BECARRE Natural

Plant extracts

Standardized Plant Extracts

May 2016
**Last News**

**Rhodiolife improves memory and increases brain activity**

Rhodiola rosea is known to improve attention and cerebral performances. On 2016, Polinat has conducted new studies: Electroencephalic studies (EEG) showed that animal supplemented with Rhodiolife® have an increased neurotransmitter production in the studied areas. This effect lasts at least for 5 hours until the end of measurements, and so even more. Besides of a stimulatory effect, the results indicate an improve of memory and an increased activity in brain regions related to motivation and reward.

**GliSODin® in accelerating symptom relief in children with allergy**

Forty subjects aged 6–17 years old with asthma, tested positive for house dust mite allergy on skin prick test, and received immunotherapy were enrolled in this study; in the present randomized, placebo controlled, double - blind clinical trial, the clinical efficacy of GliSODin® in accelerating symptom relief in children with allergic asthma and house dust mite allergy (receiving house dust mite immunotherapy) was demonstrated. “Use of Superoxide Dismutase in Accelerating Symptom Relief in Asthmatic and House Dust Mite Allergic Children Receiving House Dust Mite Immunotherapy", Anang Endaryanto, Zahrah Hikmah, Ariyanto Harsono

**Curcuma C³ Complex and metabolic syndrome**

A significant study on Curcumin C³ Complex® (in combination with Bioperine®) in patients with metabolic syndrome has been published on end of 2014, showing the significantly greater effect of Curcuminoids in reducing the serum concentrations of LDL-C, non-HDL-C, total cholesterol, triglycerides and Lp(a), when serum HDL-C concentration was elevated significantly. Serum sdLDL levels were comparable (randomized, double-blind, placebo, 117 patients, 8 weeks).

**100% Natural ORAC > 1 200 000**

FruitOx™ is the ingredient developed by PoliNat with the idea of a fruits-based, water soluble and antioxidant natural extract, offering a wide and effective spectrum of anti-radical properties and stimulation of cellular defenses. Besides other proved properties, FruitOx™ has been controlled at its ORAC value of 1 259 340 (Trolox equivalent / 100g). FruitOx™ can be easily used in all types of formulations for nutrition, or personal care.
Becarre Natural represents, distributes and develops natural actives supported by sciences for nutrition, cosmeceutical and pharmaceutical purposes from manufacturers selected for their seriousness, quality and competencies.

Becarre Natural acts as the centralized European sales and marketing organization for selected manufacturers of plants extracts, either as your local contact or through appointed distributors who are then in direct contact with the manufacturers but followed up by Becarre Natural.

Because industrials are more looking for reliability and know-how than an immeasurable list of products, Becarre Natural focuses on a specific origin of activities: standardized actives extracted from the nature under very strict process of production, with proven efficacy and sustainable resources. As per today, Becarre Natural represents by agreement different manufacturers, including Sabinsa Corp., PoliNat, Isocell, Inoreal, Herbamed … besides few others specific extracts from reputed sources.

As the right note at the right time makes the music, the right product in the right formulation makes your success. ‘Becarre’ - that you may pronounce ‘be care’ - is the French word for the musical mark which cancels the alterations such sharp sign or flat signs. The English translation is ‘the natural sign’.

Rhodiolife® stimulates and protects the immune system

The Rhodiola extract Rhodiolife® has clearly demonstrated its ability to protect cells from viral infection. This is the first time shown to be effective in the activation of the human immune system - Ahmed M, et al (2015) «Rhodiola rosea Exerts Antiviral Activity in Athletes Following a Competitive Marathon Race». Front Nutr. Jul 31;2:24.).
## Nutritional products

<table>
<thead>
<tr>
<th>Page</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Last News</td>
</tr>
<tr>
<td>3</td>
<td>Why Becarre Natural</td>
</tr>
<tr>
<td>4</td>
<td>Key Activities</td>
</tr>
<tr>
<td>5</td>
<td>Key Products</td>
</tr>
<tr>
<td>6</td>
<td>Plants list (Latin names)</td>
</tr>
<tr>
<td>7</td>
<td>Products by properties</td>
</tr>
<tr>
<td>8</td>
<td>GliSODin</td>
</tr>
<tr>
<td>9</td>
<td>Rhodiolife</td>
</tr>
<tr>
<td>10</td>
<td>Bacopa</td>
</tr>
<tr>
<td>11</td>
<td>Satiereal</td>
</tr>
<tr>
<td>12</td>
<td>Slimnat</td>
</tr>
<tr>
<td>13</td>
<td>Ellagic Acid</td>
</tr>
<tr>
<td>14</td>
<td>Ultrasome CoQ10</td>
</tr>
<tr>
<td>15</td>
<td>Curcuma C3 Complex</td>
</tr>
<tr>
<td>16</td>
<td>Pomegranate</td>
</tr>
<tr>
<td>17</td>
<td>Bioperine</td>
</tr>
<tr>
<td>18</td>
<td>Lactospore</td>
</tr>
<tr>
<td>19</td>
<td>Elim‘Real</td>
</tr>
<tr>
<td>20</td>
<td>Forslean</td>
</tr>
<tr>
<td>21</td>
<td>FruitOx</td>
</tr>
<tr>
<td>22</td>
<td>Digezyme</td>
</tr>
<tr>
<td>23</td>
<td>Boswellin</td>
</tr>
<tr>
<td>24</td>
<td>Xanthigen</td>
</tr>
<tr>
<td>25</td>
<td>Cococin</td>
</tr>
<tr>
<td>26</td>
<td>Xanthatigen</td>
</tr>
<tr>
<td>27</td>
<td>Our Partners</td>
</tr>
<tr>
<td>28</td>
<td>Plant Decree</td>
</tr>
<tr>
<td>29</td>
<td>L’Arrêté Plante</td>
</tr>
</tbody>
</table>
| 30 | What means ‘extract’ ?

### Reverse Side

<table>
<thead>
<tr>
<th>Page</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Personal Care</td>
</tr>
<tr>
<td>3</td>
<td>Why Becarre Natural</td>
</tr>
<tr>
<td>4</td>
<td>Key Products</td>
</tr>
<tr>
<td>5</td>
<td>Plant lists (Latin names)</td>
</tr>
<tr>
<td>6</td>
<td>Skin Lightening</td>
</tr>
<tr>
<td>7</td>
<td>Boswellin</td>
</tr>
<tr>
<td>8</td>
<td>Anti-acne</td>
</tr>
<tr>
<td>9</td>
<td>Cosmoperine</td>
</tr>
<tr>
<td>10</td>
<td>Our Partners</td>
</tr>
<tr>
<td>11</td>
<td>Plant Decree</td>
</tr>
<tr>
<td>12</td>
<td>L’Arrêté Plante</td>
</tr>
</tbody>
</table>
| 13 | What means ‘extract’ ?

### Process and terms
KEY PRODUCTS

Rhodiolife®

**Immunity, Adaptogen, Memory and attention**

**Energy, Aids in sports performance**

**Source**: Rhodiola roseae — roots from Altai mountains under social responsibility program — unique license and partnership with Russia (Altai)

**Bio-active ingredients**: Acetyl-11-keto-b-boswellic acid, b-boswellic acids, freeze-dried (comparison study), water or low ethanol extract. Highly selective profile from the roots to the end-extract.

**Dose**: 2 to 3 x 200mg based on 3%. Some studies showed effect starting from 50mg.

Rhodiola rosea has been considered a potent adaptogen for decades. Adaptogetic compounds help the body counteract the effects of stress, they are mostly not toxic to the body and their mechanism of action is non-specific meaning that various organs and systems are impacted upon to restore the body's balance. Studies available and a complete monograph published by PoliNat describes the origin and the efficacy.

**Clinical trials with Rhodiola rosea** extracts have shown significant improvements in fatigue, exercise capacity under stressful conditions. It also reduce the level of C-reactive protein and creatinine kinase in the blood.

**New studies** to confirm that Rhodiolife® assists the immune system (2015) and improve memory and attention (2016)

Boswellin®

**The anti-inflammatory power of AKBBA**

**Origin**: Sabinsa (India)

**Source**: Boswellia Serrata — Gum resin exudate from the tree

**Bio-active ingredients**: Acetyl-11-keto-b-boswellic acid, b-boswellic acids, boswellic acids

**Dose**: 75 to 200 mg once to twice a day depending on grades

Boswellin® is the very powerful anti-inflammatory extract of Boswellia serrata gum, standardized for its content in not only boswellic acid but mainly AKBBA, acting on two path ways : 5-lipoxigenase and HLE (Human Leukocyte elastase). Topical or oral use (anti-inflammatory of course, but also anti-wrinkle, anti-aging and skin firmness).

Grades are not titled as “total boswellic acid” - which means nothing in either since all acids are included - but specifically each beta-boswellic and AKBBA (Super grade is even up to 30% AKBBA). Oral Grades (HBD, Super, Forte, OS) and topical grade (CG).

GliSODin®

**First orally proven effective SOD** : Sun protection, Antiaging, Metabolic syndrome, Oxidative stress

**Origin**: Isocell (France)

**Source**: Curcumin melo L., Gliadine

**Bio-active ingredients**: SOD, Gliadine

Enzymatic activity of oral free SOD in the body is mainly to totally destroyed within few minutes, despite the source, and can so not promote the production of the SOD cascade by the cells. Usual studies based on free SOD cannot prove the efficacy, or at an incredibly high use (in-vivo). Thanks to its gliadin matrix, GliSODin® is orally effective unlike most existing SOD supplements.

The gliadin is not an enteric protection – what should not be enough - but a real vehicle for the SOD, due to its specific bio-adhesive properties with the epithelial cells in the small intestine.

The recommended daily dose is 2 x 100mg to 2 x 250mg a day.

GliSODin® is supported by more than 20 – mostly published - studies:

- Comparison of the GliSODin versus SOD alone
- Protection of cellular DNA
- Increase of the MED (resistance to UV induced erythema or redness), Skin's protection against sun and improved tanning speed and quality
- Regulation of inflammation and decreases oxidative stress
- Significant decline in lactic acid levels

Etc...

Curcuma C³ Complex

**Antioxidant, Preservative, Antimicrobial, Immune system, Anti-inflammatory, Metabolic Syndrome**

**Origin**: Sabinsa (India)

**Source**: Curcuma longa — roots

**Bio-active ingredients**: FREE Curcuminoids (3 fractions) - and not the inactive metabolites as sulphate or glucuronides

**Usual dose**: 3 x 400mg (alone) to 2 x 50mg, with possibly 5mg Bioperine.

**Standard, Direct Compression or even Beadlets grades**

Sabinsa is the world leading manufacturer of Curcuma extract 95%, producing in their dedicated plant (continuous batch with food solvents), processing roots from their contracted fields. They control the 3 curcuminoids to prevent adulteration with synthetic curcuminoids (a 95% extract includes curcuminoid (70-75%), demethoxy (15-25%) and bis-demethoxy (2.5-6.5%).

Another significant study on Curcumin C3 Complex® (in combination with Bioperine®) has been published on end of 2014, showing the significantly greater effect of Curcuminoids in reducing the serum concentrations of LDL-C, non-HDL-C, total cholesterol, triglycerides and Lp(a), when serum HDL-C concentration was elevated significantly. Serum sdLDL levels were comparable.

It’s probably the most studied curcuma extract (hundreds of studies incl. colorectal cancer prevention), and usually referred as the highest quality (and the lowest oxalic content, causing kidney stones, heavy metals).

Satiereal®

**Innovative, patented, natural and safe appetite suppressor**

**Weight losses and good mood**

**Origin**: Inoreal (France)

**Source**: Crocus sativus L. stigmas, Mediterranean region

**Bio-active ingredients**: Specific and studied unique profile of crocin, picrocrocin and safranal - it’s more than a safron extract

**The daily dose**: 176.5mg (2 X 88.25mg/d) used in tablets, capsules, beverages and instant drinks, confectionaries, …

Satiereal® is the patented clinically proven satiety ingredient derived from saffron. The satiated feeling induced by Satiereal® encourages weight loss while eliminating frustration. This product has a unique mechanism that not only creates satiety but helps avoid snacking and compulsive eating behaviors, which in turn leads to reduction in weight and inches. Satiereal® is a Serotonin Reuptake Inhibitor (SRI), working so on the general good mood.

Studies : 4 weeks, 16 women / 8 weeks, 80 women . Besides weight losses, 100% of women receiving Satiereal® stated it decreased food intake and hunger sensation at lunch and dinner, comparing to 0% of women receiving placebo.

