THE MEDITERRANEAN IS OUR INSPIRATION

NATURAL INGREDIENTS FOR NUTRACEUTICAL AND COSMETIC APPLICATIONS

Cosmetic

BIONAP srl
Bioactive Natural Products
Who we are
Founded in 1997, BIONAP is an Italian company which produces standardized extracts for nutraceuticals and cosmeceuticals. Our mission is to discover active substances contained in Mediterranean foods and plants and to create ingredients for wellbeing and beauty products.

Quality and Research
From the initial selection of raw materials to the final extracts, BIONAP strictly controls the whole production process to ensure the highest manufacturing standards. The efficacy and safety of BIONAP extracts are supported by continuous scientific research and the effectiveness of BIONAP ingredients has been proven by several experimental and clinical trials, published in international scientific journals. Innovative technologies and our qualified team of experts make BIONAP a serious and reliable partner.
SKIN MOON®
TESTED SKIN-LIGHTENING EFFECT FROM PLANT EXTRACTS

OPUNTIA BIOCOMPLEX SH
OPUNTIA POLYSACCHARIDES FOR SKIN MOISTURIZING AND REPAIR

SKIN SAVE®
THE POWER OF MEDITERRANEAN EXTRACTS FOR SENSITIVE SKIN

OLEA-HT 10
TO PREVENT THE SIGNS OF PHOTOAGING ON YOUR SKIN

RENEGRAPE®
THE ANCIENT TRADITION FOR A SAFE SKIN RENEWAL

FLAOSLIM™
TO IMPROVE CELLULITE SKIN APPEARANCE, THE LIPOLYTIC EFFECT OF BERGAMOT FLAVONOIDS

MUCOSAVE®CG
TOPICAL ACTIVE PROTECTION OF SENSITIVE MUCOSAE

FROM BY-PRODUCTS OF MEDITERRANEAN AGRICULTURAL PRODUCTION
MADE IN SICILY
PRESERVATIVES FREE
TESTED SKIN-LIGHTENING EFFECT FROM PLANT EXTRACTS

From caper buds (Capparis spinosa), orange juice (Citrus sinensis), olive leaves (Olea europaea) and rice grains (Oryza sativa), BIONAP has developed SKIN MOON®, a new combination of extracts with a high skin-lightening activity.

<table>
<thead>
<tr>
<th>COMPOSITION</th>
<th>SKIN MOON®% (w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capparis spinosa extract</td>
<td>15-20</td>
</tr>
<tr>
<td>Olea europaea extract</td>
<td>15-20</td>
</tr>
<tr>
<td>Red orange extract</td>
<td>10</td>
</tr>
<tr>
<td>Oryza sativa extract</td>
<td>10</td>
</tr>
<tr>
<td>Total polyphenols</td>
<td>2-3</td>
</tr>
<tr>
<td>(HPLC method)</td>
<td></td>
</tr>
</tbody>
</table>

**What it does**

SKIN MOON® is able to inhibit skin melanogenesis, showing an activity similar to hydroquinone and higher than kojic acid and arbutin, which are ingredients currently used in skin-lightening products. Moreover, SKIN MOON® is well tolerated by skin and does not cause skin sensitivity, unlike other agents commonly used in skin depigmentation (1).

**How to use**

SKIN MOON® can be used for skin-whitening/lightening and antiaging products. In contrast with other agents (hydroquinone, kojic acid and arbutin), SKIN MOON® can be applied during sun exposure because it has not a cutaneous photosensibilizing effect.

Recommended usage concentration:
2-3% (w/w) in 3-6.5 pH range

**INCI NAME:**
Citrus Sinensis (Orange) fruit extract
Oryza Sativa (Rice) extract
Capparis Spinosa bud extract
Olea Europaea (Olive) leaf extract
Maltodextrin
Skin lightening: scientific investigations on SKIN MOON® effect.

SKIN MOON® and its extracts effects on skin were evaluated by different in vitro and clinical experiments (2-5). Results obtained by in vitro model showed that at different concentrations SKIN MOON® is able to induce higher inhibition of tyrosinase activity than kojic acid (Fig.1).

