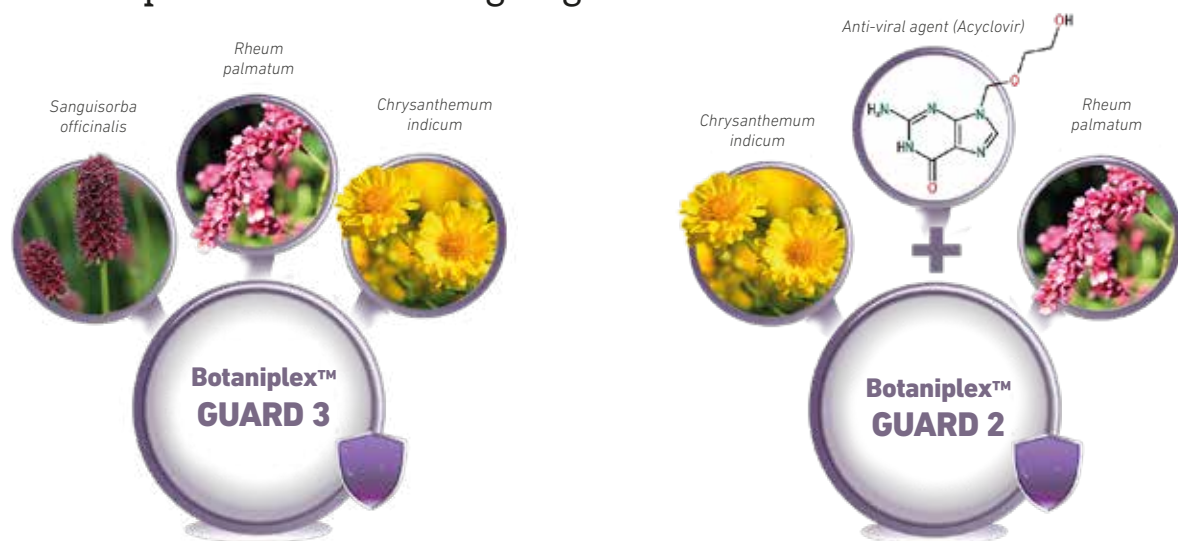
Redness reduction



Cosmetic claims	Substantiation
Redness and irritation reduction	Decreases pro-inflammatory cytokine secretion, Botaniplex™ CLEAR 12% exhibits 3-fold higher anti-oxidant activity than 0.5% Vitamin E typically used in cosmetic products, effective in acne clinical studies
Microbiome balance	Prebiotic support for <i>Staphylococcus epidermidis</i> , antibiotic against <i>Cutibacterium acnes</i> and <i>Staphylococcus capitis</i> , antifungal activity against <i>Mallasezia furfur</i>
Clears spots, pimples and blemishes	Demonstrated in acne clinical studies

Botaniplex™ GUARD

GUARD stops the viruses from going viral



INCI Name:	Botaniplex™ GUARD 3 Glycerin, <i>Chrysanthemum indicum</i> flower extract, <i>Sanguisorba officinalis</i> root extract, <i>Rheum palmatum</i> root extract.	Botaniplex™ GUARD 2 Glycerin, <i>Chrysanthemum indicum</i> flower extract, <i>Rheum palmatum</i> root extract.
Description:	Orange- brown to dark brown aqueous liquid	
Free of:	Preservatives, heavy metals, pesticide residues	
Recommended dosage:	1 – 3 %	
Formula proposals:	Soothing gel, cream for chapped lips Soothing genital wash and cream	
Cosmetic applications:	Reduces development of Herpes symptoms and Candida- related infections on lips (cold sore) or in genital area (intimate care)	Botaniplex™ GUARD 2 can be used alongside acyclovir for treating cold sores and genital herpes
Patent:	Pending: "Herbal extracts for treatment of herpesvirus infections" W02018135215	

In vitro efficacy

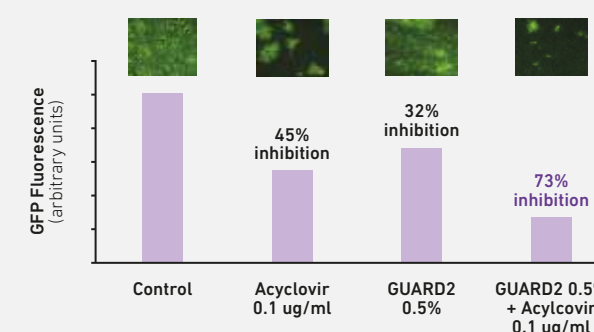
Herpes simplex virus (HSV), a double stranded DNA virus and a member of the herpesviridae family, is widespread through the world. It is known to cause oral herpes (cold sore) and genital lesions. In some cases, herpetic lesions are co-infected with microbes, predominantly *Candida* spp. and *Staphylococcus* spp.