New studies regularly published
**FruitOx®**

In-vivo cellular antioxidant, ORAC > 1 200 000 µmol TE / 100g  
Water soluble, no carrier  
**Origin**: PoliNat (Spain)  
**Source and Bio-active ingredients**: polyphenols and other actives compounds from plum, blueberry, apple, pomegranate, grape Leaves, white cherry  
**Dose**: 45% chlorogenic acids and > 25% caffeoylquinic acid  
FruitOx® is a formulation based on polyphenols from different plants and fruits, developed by PoliNat with the idea of a soluble product, fruits based, antioxidant, and offering a wide spectrum of anti-radical properties (hence the selection of only certain specific polyphenols from each source) and stimulation of cellular defenses.  
FruitOx™ has been controlled at its ORAC value of 1 259 340 (Troxol equivalent / 100g) - last analysis in August 2015 in French accredited laboratory.  
In a clinical trial with FruitOx, Abdulov et al showed significantly improved blood lipid profiles along with significantly decreased oxidative stress markers in 22 obese volunteers compared with those taking placebo.  
FruitOx™ positively promotes the antioxidant genes (key genes expression) while the genes causing oxidative stress were suppressed.  
Then, it has been the subject of several studies and research such as the up-regulation of the expression of opioid receptors in brain cells (OPRD1)  
Efficiency of pharmacologically-active antioxidant phytomedicine Radical Fruits in brain cells (OPRD1)

**Garcinitrin & Citrin**

Slows conversion of carbohydrates to fat  
**Origin**: Sabinsa (India)  
**Source**: Garcinia cambogia—fruits  
**Bio-active ingredients**: up to 60% Hydroxy citric acid  
**Dose**: 250mg of (-) HCA before meals  
Citrin® and Garcinitrin® are two grades extracted from the fruit Garcinia cambogia. Sabinsa has highlighted the active (-HCA) and its use several years ago already. Citrin is a salt of the Hycroxycitric acid, named (-) HCA, and reduces the conversion of carbohydrates in stored fat and increasing the use of fat. Sabinsa has conducted numerous studies under the name Citrin®, proving its effectiveness and safety. After initial use in the field of sports products (induced action on amino acids, detoxifying the liver, etc...), its properties have led to slimming and weight management. Another reported activity of the Citrin is the prevention of urinary tract stones.

A beverage grade is available : Citrin K BG (potassium salt)

Sabinsa has highlighted another molecule from Garcinia cambogia: the Garcinol, showing at a first glance anti-oxidant, anti carcinogenic or antimicrobial properties. Sabinsa has shown that the use of combined HCA and garcinol improves further the efficiency of HCA, the garcinol acting as a vector for the HCA to target cells.

**SlimNat**

“Feel the slimming effect” with >25% of 5-CQA, Water-soluble  
**Origin**: PoliNat (Spain)  
**Source**: Green Coffee beans  
**Bio-active ingredients**: 45% chlorogenic acids and > 25% caffeoylquinic Acid (5-CQA), low ethanolic extract  
**Dose**: 400 mg to 700 mg daily  
Slimnat is the low caffeine, hydroalcoholic (water/ethanol) Coffea arabica extract manufactured by PoliNat, standardized to a minimum of 45% chlorogenic acids keeping the high amount of active 5-caffeoylquinic acid (5-CQA) over 25%. Chlorogenic acids are one of the most abundant polyphenols in the human diet and are typically found in food sources such as coffee, fruits and vegetables. An excellent correlation is observed between the Coffea arabica beans raw material and SlimNat, indicating that the natural ratios between the different phytoactive compounds are preserved during the extraction and manufacturing process. SlimNat is soluble in water.

**Forslean®**

Helps to increase lean body mass, while decreasing body fat  
**Origin**: Sabinsa (India)  
**Source**: Coleus forskohlii - roots  
**Bio-active ingredients**: 10% forskolin (oral grade) to 98% forskolin (cosmetic grade)  
The daily dose is 2 x 250mg/d orally. Topical use is from 0.1% to 0.5% of a topical formulation, such as an ointment, cream or lotion  
Forslean is the patented extract from Coleus forskohlii developed and proved by Sabinsa. Very well documented and subject of numerous studies showing the increase of the Lean Body Mass, and the use of fat by its action on the Adenylate Cyclase. It is used in nutrition, cosmetics or nutra cosmetics (toning of skin). It received first prize several times.

**Bioperine®**

Ultimate Nutrient Enhancer  
Easy to use, well-known and efficient booster  
**Origin**: Sabinsa (India)  
**Source**: Piper nigrum L (black pepper)  
**Bio-active ingredients**: piperine  
**The dose is 5mg per intake**

Very well documented and patented (“use of piperine as a gastrointestinal absorption enhancer”), the Bioperine® increases the bio availability / bio adsorption of most of liposoluble compounds.  
Many studies are available especially versus curcuminoids (> 10 times), beta caroten (+160%) and thereof other carotenoids, CoQ10 (+150%), Resveratrol (> 200% and > 10 times in serum), liposoluble vitamins (B6: +250%), Selenium (+145%), etc...  
Bioperine® is non novel foods (2011) and not subject to EFSA since it’s a “nutrient enhancer “. The process uses exclusively ethanol (also for the oleoresin production).

**Fucoxanthin**

Support healthy body weight / Liver, Antioxidant  
**Origin**: PoliNat (Spain)  
**Source**: Wakame  
**Bio-active ingredients**: Fucoxanthin by UPLC, Fatty acids (PUFA), Fucoxanthin 10% UV powder  
**Dose**: 15 mg fucoxanthin  
Fucoxanthin is already one of the best known and used natural compounds for weight loss and body composition changes.

The scavenging activity of fucoxanthin is almost 8 times higher than that by fucoxanthinol, and more than 12 times higher than that by alpha-tocopherol. Addition of Fucoxanthin to the diet in rats significantly suppressed the peroxidation level by 7-85% (plasma) and 24-72% (liver) as compared to beta-carotene (51-76%, 33-65%) over a period of 8 h. Fucoxanthin given topically or orally to mice once a day and UVB irradiation was applied for 14 days. Its topical application (1%) significantly suppressed mRNA expression of inflammatory mediators. Oral application of fucoxanthin (10 mg/kg) significantly suppressed expression of COX-2, p75NTR, EP1 and MC1R. Also related : anti-inflammatory, anticancer, anti-obese, antidiabetic, antiangiogenic and antimarial activities.

**DigeZyme®**

Multi-enzyme complex for Digestion and Nutrients  
**Origin**: Sabinsa (India)  
**Dose**: 50 mg per dose, before eating  
A multi-enzyme complex consisting of Amylase (starch digesting), Lipase (fat digesting enzyme), Cellulase, Protease (protein digesting enzyme) and an additional component is the enzyme lactase, which is useful for people suffering from lactose intolerance (positive opinion from EFSA). DigeZyme helps in the digestion of carbohydrates, proteins and fats, which are poorly assimilated by our bodies in cases of unbalanced diets and impaired pancreatic function.
**Apple Phloridzin**

“An Apple a day keeps the doctor away”

**Antioxidant, Blood glucose, Cardiovascular**

**Origin**: PoliNat (Spain)

**Source**: *Malus domestica* – fruit skin

**Bio-active ingredients**: Phloridzin 5% to 20%, Polyphenols ≥ 80%

**Dose**: Apples range between 100 to 150g per piece, meaning 2.75 to 4.125mg per serving of Phloridzin. 300mg means 3 to 5 apples

Phloridzin has been used in physiology research for more than 150 years. Phloridzin has shown to control abnormally elevated blood glucose levels in vivo in studies through the inhibition of glucose reabsorption in kidneys and its intestinal uptake. Epidemiological data show decreased risk of cardiovascular disease and its consequences in those consuming apple flavonoids regularly. Apple intake has been associated with less asthma in adults, and improved lung function.

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**Pomegranate P40P**

**Cardiovascular health, Antioxidant, Weight, Inflammation**

**Origin**: PoliNat (Spain)

**Source**: *Punica granatum* – mashed fruits

**Bio-active ingredients**: Total punicic acids ≥ 40%, Punicalagins A+B ≥ 30%, Total polyphenols ≥ 50%

**Dose**: 2 x 100mg to 300mg (based on the spectrum of the fruits), Study published

Pomegranate is lauded since old ancient times as having many health benefits. It is widely accepted nowadays that the beneficial health effects of fruits and vegetables in the prevention of disease are due to the bioactive compounds they contain. Pomegranate contains significant amounts of said substances, such as phenolic acids, flavonoids, and tanins assuring them considerable nutritional value. PoliNat extracts from mashed fruits taking care to preserve the Punicalagins - as in the fruit - and not Ellagic in the P40P (one molecule of punicalagin is hydrolyzed to two ellagic acids).

Additional studies show a stimulation of the growth of healthy bacteria in the gut, and a anti-inflammatory properties (action on COX-2 and lipoxygenase) for Enteric Coated), a protected form for more targeted action.

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**Pomegranate Seed Oil**

**Punic acid to support healthy body weight**

**Origin**: PoliNat (Spain)

**Source**: *Punica granatum* – seeds

**Bio-active ingredients**: Punic acid ≥ 80%

**Dose**: 2-3 x 150mg

Punic Acid (P4) is structurally related to Conjugated Linoleic Acid (CLNA). Conjugated fatty acids have attracted quite an interest because of their potential beneficial biological effects. Obese rats with hyperlipidemia experienced a significant decrease in hepatic tryacylglycerol deposits, as well as levels of monounsaturated fatty acids, when fed with diets rich in Punicic acids. Additional studies show a stimulation of the growth of healthy bacteria in the gut, and a anti-inflammatory properties (action on COX-2 and lipoxygenase).

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**Fenugreek**

**Digestion, Blood Sugar**

**Origin**: Sabinsa (India)

**Source**: *Trigonella foenum graecum* – seeds

**Dose**: 25g (Fenugibers), 1-5g (Fenumanans), 100-200mg (Fenusterols)

Sabinsa develops different products from fenugreek:

- Fenugibers (digestion, serum cholesterol, TGL, VLDL) : nutritive & restorative properties, stimulates digestive process
- Fenusterols (digestion, cholesterol, serum, liver) : nutritive & restorative properties, stimulates digestive process
- Fenumannans (blood sugar) : nutritive & restorative properties, stimulates digestive process
- Fenugibers (digestion, serum cholesterol, TGL, VLDL) : nutritive & restorative properties, stimulates digestive process

**Origin**: Sabinsa (India)

**Dose**: Fenugreek has been used in physiology research for more than 150 years. Fenugreek extracts different products from fenugreek:

- Fenugibers (digestion, serum cholesterol, TGL, VLDL) : nutritive & restorative properties, stimulates digestive process
- Fenusterols (digestion, cholesterol, serum, liver) : nutritive & restorative properties, stimulates digestive process
- Fenumannans (blood sugar) : nutritive & restorative properties, stimulates digestive process

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**Lactospore®**

**Lactowize®**

**Health of the intestinal tract, Probiotic**

**Origin**: Sabinsa (India)

**Source**: *Lactobacillus sporogenes* (also called coagulans), in a 100% dedicated plant. Formulation with fibers (Lactowize®)

**Bio-active ingredients**: 6 to 15 billion spores

**Dose**: 100 to 200 Millions organisms per doses, 2-3 times a day, in tablets, capsules, chewing tablets, etc...

**Support healthy muscle mass**

**Origin**: Sabinsa (India)

**Source**: *Capsicum annuum*, *Brassica*

**Bio-active ingredients**: Capsaicinoids (Allylisothiocyanate)

**Dose**: 250mg twice a day in capsule form

**Capsicoids from Capsicum annuum (with 1% Allylisothiocyanate in AITC)**, for weight management (actives are both pungent ingredients, well known to induce thermogenesis and decrease adipose tissue weight and TGI) and to treat aches & pains in muscles & joints. Capsaïly is supplied in Beadlets, enteric coated.
Andrographis

Cold, Jaunice, Liver, respiratory
Origin: Sabinsa (India)
Source: Andrographis paniculata - leaves
Bio-active ingredients: 10% Andrographolides (50% and 90% available)
Dose: 250mg (of 10%) three times a day

Used in the treatment of the common cold - paracetamol like - to reduce its symptoms and duration. Inhibitor of Nitric oxide production and synthesis of Endothelin (spout and pigmentation).

ElimReal

Water elimination and detox, weight management
Origin: Inoreal (France)
Source: Plant formulation
Dose: 805 mg per day

ElimReal is a patented extract of different plants with complementary activities in detoxifying the body and assisting the renal elimination, which has clinically demonstrated its effectiveness (study on 95 women over 28 days, double-blind against placebo) and allows healthy allegations thanks to some of its components. It's a plant formulation from Carvi's seeds (Carum carvi), Meadowsweet Flower buds (Spira ulmaria), Guarana's seeds (Paullinia cupana), Goldendrod's plant (Solidago virgaurea), Fennel's fruits (Foeniculum vulgare) and Dandelion's leaves (Taraxacum dens leonis).