![Fig.1 Inhibition of tyrosinase activity percentage by in vitro model.](image)

Moreover, a clinical trial (1) carried out by an objective instrumental technique (reflectance spectrophotometry), evaluated skin melanogenesis inhibition of SKIN MOON® topical application in comparison with other whitening agents (hydroquinone, kojic acid and arbutin). In this study, SKIN MOON® showed a significant percentage of melanogenesis inhibition (Fig.2), without cutaneous photosensitizing effects (1).

![Fig.2 Percentage of melanogenesis inhibition on human volunteers.](image)

REFERENCES
To survive in dry climate, Opuntia ficus indica plant uses its “leaves” (cladodes) to save water. Under the prickly surface, cladodes contain a juicy and tender gel full of mucilages and other polysaccharides that bind and preserve water molecules. In the southern Italy, the farmers working in the fields know very well the properties of this natural gel and they are used to putting Opuntia cladodes on to moisturize and protect skin and wounds. **OPUNTIA BIOCOMPLEX SH** can be considered a plant origin Hyaluronic Acid. **OPUNTIA BIOCOMPLEX SH** is a powder extract obtained from the juice of Opuntia cladodes, containing the natural blend of mucilages and fibers. When topically applied, it produces a physical barrier on the skin, protects against environmental stress factors, deeply moisturizes skin and promotes cutaneous reparative processes.

<table>
<thead>
<tr>
<th>COMPOSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polysaccharides (Spectrophotometric method)</td>
</tr>
<tr>
<td><strong>OPUNTIA BIOCOMPLEX SH % (w/w)</strong></td>
</tr>
<tr>
<td>30-40</td>
</tr>
</tbody>
</table>

**What it does**  
**OPUNTIA BIOCOMPLEX SH** can be used to keep skin moisturized and promote cutaneous reparative processes. As reported in several testing studies, topical application of Opuntia polysaccharides has the power to increase skin hydration degree and the rate of skin regeneration by re-epithelialization of cutaneous lesions (1).

**How to use**  
**OPUNTIA BIOCOMPLEX SH** can be used to formulate several cosmetic products such as skin moisturizer, anti-aging, wound-healing products for face, body and hair.

Recommended usage concentration: 2-5% (w/w) in 3-7 pH range.

**INCI NAME:**  
Opuntia ficus-indica stem extract  
Maltodextrin
Skin repairing and moisturizing effects of **OPUNTIA BIOCOMPLEX SH**

**OPUNTIA BIOCOMPLEX SH** contains compounds with different chemical nature and molecular weight (MW) distribution. The high MW components of Opuntia mucilage have been identified as a linear galactan polymer and a highly branched xyloarabinan. The low MW components have been attributed to lactic acid, mannitol and phenolic compounds such as piscid acid and eucomic acid (1). Skin-repairing and hydrating effects of **OPUNTIA BIOCOMPLEX SH** have been proven by in vitro model and clinical evaluation (1,2). A new in vitro model (Time Lapse Microscopy) on keratinocyte cells was used to evaluate the effect of **OPUNTIA BIOCOMPLEX SH** on skin repair and protection, simulating in vivo conditions (1). Results have proven that Opuntia cladode extract induced a wound healing effect (WH) of 80% at 20 h, with a total wound closure within 30 h, whereas a significantly higher healing time was required in the control for the same effect (80% WH at 28 h and total closure at 50 h). The skin-moisturizing effect of **OPUNTIA BIOCOMPLEX SH** has been evaluated in a randomized, double blind and placebo controlled clinical trial, carried out on 40 healthy subjects (2). The topical effect of **OPUNTIA BIOCOMPLEX SH** at 2% w/w on skin hydration was evaluated by corneometer over a period of 30 days and at short and long-term time points (1 hour, 15 days and 30 days). Results have showed that **OPUNTIA BIOCOMPLEX SH** is able to induce a significant increase of water content on skin in a short and long-term applications. In detail, 11.4%, 25.3% and 24.8% of change of skin hydration was respectively recorded at 1 h (short term), 15 days and 30 days (long term) for **OPUNTIA BIOCOMPLEX SH** at 2%, whereas 8.51%, 7.73% and 8.84% was observed in the control (Fig.1).