Botaniplex™ GUARD blends are endowed with strong anti-HSV, as well as anti-microbial and anti-inflammatory activities needed to control herpes infections.

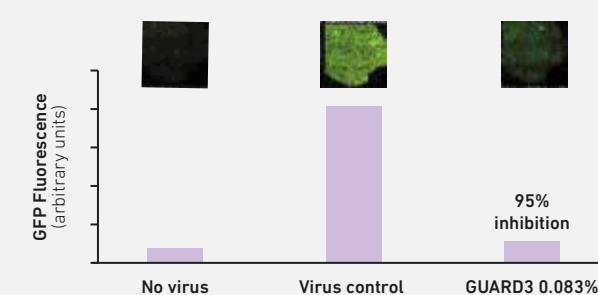
Synergistic anti-HSV-1 effect

Synergistic inhibition of HSV-1 infection by herbal extracts. Host cells were infected with HSV-1 that carries a gene for a fluorescent protein (GFP). Growth of the virus was monitored by fluorescence microscopy and using a plate reader.

Botaniplex™ GUARD 2 + Acyclovir



Botaniplex™ GUARD 3

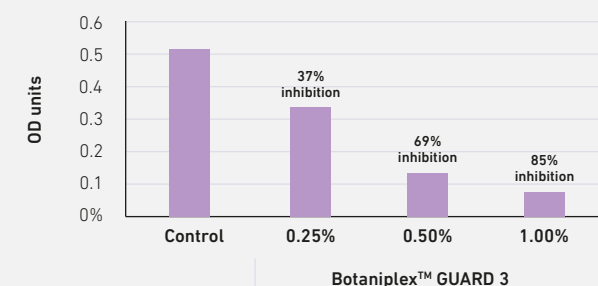


The multiple mechanisms for the action of herbal anti-viral activity are currently under intensive investigation in cooperation with Dr. Kobiler – researcher at Tel Aviv University.

Antifungal effect

Inhibitory effect on growth of pathogenic fungi

Candida albicans



In vivo efficacy

Preliminary results of Botaniplex™ GUARD 3 clinical evaluation

Design: Preliminary study - interventional, open-label. Ten adult volunteers were asked to apply topical formulation comprising 3% Botaniplex™ GUARD 3 during a breakout of oral herpes and to report their assessment.

Results: All volunteers experienced complete or partial relief of oral herpes symptoms. No or significant reduction of further development of pain, swelling, redness, wound after 3-6 application for 1-2 days. No adverse effects were observed.



Day 0

After 3 applications no wound formed and the pain abated.

Cosmetic claims	Substantiation
Relieves lip-sore discomfort	Anti-Herpesvirus activity Clinical evaluation on cold sores
Soothing redness, itchiness and irritation	Decrease in secretion of pro-inflammatory cytokines Anti-oxidative activity
Antibiotic activity	Prebiotic support of <i>Staphylococcus epidermidis</i> , antibiotic against <i>Staphylococcus aureus</i> Antifungal activity against <i>Candida albicans</i>

Botaniplex™ CALM 4

Keep CALM, love your skin whatever your age!



INCI Name:	Glycerin, Rheum palmatum root extract, Scutellaria baicalensis root extract, Glycyrrhiza glabra (Licorice) root extract, Cnidium monnieri fruit extract
Description:	Brown to dark brown aqueous liquid
Free of:	Preservatives, heavy metals, pesticide residues
Recommended dosage:	1 – 4 %
Formula proposals:	Creams, lotions, gels, masks
Cosmetic applications:	For aged skin For red, itchy and irritated skin After shave soothing