ElimReal is covered by a patent for slimming applications, and promotes renal elimination functions (excretory function of the kidneys) / urinary elimination / urinary volumes, so works on detoxification and slimming. ElimReal is easy soluble in water, and may be used in any form of dietary supplement.

Rhaponticum

Help to build Lean Muscle Mass, Muscle recovery
Origin: PolNat (Spain)
Source: Rhaponticum carthamoides (Leuzea) – root
Bio-active ingredients: 5% Ecdysteroids or 50% beta-ecdysterine

This extract from Rhaponticum carthamoides brings ecdysteroids 20HE (20 Hydroxy ecdysteroids), which have been reported to have anabolic effects in different animal species (Syrv et al.). Different preparations tested in human trials have shown diminished fat content with elevated muscle mass in track and field athletes (A comparative study of the anabolic action of Ecstasyen, Leveton and Prime Plus, preparations of plant origin), increased working capacity in top athletes under intense physical activity and in bicycle ergometry exercise tests with gradually increasing physical loads (Azizov et al.). Different preparations tested in human trials have shown diminished fat content with elevated muscle mass in track and field athletes under intense physical activity and in bicycle ergometry exercise tests with gradually increasing physical loads (Azizov et al.). Rhaponticum Carthamoides does not bind to androgen receptors, this alternate mechanism avoids the unwanted side effects of steroids while reaping many of the positive benefits.

Fabonel

Amylase inhibitory activity
Origin: Sabinsa (India)
Source: Phaseolus vulgaris
Bio-active ingredients: 8 000 units/g (Fabonel) or 20 000 units / g (Fabonel Max)
Dose: usually 1 000 - 5 000 units per dose, depending upon the starch content of the meal.

Fabonel® is an alpha-amylase inhibitory naturally extract obtained from Phaseolus vulgaris (common bean, kidney bean) that blocks the digestion of dietary starch, thereby offering potential benefits in the maintenance of healthy blood sugar levels and optimal body composition. The seeds of Phaseolus vulgaris contain an inhibitor of alpha-amylase (two glycosylated protomers of 30 kDa, which are cleaved into two polypeptides of 16 and 14 kDa, respectively), identified in the protein fraction of the bean. This protein binds with the active sites of alpha-amylase and prevents the starch metabolizing activity. hence it is also called as «Starch Blocker».

Ultrasome™ CoQ10

Enhanced oral bioavailability of CoQ10
Origin: Herbamed (Israel)
Bio-active ingredients: CoQ10 ≥ 15%
Dose: up to 60mg of CoQ10

Ultrasome-CoQ10™ is an advanced patented drug-delivery formulation of Ubiquinone (Coenzyme Q10) in a liposomal system (min. 15% of CoQ10), clinically evaluated for:
- Increased bioavailability (3-10 times)
- Improved symptoms of heart health
- Improved recovery after hip fracture
- wound healing
- Neural protection

The positive effect was observed among athletes with respect to muscle pain and fatigue after physical activity. Additionally, in several clinical trials and scientific research Ultrasome™ CoQ10 played a role in quality of life in patients with end-stage heart failure awaiting cardiac transplantation, in healing process of chronic skin lesions, in rehabilitation outcome following surgical repair of hip fracture and in protecting against 6-hydroxydopamine induced nigra lesions in rats which indicates potential therapy for Parkinson’s disease (PD) and other neurodegenerative diseases without side effects. CoQ10 is a key nutrient to work against degenerative condition and fatigue. It is a component of the electron transport chain and participates in aerobic cellular respiration, generating energy in the form of ATP. Ninety-five percent of the human body’s energy is generated this way. It's a free flowing powder, it has been found to be very easy to formulate.

Cococin®

The ultimate nutrient
Healthy cell growth, Blood circulation, Nutrient
Origin: Sabinsa (India)
Source: Cocos nucifera

Freeze dried coconut water solids (obtained from tender green coconuts), Cococin is a natural reservoir of isometric nutrients to promote tissue growth in the developing endosperm. Moisturizer and promote healthy cell growth leading to skin replenishment and/or healthy hair growth (topical). Support blood circulation.

Bacopin

Attention, stress, memory, circulation
Origin: India
Source: Bacopa monniera
Bio-active ingredients: 20% and 50% total Bacosides (as A & B), ethanolic extract
Dose: 3 x 50 mg (children) to 3 x 100 mg (adult)

- Bacosides can revitalize the intellectual functions in children and calm down the stressed mind, allowing for better brain function
- an be effective in elevating brain function by increasing concentration and more finely honing mental focus
- Anti-Convulsant and anti-convulsive actions. Treatment of Anxiety Neurosis
- Ayurvedic uses: Memory Enhancing, Anti-inflammatory, Analgesic, Anti-pyretic, Sedative, Anti-ulcerogenic, Anti-epileptic.

DGL Deglycyrrhizinated

Digestion, Immunity
Origin: Sabinsa (India)
Source: Glycyrrhiza glabra
Dose: 380 mg 2-3 times / day

Treatment of gastric and duodenal ulcers. It is made from licorice from which the glycyrrhizin has been removed. Immune support and management of gastrointestinal problems.
Eleutheroceque

Symptoms of asthenia and weakness, Adaptogen
Origin: PoliNat (Spain)
Source: Eleutherococcus senticosus – root
Bio-active ingredients: Eleutherosides ≥ 1%
Dose : 200mg to 400mg a day (corresponding to 2g to 4g of roots)
Commonly known under the old name of Siberian ginseng, it increases resistance to stress and improves performance. It also strengthens memory and feelings of well-being, while reducing fatigue. The EMEA has produced a community monograph on Eleutherococcus senticosus. The HMPC evaluated published data on efficacy and safety, for the traditional use for symptoms of asthenia and weakness. This is a low ethanol extract, water soluble, without carrier as most of the PoliNat’s products.

Ashwagandha

Psychological endurance (NSIR), Hair
Origin: Sabinsa (India)
Source: Withania somnifera
Bio-active ingredients: Withanolides, alkaloids, withaferin
Dose : 300 mg Two times / day
Also referred to by the common name of Indian ginseng (but nothing to see with). Strengthen the cerebral cortex, the adrenals, the hypothalamus, the heart and the liver.

Perilla Luteolin

Coping with allergies, Healthy body weight, Antioxidant
Origin: PoliNat (Spain)
Source: Perilla frutescens – leaves
Bio-active ingredients: Luteolin ≥ 90%
Commonly known for its anti-aging, anti-tumor, and anti-oxidant properties. In a group of 8 healthy individuals (20-25 years of age) oxidation lag time was significantly increased after ingestion of Perilla extract, with a tendency to decrease in TEARFS and LDL mobility. An ethanol based Perilla extract also showed potential to ameliorate allergenic inflammatory reactions (mimics and mimicontivitivs) in in vitro (immune cells) and in vivo (mice) experiments. Also, Luteolin administration to mice suppressed the production of Tumor Necrosis Factor in vitro and in vivo. Supplementation of diet with Perilla leaf extract significantly decreased body weight gain, food efficiency ratio, and relative liver and epidydymal fat mass in standard and high fat fed mice. Additionally, triglyceride, total cholesterol and LDL levels in the plasma were significantly reduced compared with the control group.

Perilla frutescens: Subject to local exclusivity

Acticissus

Anti-osteoporotic, bones repair, Weight, Tonic
Origin: Sabinsa (India)
Source: Cissus quadrangularis - aerial part
Bio-active ingredients: 10% Kestosterones, 1% Natural Calcium
Dose : 200 to 500mg per day
Also named “devil’s bones” because it “joins” bones much quicker after fracture. Cissus q. is used in Ayurveda medicine as a general tonic, analgesic and to heal bone fractures.
• Anabolic and/or anorectinic properties (glucocorticoid receptors)
• Weight loss (in combination with Irvingia g.)
• Analgesic : effective Analgesic by both oral and intra peritoneal as aspirin; Cortisol reducer (Cortisol Antagonist)
• Anti-osteoprotic : trials on femur ossification, mineralization, higher osteoblastic activity, Anti-inflammatorry
• Anti-ulcerogenic : comparison with Ranitidine, decrease gastric secretions
• Anti-oxidant : comparison to BHT, inhibition of DPPH, in-vivo trials
• Anti-microbial : trials versus tretcyclin

Xanthigen®

Healthy body weight
Origin: PoliNat (Spain) - Subject to local exclusivity
Source: Wakame, Punica granatum
Bio-active ingredients: Fucoxanthin, Fatty acids, Punicic acid
Dose : 3 x 200mg
Marketing : Subject to local exclusivity
Xanthigen is a innovative product which combines the slimming properties of brown seaweed extracts rich in fucoxanthin and punicic acids (PA) from pomegranate seed oil (PSO). Xanthigen® is the result of extensive research led by PoliNat SL to develop a highly efficacious, yet safe nutraceutical product which represents a serious alternative in weight management. Different clinical studies : significantly increased total weight loss, body fat loss, and resting energy expenditure (Xanthigen compared with placebo). Abdov et al (2010). The effects of Xanthigen in the weight management of obese premenopausal women with non-alcoholic fatty liver disease and normal liver.

Echinacea

Common cold, Immune system
Origin: PoliNat (Spain)
Source: Echinacea angustifolia – root
Bio-active ingredients: Echinacosides 4 to 12% (HPLC)
The European Medicines Evaluation Agency (EMEA) has evaluated a consolidated list of over 100 published reports on Echinacea angustifolia. The available information covers non-clinical and clinical safety and efficacy. The expert panel agrees there is enough evidence to accept on its use for the indication of common cold. Committee on Herbal Medicinal Products (HMPC). Assessment report on Echinae angustifolia DC.

LeanGard

Healthy body composition, Weight management
Origin: Sabinsa (India)
Composition: Forslean, GarCitrin and BioPerine
Bio-active ingredients: Forskolin, hydroxycyric acid, garcinol, piperonine
Dose: 500 mg per dose twice a day
LeanGard is a proprietary blend of natural extract for an, healthy body composition.
• Forskolin helps build lean body mass and maintain healthy body composition through cAMP mediated action).
• Hydroxycyric acid in combination with garcinol supports satiety, weight management and lean body mass ; provides antioxidant support
• BioPerine is a natural bioavailability enhancer of nutraceuticals which enhances the uptake and utilization of the actives.

GS4 Gymnema

Weight Management, Blood glucose
Origin: Sabinsa (India)
Source: Gymnema sylvestre leaves
Bio-active ingredients: Gymnemic acids 25% or 75%
Dose : 75mg (based on 75%) twice a day
Gymnema sylvestre is an herb native to the tropical forests of southern and central India. Chewing the leaves suppresses the sensation of sweet. It may suppress levels of leptin, insulin, dyslipidemia, apolipoproteins, lipids, visceral fat pad weights, and oxidative stress in obese rats fed with HFD.
This effect is attributed to the presence of the eponymously named gymnemic acids. G. sylvestre has been used as a natural treatment for diabetes for nearly two millennia. Gymnemic acids have antiobiotic, antivitettner and anti-inflammatory activities. The anti diabetic array of molecules has been identified as a group of closely related gymnemic acids after it was successfully isolated and purified from the leaves of Gymnema sylvestre. Later, the phytoconstituents of Gymnema sylvestre were isolated, and their chemistry and structures were studied and elucidated. Increase production of insulin in pancreas.
**Organic elements**

**L-Selenomethionine, Chromium, Vanadium, Zinc, Magnesium, Copper, Molybdenum**

**L-Selenomethionine**
- **Origin**: Sabinsa
- **Assay**: 5000ppm to 39% of elemental Se

**Chromium Polynicotinate**
- **Origin**: Sabinsa
- **Assay**: Hydrated Cr(1111) Dinicotinic acid complex a minimum of 14% chromium organically bound to a minimum of 77% nicotinic acid on anhydrous basis

**Bis-glycinato oxo vanadium**
- **Origin**: Sabinsa
- **Assay**: minimum of 20% elemental Vanadium

**Cystoseira canariensis**
- **Origin**: PoliNat (Spain)

**Bayberry**
- **Healthy brain aging, Detoxifying, Antioxidant**
- **Source**: Myrica cerifera – leaves or bark and leaves
- **Bio-active ingredients**: Myricetin  ≥ 80%
- **Bio-active ingredients**: Dihydromyricetin ≥ 90%

**Engelhardtia**
- **Healthy body weight, Antioxidant**
- **Source**: Engelhardtia chrysolepis – leaves

**Turkesterone and 20HE (amongst other bioactive compounds)**
- **Source**: PoliNat (Spain)
- **Dose**: 3 x 100mg

**Centella asiatica**
- **Bio-active ingredients**: Terpenes and asiaticosides
- **Traditionally use (also known as Gotu kola). Recent studies have validated its uses, especially as a psychotropic in the treatment of various mental disorders, such mental fatigue, epilepsy and hysteria. Centella asiatica could significantly improve the IQ of children and reduce the level of anxiety in adults. Venotonic activity linked to triterpenes.