Moreover, data obtained from the Visioscan technique have confirmed the moisturizing action. SEsc (scaliness) and SEsm (smoothness) parameters showed a significant improvement vs placebo after 15 days of treatment. **OPUNTIA BIOCOMPLEX SH** reduced the scaliness of more than 18% vs 4.9% of placebo and increased smoothness of more than 7% vs 1.7% of placebo. Finally, cutometer investigations on R0 (firmness), R6 (visco-elasticity) and R7 (biological elasticity) parameters have suggested that the activity of **OPUNTIA BIOCOMPLEX SH** can be attributed to increase in water content, not only in the superficial, but also in deeper skin layers. The Opuntia extract, promoting skin hydration, counteracts the superficial skin flaking and dryness, and leads to a significant improvement of skin smoothness.

**REFERENCES**

**SKIN SAVE®** is a blend of herbal extracts from Opuntia ficus indica (cladodes), Capparis spinosa (buds) and Olea europaea (leaves). It can be successfully used in topical supportive treatments of contact dermatitis, seborrheic dermatitis, acne, skin inflammatory processes and itching.

<table>
<thead>
<tr>
<th>COMPOSITION</th>
<th>SKIN SAVE® (w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capparis spinosa extract (buds)</td>
<td>18-20</td>
</tr>
<tr>
<td>Opuntia ficus indica extract (cladodes)</td>
<td>13-15</td>
</tr>
<tr>
<td>Olea europaea extract (leaves)</td>
<td>15-18</td>
</tr>
<tr>
<td>Total polyphenols (HPLC method)</td>
<td>2-3</td>
</tr>
</tbody>
</table>

**What it does**
The healthy effects of **SKIN SAVE®** on sensitive skin are attributed to the threefold action of its active components:
- polysaccharides from Opuntia ficus indica that have wound-healing and immunostimulant activities;
- olive biophenols which induce a soothing and lenitive skin effect;
- flavonoids from Capparis spinosa with desensitizing effects.

Thanks to these actions, **SKIN SAVE®** is effective in inhibiting skin damages induced by excessive sun exposure, heat burns, radiotherapy, insect and jellyfish stings.

**How to use**
**SKIN SAVE®** has a wide range of applications. It can be used in products for sensitive skin, baby care, after sun, aftershave, cosmeceutical treatments of acne, dermatitis, psoriasis, insect stings, couperose.

Recommended usage concentration: 2-3% (w/w) in 3.5-6.5 pH range

**INCI NAME:**
Capparis Spinosa bud extract
Opuntia ficus-indica stem extract
Olea Europaea (Olive) leaf extract
Maltodextrin
Scientific investigations of **SKIN SAVE**<sup>®</sup> protection on the skin

Each extract contained in **SKIN SAVE**<sup>®</sup> has shown to possess a considerable biological profile in several scientific studies carried out by different research groups (1-4). It is well known that Capparis spinosa flavonoids, when topically applied, have a marked inhibitory effect against histamine-induced skin erythema, whereas important anti-inflammatory and antioxidant activities are attributed to olive biophenols. Moreover, modern phytochemical and pharmacological investigations proved that Opuntia Ficus Indica polysaccharides possess a wound healing activity in large and full-thickness wounds by accelerating the re-epithelialization. Recently, protective effect of **SKIN SAVE**<sup>®</sup> on skin was evaluated by a clinical study carried out on 68 women undergoing a planned set of radiation therapy after breast-conserving surgery for which it was needful a regime of careful precautions for possible related skin diseases (3). In comparison with the commercial product, **SKIN SAVE**<sup>®</sup> topical application was significantly more effective in preventing or reducing acute skin reactions (Fig.1).