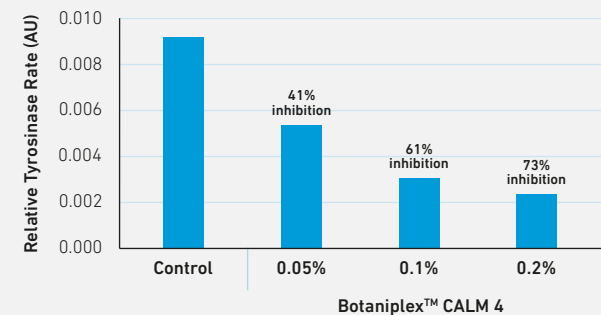
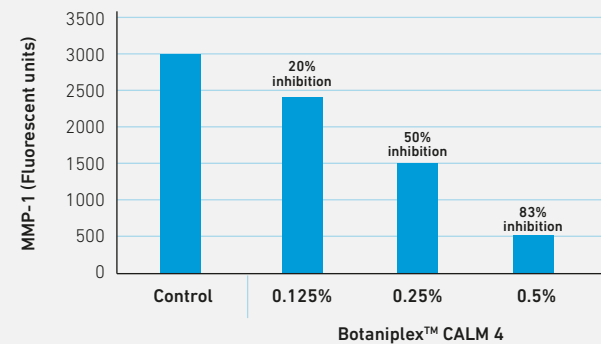
In vitro efficacy

Aging of skin is a complex process depending on both the intrinsic and extrinsic factors (mechanical, sunlight, oxidants and other pollutants, pathogens), and by intrinsic physiology (inflammation, autoimmunity etc.). As we age, skin growth and repair slow and clinical manifestations of aging increase markedly, including wrinkling, fragility, dryness, pigmentation, tendency to dermatitis and poor wound healing.

Anti – aging effect

Matrix Metalloproteinase -1 (MMP-1) is a collagenase, an enzyme that digests collagen an important skin structural protein

Botaniplex™ CALM 4 helps preserve skin structure by inhibiting MMP-1.



Lightening

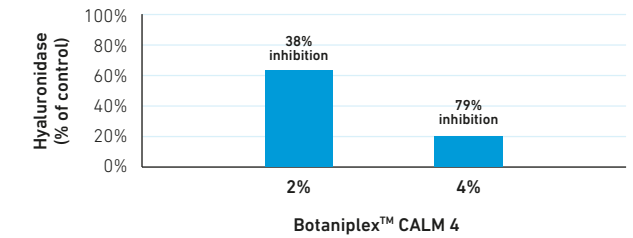
Tyrosinase is an enzyme responsible for synthesis of melanin, the pigment that causes dark patches on the skin.

Botaniplex™ CALM 4 is a strong inhibitor of tyrosinase.

Moisture preservation

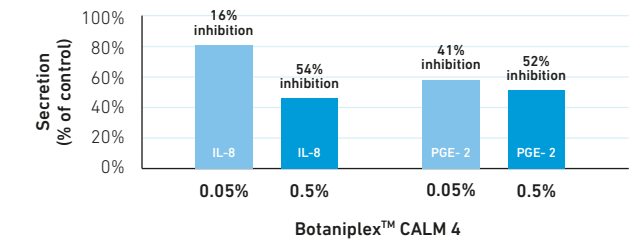
Hyaluronidase is an enzyme that digests hyaluronic acid, a polysaccharide lubricant that occurs naturally in the skin.

Botaniplex™ CALM 4 inhibits hyaluronidase, helping to keep the skin moist and supple.



Anti-inflammatory

Botaniplex™ CALM 4 decreases secretion of pro-inflammatory mediators from keratinocytes subjected to inflammation-like stimulus.



Cosmetic claims	Substantiation
Reduces redness and irritation, soothing	Decrease in secretion of pro-inflammatory cytokines Anti-oxidative activity
Helps slow skin pigmentation associated with ageing	Inhibition of Tyrosinase
Reduces dryness, wrinkling and fragility in ageing skin	Inhibition of collagenase (MMP-1) and hyaluronidase



Quality & Sustainability

Green Mountain Biotech is committed to minimizing its impact on the environment by sustainable sourcing and responsible use of resources. This includes awareness of the importance of plant biodiversity and conservation, and sensitivity to the communities who grow the medicinal herbs. In our own operations, we use manufacturing and packaging materials as efficiently as possible, recycling solvents, and disposing of waste in an environmentally appropriate manner. Botaniplex™ products are COSMOS approved as genuine organic or natural cosmetics produced to the highest feasible sustainability standards.