**Gigartina**
- **Protection against viral infections**
- **Source**: Gigartina skottsbergii – whole seaweed
- **Bio-active ingredients**: Sulfo-Polysaccharides

**Ajuga turkestanica**
- **Healthy body mass, Muscles**
- **Source**: Ajuga turkestanica – whole plant
- **Dose**: 3 x 100mg
Ultimate Anti-aging Ingredient
proven in published clinical research

Protects against DNA damage, preparation to the sun, anti-aging...

GliSODin®, our patented nutraceutical ingredient, has been shown in clinical research - mostly in-vivo - to work on the different facets induced by ageing. GliSODin® is an easy-to-use proven bio-effective SOD thanks to its unique carrier and protection.

Studies are available on www.becarre-natural.com and www.glisodin.org

Prepares the skin for sun exposure
Increases the MED (Minimal Erythema Dose)
Reduces sunburn redness
Helps prevent light sun allergies

Supports healthy immune function
Improves cognitive functions
Reduces risk factors of cardiovascular disease
Induction of Th-1 immune response

Anti-Inflammatory (C-Reactive Protein)
Improves recovery after strenuous exercise
Decreases lactate production (cramps)

Protects against DNA damage
Prevents oxidative stress
Decreases troubles induced by ageing
Faster recovery after sunburn and photo-oxidative stress

A range of Standardized Plant Extracts studied for your needs

Product developed by
ISOCCELL
Distributed by
becarre
the natural sign

www.becarre-natural.com  ·  +33 (0)6 86 54 83 48  ·  info@becarre-natural.com
<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Common Actives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhatoda vasica</td>
<td>Adhatoda Vasinc, Alkaloids</td>
</tr>
<tr>
<td>Resculcus hypochapocastum</td>
<td>Vernicia beta-Ecin, Terpenes</td>
</tr>
<tr>
<td>Aujuga Turkestanica</td>
<td>Aujuga Turkestone</td>
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<tr>
<td>Allium sativum</td>
<td>Garlic Allium</td>
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<td>Amaranthus caudatus</td>
<td>Amaranthus Squeeze</td>
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<td>Amorphophallus konjac</td>
<td>Konjac Glucamonnens</td>
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<tr>
<td>Andrographis paniculata</td>
<td>Andrographis Androphagoldes</td>
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<tr>
<td>Anethum sowa</td>
<td>Dill Fatty Acids</td>
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<tr>
<td>Aphanizomenon (cyan.)</td>
<td>Klamath Phycocyanins</td>
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<tr>
<td>Apium graveolens</td>
<td>Celery Butylphthalide</td>
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<tr>
<td>Alania mandshurica</td>
<td>Alania Alanolides</td>
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<tr>
<td>Anaphragmus nucularu</td>
<td>Shatavari Sapinos</td>
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<tr>
<td>Bacillus coagulans</td>
<td>LactoSpre Probiotic spores, Lactowizae</td>
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<tr>
<td>Baroapa monniera</td>
<td>Barocin Bacosides</td>
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<tr>
<td>Berberis aristata</td>
<td>Berberine Berberine</td>
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<tr>
<td>Beta vulgaris</td>
<td>Beet Root Nitrates</td>
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<td>Boswellia serrata</td>
<td>Boswellic Acid, ABBAIA, Polysac.</td>
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<td>Brassica juncea</td>
<td>Mustard Seed Allyloisothiocyanate</td>
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<tr>
<td>Camellia sinensis</td>
<td>Green Tea Catechins, Epigallocatechin</td>
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<td>Capsicum annum</td>
<td>Paprika Capsacinc, Chilitenoids, Carotenoids</td>
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<td>Cassia angustifolia</td>
<td>Minerals Sennosides</td>
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<tr>
<td>Centella asiatica</td>
<td>Centella Terpens, Aisaicoids, Saponins</td>
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<tr>
<td>Cinnabunum cassia</td>
<td>Cinnamon Prothychanysids, Polyphenols</td>
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<tr>
<td>Cissus quadrangularis</td>
<td>ActiCussels Kestoterones, Minerals</td>
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<tr>
<td>Citrus sinensis</td>
<td>Hesperedin Hesperidin</td>
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<tr>
<td>Cocos nucifera</td>
<td>Carbohydate, Minerals, Proteins</td>
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<tr>
<td>CoEnzyme Q10</td>
<td>Ultrasome</td>
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<tr>
<td>Coffee arabica</td>
<td>Chlorogenic, Caffeoylquinic acids</td>
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<tr>
<td>Colesia forskohlii</td>
<td>Forskolin</td>
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<tr>
<td>Colesia forskohlii Oil</td>
<td>Oil, Pines</td>
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<td>Commiphora murikul</td>
<td>Gugalipul Gugalsterones</td>
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<td>Croscu nervala</td>
<td>Cratavin Saponins, Tannins</td>
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<tr>
<td>Crocus sativus</td>
<td>Saffron Safranal</td>
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<td>Crocus sativus</td>
<td>Satireal Safranal, Picrocrocine, Crocine</td>
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<tr>
<td>Curcurita pepo</td>
<td>Pumpkin Fatty Acids</td>
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<td>Cuminum cyminum</td>
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<td>Curcuma longa</td>
<td>Curcumin Curcuminoids</td>
</tr>
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<td>Curcumis melia, Gladin</td>
<td>GlSODin Superoxydismutase, Enzymes</td>
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<tr>
<td>Cystosera Camarinesis</td>
<td>Cystoseira Polysaccharides</td>
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<tr>
<td>Echinacea Angustifolia</td>
<td>Echinae Echinacoids</td>
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<td>Eclipta alba</td>
<td>Eclipta Wedelolactone</td>
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<tr>
<td>Eleutherococcus s.</td>
<td>Eleutherocuque Eleutherosteroids</td>
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<tr>
<td>Embelia Ribes</td>
<td>Embelia Embelin</td>
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<td>Emblica officinals</td>
<td>Saberry beta-GIucogallin</td>
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<tr>
<td>Emblica officinals</td>
<td>Amla Tannins, Fibers</td>
</tr>
<tr>
<td>Engelhardia cryosalpinx</td>
<td>Engelhardia Dihydroquercetin</td>
</tr>
<tr>
<td>Enzymes</td>
<td>Digestyme Enzymes</td>
</tr>
<tr>
<td>Faniscicum vulgare</td>
<td>Fennel Fatty acids</td>
</tr>
<tr>
<td>Garcinia cambogia</td>
<td>Garicin Hydroxyctric Acid, Garcinol</td>
</tr>
<tr>
<td>Gapsinina skottbergii</td>
<td>Gaptina Sulfopolsaccharides, Polyphenols</td>
</tr>
<tr>
<td>Ginkgo biloba</td>
<td>Ginkgo Biloba Flavone, Terpen, Lactones</td>
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<tr>
<td>Glycine max</td>
<td>Soy Isoflavoines</td>
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<tr>
<td>Glycyrrhiza glabra</td>
<td>MAG Mono-Ammonium Glycyrhizinate</td>
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<tr>
<td>Glycyrhiza glabra</td>
<td>DGL Deglcyryhrizinated Licorice</td>
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<tr>
<td>Griffonia simplicifolia</td>
<td>Griffonia HTTP Hydroxryptophan</td>
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<tr>
<td>Gymnema sylvestre</td>
<td>Gymnema Gymnemcs Acids (25-75%)</td>
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<tr>
<td>Hordeum vulgare</td>
<td>Barley beta-Gucans</td>
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<tr>
<td>Inula nacciosa</td>
<td>Inula Lactones</td>
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<tr>
<td>Kaempferia galanga</td>
<td>Galanga Cinnamate</td>
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<tr>
<td>Lamarnana japonica</td>
<td>Furozidan Sulfopolsaccharades, Furozidan</td>
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<tr>
<td>Larix sibrica</td>
<td>Larix Taxifolin, Dihydroqueretin</td>
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<tr>
<td>Linum usitatissimum</td>
<td>Flaxseed Fibers, Polysaccharades</td>
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<tr>
<td>Magnolia officinals</td>
<td>Magnolia Magnolol, Honokiol</td>
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<tr>
<td>Malus domestica</td>
<td>Apple Phloridzin, Polyphenols</td>
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<tr>
<td>Mangifera indica</td>
<td>Mango Mangiferin</td>
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<tr>
<td>Melia azadrachta</td>
<td>Neem Bitter Principles</td>
</tr>
<tr>
<td>Melissa officinals</td>
<td>Lemon Balm Rosmarinic Acid</td>
</tr>
<tr>
<td>Mineral pitch</td>
<td>Shiogi Fulvic Acid</td>
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<tr>
<td>Momordica charantia</td>
<td>Momordica Bitter Principles, Charantin</td>
</tr>
<tr>
<td>Momordica chinensis</td>
<td>Momordica Bitter Principles, Carotenin</td>
</tr>
</tbody>
</table>

**Flavors**

- Galbador, Geranyl, Karanoarol, Meloar, Naturanate, Safranal, Sandanol, Super Santol, 1,2-Decanediol / 1,2 Hexanediol / 1,2-Octanediol, Metoxy Melonal

**Plant Name** | **Common Actives**
---|---
Penilla fructis | Luteolin, Luteolin |
Phaseolus vulgaris | Fabenol Enzymes Inhibitor |
Phyllanthus amarus | Phyllanthus Bitter Principles, Phyllanthin, Tannins |
Picrohiza kurrooa | Picroliv Apocynin, Kutkin, Bitter Principles |
Piper longum | Pepper Piperine |
Piper nigrum | BioPerine Piperine |
Plant Formula | Fruit Ox Antioxidant Polyphenols |
Plant Formula | ArthrinBlend Glucosamine, Boswellic Acids, Curcumins, Piperine |
Plant Formula | Hot Sip Glycerchizinic, Piperine, Alkaloids |
Plant Formula | LeanGard Forskolin, Glicolin, Piperine |
Plant Formula | Triphala Tannins, Polyphenols |
Plant Formula | Resvenox Resveratrol, Stilbenes |
Prunus africana | Pygeum Sterols |
Prunus armeniaca persica | Apricot Nectarine Polyphenols |
Prunus caucasica | White Cherry Polyphenols, Chlorogenic Acid |
Prunus domestica | Plum (Prune) Chlorogenic Acid, Polyphenols |
Pterocarpus marsupium | Pterohwhite Tannins, Stilbins, Pterocarpicide |
Punica granatum | Pomegranate Ellagic Acid |
Punica granatum | Pomegranate Punicosides, Punicaglicans, Polyphenols |
Punica granatum | Pomegranate Punicic acid CLNA |
Rhaponticum cardamonoid Rhaponticum | Ecysteroids |
Rhodola rosea | Rhodolife Rosavins, Salidroside |
Rhodiadendron caucu- Rhododendron | Polyphenols |
Wasarinus officinalis | Rosemary Carnosic, Ursolic, Rosmarinic Acids |
Sacharignum officinarum | Policosanol Policosanol |
Salacia reticulata | Salaretnit, Terpen, Saponins |
Salvia officinalis | Sage Ursolic Acid, Na Ursolate |
Sambucus nigra | Elderberry Anthocyanins, Polyphenols |
Seaweeds | Sea Blend Sulfopolsaccharades, Sulfofucoidenan |
Serenoa repens | Saw Palmetto Fatty Acids |
Synthesis | Alpha Lipic Alpha Lipic Acid |
Synthesis | Chrysin Dihydroxyflavone |
Synthesis | DIM Diindolymethane |
Synthesis | Glucosamine Glucosamine |
Synthesis | I3C Indole - 3 - Carbinol (I3C) |
Synthesis | Ipriflavone Ipriflavone |
Tagesi erectus | Lutrin Lutrin |
Terminated aruna | Arjunolc Arjunolic Acid, Saponins |
Terminaled belica | Terminaled Tannins |
Tinospora cordifolia | Tinosolin Bitter Principles |
Tribulus terrestris | Tribulix Saponins, Protodioscin, Steroids |
Trigolona foem grun. | FenulFiber Fibers |
Trigolona foem grun. | FenuFiber Fibers |
Trigolona foem grun. | Fennunans Galactomannans, Fennunans |
Trigolona foem grun. | Fursteterol Saponins, Steroids, Protodioscin |
Tylophora indica asth. | Tylophora Alkaloids |
Undaria p /Punica g. | Xanthigen Punicic acid CLNa, Fucoxanthin |
Undaria pinnatifida | Fucxanthin Fucxanthin |
Vaccinium vaccinium | Blueberry Chlorogenic Acid |
Vaccinium castractophyls | Blueberry Chlorogenic Acid |
Vaccinium castractophyls | Blueberry Myncetin, Caffeoylquinic |
Vaccinium macrocarpon | Cranberry Poroanthocyanidins, Polyphenols |
Vaccinium myrtillus | Bilberry Anthocyanins |
Vexin regungo | Vexin Aegnuside |
Vitis vinifera | Grapes Procyanidins, OH -Quercetin |
Withania somnifera | Ashwagandha Withanolides, Alkaloids, Withaferin |
Zingiber officinal | Ginger Gingerols |

**Minerals**

- Seleno-methionine, Methyl Selenocysteine Synthetic or enriched plants
- Chromium Picolate, L-Seleno-Methionine, Methyl Selenocystein, Molybdan Methionae, Gamma-Gla- myl-S-L-Selemothionine, N-Acetyl L-Cyst., etc.
- Damascene, Ailly, Alpilone, Ioseugenol, Citronellyl

**Flavors**

- Galbador, Geranyl, Karanoarol, Meloar, Naturanate, Safranal, Sandanol, Super Santol, 1,2-Decanediol / 1,2 Hexanediol / 1,2-Octanediol, Metoxy Melonal
BECARRE NATURAL - FRANCE

149 rue d’Estienne d’Orves - 92140 Clamart
contact@becarre-natural.com / www.becarre-natural.com
Your distributor of natural actives / Agent conseil d’actifs naturels
The below mentioned extracts are especially recommended for sport, performances, muscles recovery (elderly, post-surgery) or muscles body mass or recovery. As sport induces a post-effort deficiency of the immune health, it may be interested to work on energy, power and after-sport.