![Graph showing erythema index (ΔE,I) vs time (weeks) for subjects not treated (control), treated with a commercial product and treated with a formulation containing **SKIN SAVE**<sup>®</sup>](image)

**Fig.1** Trends of erythema index (ΔE,I) vs time (weeks) for subjects not treated (control), treated with a commercial product and treated with a formulation containing **SKIN SAVE**<sup>®</sup>

**REFERENCES**

The olive tree is the symbol of longevity and beauty in the Mediterranean culture and its health properties had been recognized since very old times. Recent archaeological research on cosmetic products has identified olive oil as the principal make-up ingredient of the Romans and Cleopatra also. According to Bionap’s philosophy, OLEA-HT 10 is obtained from a by-product of the sicilian olive oil production. The ingredient is a light-colored powder containing hydroxytyrosol and tyrosol (10-12% HPLC).

What it does
• Several in vitro and clinical studies have proved the radical scavenging and antioxidant activity of hydroxytyrosol and tyrosol (1-6). These activities are important to protect proteins such as collagen and elastin that influence skin elasticity and turgor.
• OLEA-HT 10 is able to counteract skin photoaging signs (wrinkles, hyperpigmentation, skin sensitivity) and UV-induced DNA damage.

How to use
OLEA-HT 10 is a key ingredient for face and body formulations (emulsions, lotions, gels, cleaners, etc) specially aimed at preventing photo-aging and skin spots.

INCI NAME:
Olea Europaea (Olive) fruit extract
Maltodextrin

SCIENTIFIC INVESTIGATIONS OF OLEA-HT 10

OLEA-HT 10 activity is supported by in vitro test and clinical trial. The mechanism underlying its anti-aging effect consists in reactive oxygen species scavenging capability and the block of improper extracellular matrix rearrangements that occur during oxidative damage. In a vitro test, carried out on human keratinocytes (HaCaT) irradiated for 24 hours with UVB radiations, it has been evaluated the efficacy of OLEA-HT 10 to modulate cellular response using lactate dehydrogenase (LDH) leakage assay and the Trypan blue staining.
Our preliminary data in vitro showed that OLEA-HT 10 is potentially able to efficiently counteract UVB-induced damage, and in particular some events associated to inflammation and apoptosis, such as NF-κB activation (6). This activity could be attributed to the block of cellular oxidative stress and related events. Moreover, a clinical trial has been performed to evaluate skin photo-protective and anti-aging effects. The photo-protective effects of OLEA-HT 10 against UV-induced skin erythema was evaluated on healthy volunteers using an objective instrumental method (reflectance spectrophotometry).

Data obtained from the study showed that treatment with OLEA-HT 10 leads a significant reduction in the UV-induced skin erythema degree (about 35%).

In conclusion OLEA-HT 10 can strengthen physiological antioxidant skin defences, protecting from damaging processes involved in photo-aging and leading to an improvement in skin tone and appearance.

Fig. 1. Protective effects of OLEA-HT 10 on UVB-induced damages

Fig. 2. Mean area under curve values (AUC±SD) of UV-induced skin erythema before and after application of a cream containing OLEA-HT 10 (0.5%)

REFERENCES
**RENEGRAPE®** is a skin peeling agent made up of an organic acid mixture (tartaric, malic, lactic, citric and gluconic acid) derived from Sicilian white grapes (Vitis vinifera). It is a liquid extract, 38-42% standardized in organic acids.

As far back as the 17th century, ladies in the French Court of Louis XIV used to apply aged wine to their faces to keep their skin smooth and young. Nowadays, we know that the link between these anti-aging old remedies and the benefits obtained by red wine skin application is represented by a group of natural acids belonging to Alpha Hydroxy Acids (AHAs).

| COMPOSITION | RENEGRAPE®<sup>®</sup>  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total organic acids</td>
<td>38-42</td>
</tr>
</tbody>
</table>

**What it does**

As reported in a recent clinical study published on Journal of Cosmetic Science, topical application of **RENEGRAPE®** stimulates cell turnover and produces a safe exfoliation well tolerated by the skin (1). **RENEGRAPE®** provides a peeling effect similar to glycolic and mandelic acids but without the undesirable side effects (skin irritation or inflammation). According to the used concentration, the results will be a soft or strong exfoliation.