- Rhodiola: increase the performances besides many other very positive effects (incl. neurotransmission, immunity).
- Cystoseira (algae): Inhibitor of myostatin (myostatin inhibits the growth and repairing of the muscles).
- Rhaponticum: ecodosterone, or beta-ecdysterine from Rhaponticum carthamoides. Help to build Lean Muscle Mass.
- GI5ODeN: besides its strong action on immune system, GI5ODeN protects against inflammation and induced lactate production.
- Ultrasome CoQ10: [Herbamed]: enhanced bio available form of ubiquinone - CoQ10, ATP transfer (electron transfer) and aerobic cellular respiration.
- Fucoxanthins and Xanthigen: unique combination Xanthigen, working also on W3Kame for weight management, part of the "gestational".
- Forslean: Bengen by Sabinsa, CLnA from pomegranate to support healthy body weight.
- Blueberry: better contractibility.
- Grapes Leaves (Dihydroquercetin): decrease the formation of lactate.
- Cocuctin: the unique profile of nutrients from tender coconut.
- Fenusters from Fenugreek: action on the use of proteins in muscles rebuild (increase deposition of protein).
- Bacoside from Bacopa moniera: microcirculation / neurotransmission.
- Tribilus terrestris at 45% saponins.

Malfunction of the regulation of the blood sugar levels can have various causes (insulin secretion or insulin response, also related to the ingestion of sugar). Types of diabetes are rated as (IDDM: insulin by the pancreas, insulin dependent), «IDDM, IDDM, resistance to insulin / non-insulin dependent» or «gestational». Other products may be recommended to manage the consequences (cardiovascular, neuropathy, nephropathy, ...).

- Apple Polyphenol & Phloridzin: work on the sugar reabsorption.
- GS4 Gynemee acids: promotes the bodies production of insulin.
- Bayberry Myricetin: inhibit the intestinal sugar transporter GLUT2.
- Momordicin: sugar level / insulin.
- Blueberry Leaves: 47% and 56% inhibition on intestinal maltase and sucrase.
- Amla Saberry: complications of diabettes.
- Mango: sugar (a-glucosidase).
- Engelhardia: prevents complications from diabettes.
- Fenummannans: sugar level.
- Silibin: insulin and sugar.
- Salarein: insulin and sugar.
- Fabenol: inhibition of carbohydrates.
- Cumin: insulin.
- Cinnamon: sugar level, avoid the peak of sugar for longer satiety.
- Tulsi: sugar level.
- Berberine: diabetes mellitus (inhibition of a-glucosidase).
- Alpha Lipoic acid: sugar level, prevents from retinopathy and cardiopathy.
- BGVO: Bis- glycinato- oxovanadum.

Some products have been especially studied for their action on MetS, besides those with properties against oxidative stress, cholesterol, blood sugar level and globally over-weight:

- GI5ODeN: decrease IMT. Reduces risk factors of cardiovascular disease (new study).
- Curcuma: reduction serum concentra-
- tion of LDL-C, non-HDL-C, total cholesterol, triglycerides and Lp(a).
- Ultrasome CoQ10: increased plasma total CoQ10 acts on metabolic syndromes, decrease dyspepsia (heart transplant).
- Bayberry myricetin, Pomegranate Punici, ...

Digestion may mean different actions, with possible combinations:

Maximize the uptake of nutrients.

Improvement of the digestive wellness, as well as the welfare of the intestinal tract (pre- and probiotic).

Allow people eating less or just make the most of their diet.

Prevent heartburn, ulcers, fatigue, nausea and irritations related to weak digestion.

All adaptogenic products support healthy digestion, but more specifically dedicated:

- Digezyme multi enzyme complex: key specific enzymatic profile for digestion.
- Cumin (nigella sativa): stimulates digestion and removes intestinal spasms.
- Amla: strengthen digestion, absorption and assimilation of food.
- Lactospore: pro biotic Lactobacillus sporogenes — also Lactowize with fibers.
- Fenubier and galactomannans (stimulates digestion).
- Rhododendron: increase of diaphoresis.
- Fennel: digestion, detoxifier / kidneys, stomach cramps.
- Elimrea: Elimination, urination, detox.
- Berberine: indolent ulcers, stomach concerns (supports the healthy bacteria).
- Ginger: nausea, digestion (speed up from sto-

Weight may be managed through different ways: 1. Decrease of the amount of certain nutrients, especially fats (less intake of course, but also a different degradation and digestion/absorption), 2. Reduction of the bio transfer to the cells and muscles (educa-

tion of the body), 3. Decrease of the storage of the fats, including in the liver, 4. Use of the stored fats.

- Forslean (bean body mass): developed by Sabinsa [3 awards]. Increase lean body mass, while decreasing body fat (patent). Also on action on respiratory and cardiovascular health.
- Satierale: innovative, natural and safe appetite reducer working on Serotonin reuptake. Weight losses, decrease feeling of hunger, snacking and sugar cravings, and always with a very positive effect.
- Fucoxanthins and Xanthigen: Extracted from Wakame for weight management, part of the unique combination Xanthigen, working also on the fat deposits in white adipose tissues, liver, adipocytes, ...
- ElimReal: patented formulation of 6 plants for water elimination and detoxification.
- SlimNat green coffee extract: min. 25% 5-cafeoylquinic acid (5-CQA), low ethanol, and still 45% chlorogenic acids.
- Punicic acid: CLna from pomegranate to support healthy body weight.
- Citrin and Garcritin: slow conversion of carbohydrates to fat. Garcinol in Garcitrin helps to transpor-
- tHCA of citrin.
- Leangard formulation of Forslean, Garcritin and Bioperine.
- ElimReal: Natural proprietary blend to promotes water renal elimination by increasing the number of daily urinations.
- Gymnema: works on dyslipidemia, apolipoproteins.
- Rhododendron: Fat blocking, antioxidant, increase of diaphoresis (elimination).
- Mango: Mangiferine for weight management.
- Capsaxine and Capsallyl: thermogenic from capsicum annum.
- Fenufibers: fibers from fenugreek.
- Acticiussus: Cissus quadangularis.
- Salaretin: Mangiferin and triterpenoid. Inhibits carbohydrate digestion.
The skin is the single largest organ of the body. Different factors can cause skin problems: heat, cold, sun... Below is a very short list of available actives, without here speaking of the skin lightener / whitener, or only topical.

- Glisodin: oral protection of the skin, Increase of the MED (resistance to UV induced erythema or redness), improves tanning speed and quality, drastically decreases the oxidative stress (more than 20 published studies)
- Punic: from pomegranate, Heat, protect, and moisturize dry, cracked, mature, and irritated skin
- Rhodiola: improve skin's defensive barrier functions against stress of UV rays, increases elastin
- Bayberry Myricetin: protect cells from UV light by inducing apoptosis (cellular death) of those cells damaged
- Licorice derivatives: acts on tyrosinase, anti-inflammatory
- Brown seaweeds, Fucoxanthin: Inhibition of hyperplasia and induce apoptosis
- Saberry: from Amla (Emblica o.), rejuevnative properties, UV protection

And all others showing great antioxidant properties: Fruits, Curcuma, Apple, Mango, etc...

You may find the full list by properties or by sectors on the website. Just a quick look at some activities, not mentioned in others:

- Bioavine: the ultimate nutrient enhancer, only 5mg per dose to boost by 150% to 1 000% the bio assimilation
- Minerals: not the common... molybde-num, chromium, vanadium, ... 
- Detoxifiers : ElimReal (water elimina-tion). Picrolov (found more potent than Silymarin), Laxir, ...
- Respiratory support: Andrographis, Centella, Elderberry, Adhatoda, Coleus,
- Cardiovascular, Cholesterol manage-ment, men's and women's, hair, flavors intermediate...

Solutions to stress from nature. Adaptogenic herbs demonstrate a nonspecific enhancement of the body’s ability to resist a stressor. Only the very common are mentioned here.

- Rhodiola: One of the best adaptogens. Sustained energy, memory and physical performances, stress. Anti-aging
- Eleutheroceque: also named Siberian ginseng in some parts.
- Ashwagandha: also named Indian ginseng in some parts.
- Asparagus: known as the women’s tonic in Ayurvedic medicine (Shatavari)
- Amla: also named Emblica officinallis or Indian gooseberry

The effects of stress on memory include interference with a person's capacity to encode memory and the ability to retrieve information. Age, daily stress and daily needs of attention lead us to seek support to fight anxiety, and strength-en brain alertness.

- Rhodiola: transport of serotonin precursors, trypto-phan and 5-HTP into the brain, increase bioelec-trical activity
- Bacopin: intellectual functions (in children) and calm down the stressed mind, attention
- Safra: safranal, crocin and picrocrocin work on stress and anxiety, good mood
- Glisodin: promotes antioxidant defences in the brain and prevents stress-induced impairment of spatial memory
- Ultrasone CoQ10: treatment on neuronal damage
- Curcuma C3: prevents from the plaques causing degeneration of brain cells, inhibition of cytokins
- Eleutheroceque: increase mental alertness, chronic conditions such as fatigue or stress
- Centellin: neuroprotective against cognitive impairement, micro circulation
- Ashwaganda: Improve psychological endurance (NSIR). Indian ginseng (but this is a misnomer), strengthen the cerebral cortex, chronic fatigue syndrome
- Mucuna pruriens: L-Dopa, management of Parkinson's disease, nervous debility
- Griffonia Extract: 99% of 5 Htr for the brain health, precursor of serotonin, migraine, depression and fibromyalgy

Inflammation is a complex process involving a series of actions and/or reactions and a broad range of biologically active substances triggered by the body's immunological response to tissue damage.

- Glisodin: reduces the production of the pro-inflam-matory cytokine, tumor necrosis factor-alpha (TNF-α) and promotes production of the anti-inflammato-ry cytokine IL-10.
- Curcuma C3 Complex: COX-2 (Cyclooxygenase 2) inhibitor, without gastrointestinal side effects unlike NSAIDs.
- Mango: inhibition of inflammatory mediators in the synovial tissues, hypouricemic effect (decrease serum urate levels in hyperuricemic mice).
- Polysalt: helps manage inflammation and improve mechanicals strengths of the bones
- Ginger: Analgesic and anti-inflammatory activi-ties of gingerols
- Ursolic / Urolute: Inhibition of histamine, Lipoxyn-genase and COX
- Pygeum: alleviate discomfort caused by prostatic inflammation
- Capsaicin: immune system modulator, Coping with allergies
- Xymenynic: stimulates conversion of arachidonic into eicosanoids in the dermis

The immune system’s ability to fight infectious disease may be compromised by fatigue, aging, stress, diseases (and some related medications), and even sport. Different plant extracts exist to strengthen the immune system and assis-t the body to increase its defenses.