**How to use**

**RENEGRAPE®** can be effectively used as an exfoliant agent and anti-aging ingredient because it helps to reduce the appearance of wrinkles and age spots, promoting the regenerating skin processes. Moreover, it is useful to improve the signs of acne (1-2). **RENEGRAPE®** is suitable for creams, lotions, gels, shampoo, bath foam, etc.

Recommended usage concentration:
10-50% (w/w) in products for home or professional use.

pH range: 3-6.5

**INCI NAME:**

Vitis Vinifera (Grape) juice extract
Efficacy and safety of RENEGRAPE® on epidermal renewal: clinical studies

In a recent clinical study (1), the effectiveness and safety of skin exfoliation produced by RENEGRAPE® have been evaluated by new experimental protocols and instrumental reflectance spectrophotometric method. To assess RENEGRAPE® efficacy, skin sites were treated at the beginning with tanning DHA solution and successively with RENEGRAPE®, glycolic acid and mandelic acid for 12 days. It was observed that RENEGRAPE® was able to increase the rate of skin regeneration (CTA%), with a significant reduction of time required to obtain complete skin renewal (Fig.1).

Safety models used in this study proved that RENEGRAPE® is extremely well tolerated by skin. After topical application, it produced only a mild erythema which naturally disappeared within few hours (Fig.2). Moreover, photosensitizing effect induced by long-time application is significantly lower than the glycolic and mandelic acid. Results obtained from these clinical studies, showed that RENEGRAPE® provides a good balance between efficacy and tolerability, in contrast with other agents commonly used in cosmetic products.

REFERENCES


In the narrow strip of the Calabria coast, several legends are told and passed down the generations about the mysterious origin of the “Green Gold”, the bergamot fruit. During the 17th century, the bergamot was used only for the essential oil contained in its peel, the external part of the fruit, dealing every other part as waste. But now, bergamot is recognized in its “whole beauty”; in fact, the heart of bergamot fruit contains active lipolytic principles, flavonoids, able to counteract the “orange peel” looking of the skin, by the reshape and improvement of skin firmness.

What it does
FLAVOSLIM™ is a powder ingredient containing active compounds (8-10% in flavonoids) of bergamot (Citrus bergamia Risso and Poiteau) juice. FLAVOSLIM™ is able to activate fat metabolism, reducing fat cell accumulation, inducing lipolytic effect, and inhibiting inflammatory processes and related consequences on adipose cells (1-3).

How to use
FLAVOSLIM™ is an ingredient created for body care formulations (gels, emulsions, massage products, foams, etc) aimed at improving cellulite skin appearance and loss of skin tone, firmness and tonicity.

Recommended usage concentration:
1-2% w/w in 3-6.5 pH range.

INCI NAME:
Citrus Aurantium Bergamia (Orange) fruit extract
Maltodextrin
FLAVOSLIM™ action on adipocytes: scientific research

Cellulite is a complex and multifactorial disorder of the subcutaneous fat layer. It can involve several mechanisms such as local fat accumulation, alteration of the extracellular matrix and inflammatory processes. Flavonoids contained in bergamot fruits are active compounds showing to own remarkable anti-oxidant activity and inflammatory effect on keratinocytes (1). In particular, they have proven to induce a strong reduction of glycosaminoglycan (GAG) synthesis induced by proinflammatory mediators. This appears to be a very interesting result in cellulite treatment because chronic tissue inflammation, occurring in skin affected by cellulite, leads to the synthesis and proliferation of dermal hydrophilic GAGs. In their turn, GAGs induce water retention (oedema), which provokes tissue hypoxia, cellular changes and, as a consequence, also the worsening of skin cellulite appearance. FLAVOSLIM™ ingredient has been evaluated on adipocytes metabolism using mesenchymal stem cells (MSCs) from adipose tissue during adipogenic differentiation (3). FLAVOSLIM™ was able to induce lipolytic effect both on differentiated MSCs in adipocytes and during adipogenic differentiation. In fact, adipocytes treated with FLAVOSLIM™ showed no toxicity (MTT test), a conspicuous reduction of cell sizes as well as the suppression of intracellular lipid droplets accumulation (Fig 1). Moreover, it is able to modulate the production of AMPK (5’-adenosine monophosphate-activated protein kinase) that seems to inhibit adipogenesis through activation of lipase enzymes such as adipose triglyceride lipase (ATGL), hormone-sensitive lipase (HSL), and monoacylglycerol lipase (MAGL) (3).