- Rhodiola: stimulates and protects the immune system (homeostasis), increases the natural killer cells (NK). Balance the body’s stress-response sys-tem (new study)
- Glisodin: a key product to regulate the immune response, in a polarized adaptive immune system (Reduction of Th1). In-vivo studies also performed on FIV infected system and children (allergy)
- Echinacea: popular immune-system stimulant used to prevent colds and other infections
- Andrographis: listed in Indian Ph. for the treat-ment of colds, flu, fever (and even cancer), power-ful antioxidant, anti inflammatory and immune stimulating properties.
- Curcuma C3: antineoplastic and immune modula-ting properties (tyrosine)
- Luteolin: modulator, coping with allergies
- Elderberry: boost immune system, sinus pain
- Selenomethionine: Bioavailable and unique com-position of supplemental selenium
- Hot Sip: Ayurvedic formulation cold and cough
- Barley b-glucans: immunomodulator to support immune system function
- Adhatoda: management of breathlessness, cold and coughs, antimicrobial
- Eleutheroceque: traditionally used to prevent colds and flu besides vitality
- Brown Seaweed: amplify the immune response (for instance in the elderly)
- Apple: reduced symptoms of allergy (food).
- Ginger: ...

Various products show antibacterial or anti fungal activities, based on specific bio-actives or more globally polyphenols. There are also oils (thyme or cin-namon for example) but they usually present a too strong in smell. Some synthetich molecules are also available: monolaureate (somewhat), 1.2 Hexanediol. Sabinsa has published an internal document introducing the efficacy against the strains, especially propionibacterium acnes.

- Glisodin, skin protection, stress, sun exposure, antioxidiant
- Vites Oil: standardized in Artemetin
- Gigartina (red algae) against eczema, psoriasis or herpes.
- Mango (Mangiferin)
- Neem (Neemoids and Limonoids)
- Magnolia: food grade, 15% Magnolol, 5% Homo-
kool
- Galanga: contains Ethyl p-methoxy cinnamate
- Ellagic Acid from Pomegranate
- Coleus Forskholii Oil, Rosmarinic acid, Curcuma
- Turmeric Oil, Mustard seed, Policosanol
- AcneZer: specific formulation of Policosanol, Coleus Oil, Monolaurin, Vitec Oil (topical)
- Berberine: also mouth wash
- Oleanolic Acid (olive) and olearpeine
Thanks to its gliadin matrix, GliSODin® is orally effective unlike most existing SOD supplements. The gliadin is not only an enteric protection but more: a real vehicle for the SOD, thanks to its specific bio-adhesive properties with the epithelial cells in the small intestine. After its activity in a medium mimicking the digestive conditions, Vouldoukis et al. have shown ex vivo that prime activation of macrophages isolated from rodents with interferon-gamma (INF-gamma) subsequently challenged with IgG1/anti-IgG1 immune complexes leads to the significant production of superoxide anions. This production may be regulated, in a dose-dependent manner, in macrophages originating from rodents previously supplemented with GliSODin®. These results prove the potential in vivo activation of antioxidant activities made by the SOD-containing melon extract/glutathione biopolymer combination.

An important proof of concept in vivo study by Vouldoukis et al. using Balb/c mice receiving the SOD melon extract orally, either alone or combined with wheat gliadin (GliSODin®) for 28 weeks showed that only the gliadin-SOD complex resulted in a significant increase in circulating antioxidant levels. At the end of the study, the animals supplemented with GliSODin® had significantly lower levels of oxidative-stress induced DNA damage. Furthermore, the researchers found lower levels of apoptotic cells in the spinal fluid, thus showing a marked protective benefit.

Oxidative stress & DNA damages

GliSODin®'s protective benefits have been demonstrated in human interventional studies. GliSODin® was shown to protect against cellular oxidative stress damage in a dramatic human model. In this double-blind, placebo-controlled trial, twenty healthy volunteers were given pure oxygen in a hyperbaric chamber (HBO), which increased atmospheric pressure to 2.5 times normal, inducing intense oxidative stress. A measure of blood cell protection, looking at the integrity of the cellular DNA, was taken before and after exposure to measure the effect of oxidative stress. The GliSODin® group had significantly lower cellular DNA damage as evidenced by a test called “Comet Assay.” Also, these findings coincided with reduced blood isoprostane levels, another marker of oxidative stress. In the GliSODin® group, the cell nucleus is intact, while the placebo group shows progressive nuclear damage with pronounced “comet tail.”

www.glisodin.org & www.glisodin.org

First orally effective SOD, GliSODin® is the new oral active for skin health, immune system and free radicals protection developed by Isocell and supported by more than 25 mostly published studies

- GliSODin® is both a protected and targeted SOD, supported by more than 25 clinical and scientific studies.
- GliSODin®, a patented nutraceutical ingredient, has been shown in clinical research to:
  - Promote the production of the body’s own, natural antioxidants
  - Help maintain cellular health and protect against damage caused by oxidative stress
  - Support skin health against photo-oxidative stress
  - Reduce lactic acid buildup in humans under physical stress
  - Support healthy immune function Promote cardiovascular health
  - Prevent stress induced impairment of spatial memory (neuroprotection)

Anti-aging

- Protects against DNA damage
- Prevents oxidative stress
- Decreases troubles induced by ageing
- Improves cognitive functions
- Protects against photo aging
- Supports healthy immune function
- Reduces risk factors of cardiovascular disease
- Helps prevent light sun allergies

The enzymatic activity of oral free SOD in the body is mainly to totally destroy within few minutes, despite the source, and can so not promote the production of the SOD cascade by the cells and the related expected optimal activities. For this reason, usual studies based on free SOD cannot prove the efficacy, or at an incredibly high use (in-vivo).

Dose: 2 x 100mg to 2 x 250mg a day
GliSODin® was studied for its ability to regulate the immune response. Supplementation with GliSODin® had increased production of type 1 helper T lymphocytes (Th1) and INF-α and IL-4. The immunoglobulin G (IgG) response – the predominant antibody used by the body to identify and neutralize foreign objects, while the response of IgE, the immunoglobulin associated with an allergic response was only marginally affected. Vouloudakis et al. proposed that the mechanism behind these effects was due to an activation of antigen presenting cells (APC), which results in the production of hydrogen peroxide (H2O2) and nitric oxide (NO), both of which are reactive oxygen species and upset the oxidant-antioxidant balance. In response to this, production of the antioxidant enzymes catalase and glutathione peroxidase is induced. This results in a polarized adaptive immune system, highlighting the benefits of GliSODin® since this polarization is a sign of the natural equilibrium of antioxidants in the cells. Rahman et al. investigated the effect of receiving GliSODin®-containing supplements on quality of life and performance of 23 AIDS patients on HAART (significant benefits for the millions of people infected with the HIV-1 virus and receiving anti-retroviral therapy).

A randomized, placebo-controlled, double-blind clinical trial by Mac-Mary et al. showed that GliSODin® supplementation reduced skin-reddening when healthy fair-skinned volunteers were exposed to UV radiation. Fifty subjects were randomly assigned to receive a daily dose of GliSODin® (500 mg) or placebo four weeks. Subjects were exposed to UV radiation to induce sunburn on the inner forearms, and the susceptibility of the participants to sunburn (defined as the minimum erythematous dose – MED) and a measure of the resulting redness (actinic erythema).

Supplementation with GliSODin® results in an increase in the minimum exposure to UV rays necessary to produce skin burn for fair-skinned people (phenotype II), compared to placebo. The induced redness also decreased quicker in the GliSODin®-supplemented group over the four-week period. These results confirmed the efficacy of the SOD-gliadin combination against the consequences of oxidative stress produced by exposure to UV radiation. In a later study of similar design with Type II (fair-skinned) participants, GliSODin significantly increased the MED in two weeks’ time with a dose of just 250mg.

In an in vivo study, Vouloudakis et al. compared the effects on production of pro- and anti-inflammatory cytokines with SOD, Gliadine, heat inactivated GliSODin® and GliSODin®. Only GliSODin® reduced the production of the pro-inflammatory cytokine, tumor necrosis factor-alpha (TNF-α) and promoted production of the anti-inflammatory cytokine interleukin-10 (IL-10), compared to the other treatments. The anti-inflammatory effects of GliSODin® are significant since chronic inflammation is associated with the onset and progression of many chronic diseases. Okada et al. reported that administration of the gliadin-SOD complex could prevent cancer progression, promoted by inflammation. This result indicated that the antioxidant and anti-inflammatory properties of GliSODin® might have significant benefits for the prevention of tumor development and progression.

A double-blind study included 19 participants who were participating in a training camp (2 capsules [total 500 mg] of GliSODin®). SOD activity was significantly higher (p <0.01) in the supplemented group at all measurement times, and post-exercise C-reactive protein was significantly lower in athletes receiving GliSODin®. Supplementation with an extract rich in SOD activity promoted antioxidant status and protected against increased inflammation in the serum of professional rowers. Hong et al. recruited 44 healthy individuals and assigned them to receive a daily GliSODin® dose of 1500 IU for four weeks. Healthy volunteers were then submitted to cycling or treadmill exercise but assigned into two distinctive groups: the severe exercise group (27 subjects) or the moderate exercise group (17 subjects). Only volunteers ranging from the severe exercise group showed a significant reduction in the exercise-induced lactate production, after the four-weeks of SOD supplementation.

**Immunity**
- Supports healthy immune function
- Immune-modulating properties shown to be effective in children
- Acts as immune-modulator
- Regulates pro- and anti-inflammatory cytokines production
- Induction of Th1 immune response

Newly published study with GliSODin®: in the present randomized, placebo-controlled, double-blind clinical trial, the clinical efficacy of GliSODin® in accelerating symptom relief in children with allergic asthma and house dust mite allergy (receiving house dust mite immunotherapy) was demonstrated. In summary, GliSODin® accelerates the symptom relief in asthmatic children allergic to house dust mite receiving house dust mite immunotherapy. For the first time GliSODin’s immune-modulating properties were shown to be effective in children!

**Cardiovascular health**
- Reduces risk factors of cardiovascular disease
- Decreases carotid Intima-Media thickness (IMT)
- Prevents metabolic syndrome-related diseases

**Sport & inflammation**
- Anti-inflammatory effect: control C-Reactive Protein
- Decreases in-exercise lactate production
- Supports post-exercise immune function
- Improves recovery after strenuous exercise

**Sun & skin health**
- Increases the MED (Minimal Erythema Dose)
- Helps prevent light sun allergies
- Prepares the skin for sun exposure
- Reduces sunburn redness
- Faster recovery after sunburn and photo-oxidative stress
Rhodiola rosea, also known historically as “Golden Root” from the “Golden Montains” (Mongolian word ‘Altan’), is the most popular phytomedicine traditional used to increase physical endurance, work productivity, longevity, memory and attention, resistance to high altitude sickness, fatigue, depression, and disorders of the nervous system.

Attention and Memory Cerebral activity

Rhodiola rosea is known to improve attention and cerebral performances. On 2016, Polinat has conducted new studies: Electrocencephalographic studies (EEG) showed that animal supplemented with Rhodiolife® have an increased neurotransmitter production in the studied areas. This effect lasts at least for 5 hours until the end of measurements, and so even more. Besides of a stimulatory effect, the results indicate an improve of memory and an increased activity in brain regions related to motivation and reward.

R. rosea increases the bioelectrical activity of the brain which improves memory and brain energy. Another study also described the Acetylcholine Esterase Inhibitors in Rhodiola rosea. It helps the body adapt to stress by affecting the levels and activity of serotonin, dopamine, and norepinephrine, neurotransmitters found in different structures in the brain and influencing the central nervous system. Rhodiola inhibits the breakdown of these chemicals and facilitates the neurotransmitter transport within the brain. In addition to its impact on the central nervous system, it increases the chemicals that provide energy to the muscle of the heart and prevent the depletion of adrenal hormones induced by acute stress. (Tori Hudson, 2006)

The root of R. rosea shows six distinct groups of chemical compounds. The Phenylalkanoids are the main contributors, incl.:
- Phenylpropanoids: Rosavins are products of the phenylpropanoid metabolism. Rosavins (ie. rosavin, rosin and rosarin) are specific to the root from Rhodiola roseae. The rosavins are the constituents currently most often selected as the marker compounds for standardization of extracts, although they are not necessarily the only pharmacologically active ingredients for its medicinal properties.
- Principal phenylethanoids consist of glycosides and salidrose has been reported as the most active tyrosol glycoside, being associated, together with rosavins, to the anti-depressive and anxiolytic effects (Maslowa, 1994; Tolonen, 2003). Other phenylethanoids have also been isolated but with today limited scientific literature concerning the bioactivity (Jiménez 1994).

Active Ingredients

Activities related to Rhodiola rosea have been traditionally attributed to the presence of four principal active ingredients: salidrose, rosin, rosavin and rosinarin (Sokolov, 1985; Furmanowa, 1998).

The right product from the right place at the right time

While Rhodiola as a genus may have originated in the mountainous regions of Southwest China and the Himalayas, botanists have established that Rhodiola rosea naturally display a circumpolar distribution in mountainous regions in the higher latitudes and elevations of the Northern Hemisphere. In central and Northern Asia, the genus is distributed from the Altai Mountains across Mongolia into many parts of Siberia. Rhodiola rosea used for the production of RhodioLife® is wildcraft collected from this part, under the Russian Government License. Altai Mountains represents a pristine area free from contamination in of the most well preserved and remote natural environments.

PoliNat is involved from the early beginning in the collection practices, with SOPs describing the stage of the plant growth, best time of collection and ecologically non-destructive systems.

Rhodiola: Memory, Immunity & Energy

A wide array of human health benefits related to mental health and physical performance has been clinically demonstrated using the unique phyto-medical form of R. rosea extract specifically standardized to rosavins. Rhodiola rosea possesses valuable anti-fatigue, anti-stress, and anti-depressant properties; it stimulates muscle energy status, improves glycogen synthesis in the muscles and liver and increases muscle protein synthesis and anaerobic activity.

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**Immune System**

The Rhodiola extract Rhodiolife® has clearly demonstrated its ability to protect cells from viral infection. This is the first time shown to be effective in the activation of the human immune system (launch and human in-vivo study April 2015 - Ahmed M, et al (2015) «Rhodiola rosea Exerts Antiviral Activity in Athletes Following a Competitive Marathon Race». Front Nutr. Jul 31;2:24).

It stimulates and protects the immune system (homeostasis), and increases the natural killer cells (NK) in the stomach and spleen. This action may be due to its ability to normalize hormones.

Cardiovascular: Linked to the anti-stress action (and decrease of catecholamines and corticosteroids released by the adrenal glands during stress), R. rosea decreases the amount of cyclic-AMP (c-AMP) released into cardiac cells, and so assist the uptake if lire intracellular calcium for greater heart muscle contraction (regular beat).

**Response to Stress**

Rhodiola rosea balance the body's stress-response system. Adaptogenic plants naturally increase the body's non-specific resistance and normalise the functions of the body, with a more resourceful manner when facing stressful situation. R. rosea impacts central monoamine levels.

R. rosea is said to assist the transport of serotonin precursors, tryptophan and 5-HTP into the brain. (Studies shows that serotonin brain neurotransmitter is involved in many functions such as pain perception, behavior, smooth muscle contraction, temperature regulation, appetite, etc...)

Case studies have reported that R. rosea helps with depressive syndromes, memory loss, anxiety, cognitive dysfunction and menopause related symptoms.

**ATP & Energy**

The effect of Rhodiola rosea (RR) supplementation on ATP content in muscles was studied in Sprague-Dawley rats, where 24 adult rats were divided 3 groups equally: control group, RR (50mg/Kg) and Rhodiola crenulata (50mg/kg). Two sessions of forced swimming with 30-min intervals were carried out every day.

The decrease in ATP content in rats receiving R. rosea extract was statistically significantly less pronounced than the other groups (1). In a human trial, a total of 36 healthy untreated volunteers (21-24 years of age) were randomly, equally divided in 3 groups (control, placebo and RR extract). Individuals in the placebo and RR extract groups received 2 capsules a day of each treatment (placebo or 340 mg of RR extract) for 30 days before and 6 days after exhausting physical exercise was performed (computer aided bicycle ergometer with gradual increases of workload). Changes in biochemical markers of muscle damage and inflammation were significantly less pronounced in those taking RR supplementation (2).


Rhodiola rosea balance the body's stress-response system.

Rhodiola extract one hour before exercise significantly increases capacity for endurance exercise. It also shortens recovery time after long workouts, to increase strength, and anti-toxic action.

Rhodiola extract reduces levels of C-reactive protein, an inflammatory marker, and creatinine kinase, a marker of muscle damage (Abidov M & al, 2004). An other study from PoliNat suggests that Rhodiola extract protects against peroxide-induced oxidative stress through the modulation of the molecular chaperone HSP70. (Hernández-Santana et al (2014), Phytother Res. 2014 Apr;28(4):623-8).

**Oxidative stress**

Rhodiola rosea root extract protects skeletal muscle cells against chemically induced oxidative stress by modulating heat shock protein 70 (HSP70) expression. «The aim of this study was to analyze the efficacy of a Rhodiola rosea root extract (Rhodiolife) in protecting murine skeletal muscle cells (C2C12 myotubes) from chemically induced oxidative stress and to establish whether modulation of HSP70 expression is observed. C2 C12 cells treated with Rhodiolife did not experience any loss of viability (p > 0.05) at concentrations of 1-100 µg/mL for up to 24h. In control cultures, viability decreased 25% following exposure to 2 mM H2 O2 (1h). However, no significant decrease in viability in cells pre-treated with extract at concentrations as low as 1 µg/mL was observed. HSP70 mRNA levels were up-regulated two-fold in cell cultures treated with Rhodiolife (10µg/mL), and expression was further enhanced by exposure to H2 O2 (six-fold, p < 0.05). HSP70 protein levels were maintained in pre-treated cell cultures compared to controls but was significantly lower (-50%) in cells lacking treatment exposed to H2 O2. The present results indicate that Rhodiolife protects C2 C12 myotubes against peroxide-induced oxidative stress through the modulation of the molecular chaperone HSP70.»

**Anti-inflammatory**


**Bacopin is a cognitive enhancer in cases of:** Declining Memory Poor Concentration Attention Deficit Hyperactivity Disorder Anti-convulsive or Anxiety Neurosis Dosage: 15 to 30 mg of Bacopin 3 times daily for 20% extract (dosage must be adapted to the grades 20% or 50%).

**Bacopin revitalizes intellectual functions**

Chemical constituents

The pharmacological effects of Bacopa monniera are attributed to the presence of a number of biologically active compounds, including alkaloids, saponins and sterols. The compounds responsible for the memory enhancing effects of are triterpenoid saponins called «bacopins» (Bacopside A3, bacopaside 1, bacopaside 2, jujubogenin, bacosaponine C).

Properties

The biological effects of Bacopa monniera are well documented in traditional as well as scientific literature. The most important of these are the effects of the plant, plant extracts and isolated bacopins on cognition and memory functions, their anxiolytic effects and their role in the management of convulsive disorders.

On receiving signals, receptors of the hippocampus trigger an electric pulse, mediated through a change in protein composition.

The pulse is transmitted to the next neuron through the synapse. The process continue till the bond between neurons become strong and the memory is created.

However, continuous electrical activity wears out the synapses, impairing a new memory creation and causing loss of memory.

The bacopins help in restoring the synaptic activity of neurons.

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**Bacopin revitalizes intellectual functions**

Chemical constituents

The pharmacological effects of Bacopa monniera are attributed to the presence of a number of biologically active compounds, including alkaloids, saponins and sterols. The compounds responsible for the memory enhancing effects of are triterpenoid saponins called «bacopins» (Bacopside A3, bacopaside 1, bacopaside 2, jujubogenin, bacosaponine C).

Properties

The biological effects of Bacopa monniera are well documented in traditional as well as scientific literature. The most important of these are the effects of the plant, plant extracts and isolated bacopins on cognition and memory functions, their anxiolytic effects and their role in the management of convulsive disorders.

On receiving signals, receptors of the hippocampus trigger an electric pulse, mediated through a change in protein composition.

The pulse is transmitted to the next neuron through the synapse. The process continue till the bond between neurons become strong and the memory is created.

However, continuous electrical activity wears out the synapses, impairing a new memory creation and causing loss of memory.

The bacopins help in restoring the synaptic activity of neurons.

Bacopin is a cognitive enhancer in cases of: Declining Memory Poor Concentration Attention Deficit Hyperactivity Disorder Anti-convulsive or Anxiety Neurosis Dosage: 15 to 30 mg of Bacopin 3 times daily for 20% extract (dosage must be adapted to the grades 20% or 50%).
Satiereal® is a patented clinically proven satiety ingredient derived from saffron stigmas. The satiated feeling induced by Satiereal® encourages weight loss while eliminating frustration. This product has a unique mechanism that not only creates satiety but helps avoid snacking and compulsive eating behaviors, which in turn leads to reduction in weight and inches.

What is unique about Satiereal® saffron extract is that it targets emotional behaviors:
- It decreases your desire to snack
- It decreases your desire for sugary foods
- It increases your sense of satiety or fullness (resulting in better portion control)
- It provides a good mood
- It can be used in any form or food

Satiereal® is derived from the stigma of saffron crocus, Crocus sativus L, which is cultivated throughout the Mediterranean region. Historically, saffron was prized as a culinary spice, colorant and dye, and as a medicinal herb to ease digestion or to treat depression. These medicinal uses are usually curtailed to the food intake mass for the supplemented subjects versus the placebo group. Decrease of the desire and pleasure associated to the food intake mass for the supplemented subjects versus the placebo group.

Double Blind vs placebo (Publ. Nutrition Research)
Randomized double-blind versus placebo showed the efficacy of Satiereal® on weight management in 60 women at the dose of 176.5mg/day; it shows that Satiereal® increases satiety, decreases hunger, reduces sugar cravings (~78%), and reduces compulsive snacking between meals. Women taking Satiereal report decreased hunger. 80.7% of women taking Satiereal® lost weight in two months. Notably, Satiereal® group lost preferentially fat mass, instead of lean mass.

Dosage: 2 x 88.25 mg a day
Two grades available:
- SATIEREAL C: Non water soluble, for tablets and hard gel capsules
- SATIEREAL AWS: water soluble, homogeneous without change after heat treatment (110°C, 20 ms for instance) for beverages,…

Trademark awareness: SATIEREAL® - on internet, plenty of testimonials, YouTube videos…
consumer will search before purchasing and will rely on and look for the brand.

Specific Saffron Extract
Satiereal® is a specific combination of Crocin (carotenoid dye, crocin [golden yellow-orange]), Picrocrocin (flavor, bitter glucoside, a truncated version of the carotenoid zeaxanthin) and Safranal (aroma, less bitter), definitely more than a Saffron extract of Safranal.
Inoreal noticed that the efficacy of the active saffron constituents, so it is cost effective as a weight-loss formula.

Clinical Trials
Clinical vs placebo
16 women, checked efficacy and tolerability of Satiereal® (2 x 88.25mg).
100% of supplemented women express the decrease of their food intake associated to a satiety feeling, to a decrease of the hunger feeling in the beginning of meals and a decrease of the meals duration. This is still persistent until dinner when Placebo shows an increase compulsive and reactive desire to eat.
Decrease of body weight and fat mass for the supplemented subjects versus the placebo group.
Decrease of the desire and pleasure associated to the food intake mass for the supplemented subjects versus the placebo group.

Capsules and Tablets with Satiereal®
Instant stick for instance coffee or coated tea, with 9.81% of Satiereal® AWS per stick of 1.8g (formulation checked by Inoreal).

Meal replacement: problems with meal substitute is the snacking in between! Satiereal® provides a long feeling of satiety... better mood so feel better
- Replacing 1 meal/day « weight management after weight loss »
- Replacing 2 meals/days « weight loss contribution »

Cereals Bars, biscuits: 1.18% of Satiereal® / bar of 14.9 g

Candies, Chewing gums, chews: Better use them instead of snacking

Beverages and instant drinks: 0.088% of Satiereal® AWS per bottle of 200g gives a clear, pleasant and efficient drink. Formulations with Raspberry, Hibiscus, Apple juice, Cranberry, Iced tea, ... or even only water (yellow translucide solution).

Other possible associations (additional claims) with for instance 500mg of Garcinia cambogia extract standardized to HCA (Weight management, also in beverages), 200mg of Fucus powder.

Serotonin Reuptake Inhibitor
Stress, anxiety, depression... influence food behavior, generally leading to compulsive overeating in reaction to stress. This phenomenon induces weight gain, subject feel guilty, trying to stop, thus generating stress for those who need consolation in carbohydrates intake!
This is mostly due to low Serotonin levels.
Satiereal® has been demonstrated to keep the neurotransmitter serotonin signal active, in otherwords serotonin reuptake inhibition in neurons (mechanism of many antidepressants). It is probable that this serotonin reuptake inhibition accounts for saffron’s use in treating depression and “melancholia” in the medicinal traditions. Saffron extract has been shown to be as effective as the tricyclic antidepressant drug imipramine and the SSRI fluoxetine (Prozac) in managing depression - with no side effects.
Pharmaceutical SSRIs have varying effects on weight, but Satiereal helps keep excess body weight from accumulating. This is one advantage of Satiereal® over other dietary satiety ingredients: it needs only be used in small quantities, it is potent, it acts directly on neurotransmitters to relieve the cause of nibbling and hyperphagia, instead of just delaying it.