![Fig.1 Images of adipocyte cells not treated (control) and after 14 days of treatment with FLAVOSLIM™ at different concentrations (10µg/ml - 100µg/ml)](image)

REFERENCES

Physical protection of mucosal surface and lenitive/soothing activity are two important requirements of formulations designed for sensitive mucosas. Symptoms of sensitive mucosas are due to the disruption of the physiological barrier that makes them more and more vulnerable to external agents, causing therefore irritation, pain and discomfort. **MUCOSAVE® CG** is a powder extract specifically designed for topical mucosal protection, particularly for sensitive mucosas. It is a blend of two herbal extracts: polysaccharides from cladodes of Opuntia ficus indica and biophenols from olive leaves (Olea europaea).

<table>
<thead>
<tr>
<th>COMPOSITION</th>
<th>MUCOSAVE® CG (%) (w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opuntia ficus indica extract</td>
<td>25-35</td>
</tr>
<tr>
<td>Olea europaea leaf extract</td>
<td>23-30</td>
</tr>
<tr>
<td>Total polyphenols (HPLC method)</td>
<td>3.7-4.3</td>
</tr>
</tbody>
</table>

**What it does**

**MUCOSAVE® CG** exerts a double action: a strong mucoadhesivity due to Opuntia polysaccharides which also have a wound-healing effect and a lenitive action from olive biophenols (1-2).

**MUCOSAVE® CG** is a (patented) ingredient that can be used as supportive treatment for mucosal inflammatory reactions and other mucosal conditions (oral, vaginal, etc.).

**How to use**

**MUCOSAVE® CG** can be added to topical products designed to protect mucous membranes (intimate washes, vaginal gels, toothpastes, mouthwashes, medical devices etc.) and to facilitate wound-healing processes.

Recommended usage concentration:
2-3% (w/w) in 3.5-6.5 pH range.

**INCI NAME:**

Opuntia ficus-indica stem extract
Olea Europaea (Olive) leaf extract
Maltodextrin
Scientific investigations of MUCOSAVE\textsuperscript{CG} protection.

Experimental studies (2) carried out on mucous membrane cell lines showed that MUCOSAVE\textsuperscript{CG} has a strong mucoadhesive activity (50% of cell surface), higher than other bioadhesive polymers such as hyaluronic acid (Fig.1). This new in vitro model is based on the competition in the binding of lectin and tested polymers to the mucosal surface glycoproteins and it is able to evaluate the mucoadhesivity by objective instrumental assessment.

Moreover, experimental results obtained from in vitro intestinal cell models (Fig.2), predicting of in vivo behaviour, proved that the combination of extracts contained in MUCOSAVE\textsuperscript{CG} can counteract the overproduction of the intercellular adhesion molecule-1 (ICAM-1), specifically involved in mucosal inflammatory processes (2).

REFERENCES

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Barcode Scanner
or RedLaser

**IPHONE**
QR Reader
or RedLaser

**BLACKBERRY**
QR Code Scanner
or Code Muncher

OR DIGIT IN THE ADDRESS BAR OF YOUR BROWSER THE FOLLOWING LINK:
http://www.bionap.com/

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WHAT'S NEW?

MedOil
Mediterranean cold pressed virgin oils

- Nigella oil
- Cardo oil
- Pistachio oil
- Hazelnut oil
- Opuntia oil
- Yellow sesame oil
- Pine nut oil
- Wild olive oil
- Lentisco oil
- Tomato oil
- Pomegranate oil
- Chia oil
MedOil
Mediterranean essential oils

- Thymus vulgaris
- Thymus capitatus
- Origanum hirtum
- Mentha suaveolens
- Salvia officinalis
- Lavandin sumian
- Lavandin grosso
- Rosmarinus officinalis
- Citrus reticulata (mandarin)
- Citrus sinensis (red orange)
- Citrus limon (lemon)