Not a common Saffron!
Satiereal®, a specific Saffron extract, works as a hunger suppressant and seems curb appetites by boosting serotonin levels.
The satiated feeling induced by Satiereal® encourages weight loss while eliminating frustration.
**SlimNat** is Polinat’s proprietary low caffeine, green coffee bean extract manufactured exclusively with hydro alcoholic extraction process. The process ensures a minimum of 45% chlorogenic acids content and over 25% of 5-caffeoylquinic acid (5-CQA) by UPLC. Chlorogenic acids may help regulate blood glucose levels, and improve lipid metabolism and obesity by multiple mechanisms.

**Excess weight, a serious health problem**

According to WHO obesity and overweight have become a world pandemic. In 2005 approximately 1.6 billion adults (age over 15) were estimated to be overweight and at least 400 million adults were obese, with further projections of 2.3 billion adults overweight and more than 700 million obese by 2015. Excess weight carries serious health problems such as cardiovascular disease, diabetes, musculoskeletal disorders and some cancers (WHO (2006) Fact sheet N°311).

**Slimnat, innovative weight management**

Body weight regulation represents a complex, substantial challenge; although it depends ultimately upon the balance between energy intake (food) and energy expenditure (heat production and physical activity) many redundant pathways control energy regulation. This redundancy means that attacking excess weight (accumulation of energy) through a single mechanism usually fails as the body will tend to compensate activating these other pathways (Foster-Schubert (2006) Endocrine Reviews 7:779-793).

**Recommended dosage**: 400mg to 700 mg a day

**Safety & Quality**: SlimNat is manufactured according to Good Manufacturing Practices and all EC applicable regulations. All ingredients are of vegetable origin. The product is non-GMO, non-irradiated, and allergen and BSE free.

**Composition**

<table>
<thead>
<tr>
<th>Composition</th>
<th>SlimNat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caffeoylquinic Acid (5-CQA)</td>
<td>≥ 25%</td>
</tr>
<tr>
<td>Neochlorogenic Acid</td>
<td>≥ 5%</td>
</tr>
<tr>
<td>Total Chlorogenic Acids</td>
<td>≥ 45%</td>
</tr>
<tr>
<td>Total Polyphenols</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

**Oral Ellagic Acid for Skin Lightening**

Oral Administration of Ellagic Acid for skin lightening Oral administration of ellagic acid (alcoholic extraction followed by acid hydrolysis) has been studied, and its metabolites have been detected in urines and feces. A whitening effect on UV-induced pigmentation was observed, with a reduction on the number of DOPA-positive melanocytes (Mineka Yoshimura, 2006).

A double blind vs placebo clinical trials has evaluated the protective andamelorative effect at 200mg and 100mg of ellagic acid per day, orally, followed by UV radiations. It’s so suggested that ellagic acid orally administered is absorbed into the body and the ellagic and/or its metabolites inhibits the proliferation of melanocytes in the skin.

Those studies have been performed in Japan, with products offered by Sabinsa Japan Corp. Effects or Oral Administration of Ellagic Acid-rich pomegranate Extracts on UV induced pigmentation in the human skin, Kouichi Kasai, Mineka Yoshimura, Takuro Koga, Masayuki Arii, Satoru Kawasaki, J Nutr Sci Vitaminol 52, March 2006.

Clinically Evaluated Bioavailable CoQ10

T he Ultrasome™ encapsulated CoQ10 from Herbamed showed high drug-tapping efficacy, with enhanced oral bioavailability compared to generic CoQ10. Ultrasomes are a new type of lipid particles considered as an intermediate or «Hybrid» system between liposomes and oil-in-water emulsions. Ultrasome-CoQ10™ is clinically evaluated for increased bioavailability (3-10 times) through different in-vivo.

Enhanced bioavailability of Coenzyme Q10

Ultrasome-CoQ10™ has been clinically evaluated for:
- Increased bioavailability (3-10 times)
- Improved symptoms of heart health
- Improved recovery after hip fracture
- Wound healing
- Nutritional support

As a free flowing powder, it has been found to be very easy to formulate. Herbamed has formulated CoQ10 using the Ultrasome™ proprietary drug delivery technology.

The Ultrasome™ encapsulated CoQ10 showed high drug-tapping efficacy, better in vitro drug release and enhanced oral bioavailability compared to generic CoQ10.

The positive effect of Ultrasome™ CoQ10 was observed among athletes with respect to muscle pain and fatigue after physical activity. Additionally, in several clinical trials and scientific research Ultrasome™ CoQ10 played a role in quality of life in patients with end-stage heart failure awaiting cardiac transplantation, in the healing process of chronic skin lesions, in rehabilitation outcome following surgical repair of hip fracture and in protecting against 6-hydroxydopamine induced nigra lesions in rats which indicates is potential therapy for Parkinson's disease (PD) and other neurodegenerative diseases without side effects.

What is Ultrasome CoQ10?

Ultrasomes are a new type of lipid particles considered as an intermediate or «Hybrid» system between liposomes and oil-in-water emulsions. Ultrasome particles have a new type of lipid assembly comprising a hydrophobic core, in standard oil-in-water emulsions, but surrounded and stabilized by one or more phospholipid bilayers as in liposomes. The Ultrasome technology represents a new entity as lipoidal drug vehicle and its successful development was achieved by the incorporation of a relatively high lecithin content (5-10%) compared to standard emulsions (0.5-2%), the use of fats or triglycerides which are solid at room temperature instead of oils, and the utilization of high pressure emulsification. The combination of the specific lipid composition and manufacturing technology results in the formation of stable lipid particles in the submicron range.

Coenzyme Q10, also known as ubiquinone, refers to Quinone with 10 chemical subunits in its tail. It is a natural substance present in every cell of the body: a key nutrient to work against degenerative condition and fatigue. It is a component of the electron transport chain and participates in aerobic cellular respiration, generating energy in the form of ATP. 95% of the human body's energy is generated this way.

CoQ10 comes in Ubiquinone (also known as Ubidecarenone). When taken CoQ10, it is actually metabolized within our bodies where it also becomes Ubiquinol, the non-completely-oxidized and antioxidant form of CoQ10. Ubiquinol is sometimes said to be more bio available because it's soluble in water and fat. Besides the fact that Ubiquinol is metabolized in the body from Ubiquinone, the use of Ubiquinol refers to the antioxidant property, and not to the cascades of benefits of Ubiquinone in the mitochondria and energy.

Supplementing - Benefits

Since we get only a very little from the body due to conversion issues especially when aging, supplementing to maximize CoQ10 benefits make sense.

Benefits for Anti aging, energy and fatigue: to maintain a «healthy» rate of CoQ10, an intake of 10 to 30 mg daily is often recommended generally if over 30-40 years, to keep the heart healthy as well as for energy boost. Patients may require up strong need 200-400mg under medical supervision. Beyond 600mg means clinical trials.

Benefits for heart: a weak heart - Patients with congestive heart failure due to myocardial infarction, cardiomyopathy, or even hypertension - means the heart works inadequately and the blood volume pumped becomes very poor with all the undesired side effects : shortness of breath, fluid in lungs, heavy legs, ...

Benefit for immune system: efficient immune response will be reduced accordingly to a lower CoQ10 content, because immune system requires a tremendous amount of ATP to aggressively mount defenses.

Benefits in case of statin drugs: statin therapy cause a decrease of CoQ10 levels by 40-50%. There are several studies that has proved that external CoQ10 benefits to counter statin side effects.

Benefits for Parkinson’s disease: preliminary research suggests that CoQ10 supplementation can help to increase levels of dopamine, a neurotransmitter which are deficient in people with Parkinson’s disease. Some clinical research are done, with some-times very high level of supplementation.

Benefits for Skin Lesion: a prospective demonstration study on patient who suffered from either nonhealing or deteriorating full thickness skin lesion for more than 20 days (see studies). There are also several reported anecdotal CoQ10 Benefits although there is no scientific evidence: migraine due to hyper tension, headache, ...

Enhanced Oral Bioavailability

Compared to generic CoQ10 Among Elderly Hospitalized Patients in a Randomized Double-Blind Controlled Study:† The results of this study demonstrate the effectiveness of Ultrasome™ CoQ10 with significant enhanced oral bioavailability of CoQ10. In young volunteers the absorption was estimated 9-10 fold higher than generic CoQ10.

Chronic wounds in debilitated elderly impatients

On patients with mean age of 76.9 years, the conclusion is that Ultrasome™ CoQ10 plays a role on the healing process and thus should be considered as a tool in treating chronic skin lesions. Patients received 400 mg/day Ultrasome-CoQ10 (60 mg of CoQ10) for 20-60 days

End-Stage Heart Failure Awaiting Cardiac Transplantation

A randomized, Placebo-Controlled Study:‡ The study group showed significant improvement in the 6-min walk test and a decrease in dyspnea. The administration of CoQ10 to heart transplant candidates led to a significant improvement in functional status, clinical symptoms, and quality of life. 400 mg Ultrasome-CoQ10 (60 mg of CoQ10)

Hip fracture rehabilitation

All subjects in the intervention group received 400 mg of Ultrasome-CoQ10 (60 mg of CoQ10) daily for the entire hospital stay. Control patients received no additional therapy. Pain intensity frequency and endurance were lower in the intervention group (p<0.001) treated with 400 mg of Ultrasome-CoQ10 (60 mg of CoQ10) daily during the entire hospital-stay

Muscles soreness and fatigue

Thirty runner’s athletes were randomly assigned to receive an oral dose of 400 mg Ultrasome-CoQ10 (60 mg of CoQ10) : Oral administration of 400 mg of Ultrasome-CoQ10 (60 mg of CoQ10) in nutrition bar form before physical activity for 1 week significantly reduced muscle soreness and fatigue at the intervention group (p<0.05)

Neuronal damage in animal model

On Male Sprague-Dawely rates. Oral administration of Ultrasome-CoQ10 (5 mg/kg), one week before and two weeks after 6-OHDA lesion, reduced apomorphine (25 mg/kg) induced rotations by 87% (p < 0.04). The same results were obtained but with lower dosage of Ultrasome-CoQ10 (3 mg/kg) regards to amphetamine (5 mg/kg). The reduction in rotation rate was by 72% (p < 0.03)
Sabinsa has developed a reputation for being a trusted and valued resource to academic and medical communities in providing C3 Complex for a variety of research initiatives.

Feel quiet when using the Curuma longa from the leading Cie

New Metabolic syndrome
A significant study on Curcumin C3 Complex® (in combination with BioPerine®) in patients with metabolic syndrome has been published on end of 2014, showing the significantly greater effect of Curcuminoids in reducing the serum concentrations of LDL-C, non-HDL-C, total cholesterol, triglycerides and Lp(a), when serum HDL-C concentration was elevated significantly. Serum sdLDL levels were comparable (randomized, double-blind, placebo, 117 patients, 8 weeks).

Traditional knowledge
The rhizome of turmeric has a rich history in India as a spice, food preservative and coloring agent, and has been used for centuries in the Ayurvedic system of medicine: well-documented for treatment of various respiratory conditions (e.g. asthma, bronchial hyperactivity and various allergies), liver disorders, poor appetite, rheumatism and influenza symptoms.

Pharmacological activity
Turmeric and more appropriately the components curcuminoids have been preclinically and/or clinically validate for their role in maintaining health and wellness.

At the molecular level, the curcuminoids have been showed to inhibit nuclear factor kappaB (NFκB), a transcription factor that triggers inflammatory mediators.

Curcumin C3 Complex counteract free radicals in 2 ways:
- Prevention of free radical formation
- Intervention whereby already preformed radicals are quenched by the curcuminoids.

Curcuminoids offer antioxidant, anti inflammatory, and a healthy immune system support, and potential prevent connective tissue breakdown through inhibiting destructive enzymes, with benefits in healthy aging and all-related oxidative stress (including diabetes mellitus (and the secondary complications of the disease)). Studies reported it protects the liver against several toxicants both in vitro and in vivo.

Various other researches are conducted especially against metabolic syndrome (see below), as well as Alzheimer (anti-amyloid b), and cancers (breast, bladder, pancreatic, skin) where curcuminoids act by inhibiting several processes.

Why Curcumin C3 Complex stands out from the crowd?
- Most clinically studied Curcumin brand: more than 65 scientific publications, including clinical trials, have been published, and more than 100 articles.
- Free curcuminoids only, and no inactive metabolites
- Most safety data conducted with C3 Complex and not another curcumin extract. Only Curcumin in the market that has been reviewed and acknowledged by US FDA for GRAS status, a process which includes a comprehensive review of safety and toxicological data
- Most Patent-IP protection: Holds patent covering composition of curcuminoids, method of manufacture and uses
- Most consistent quality: C3 Complex has the same composition of the three Curcuminoids consistently in the same ratio in every batch
- It is known for its very low oxalic acid content (what caused kidney stones), heavy metal, ...
- Most stable supply chain: C3 Complex is promptly delivered from European buffer stock
- More proven bioavailability
- Dedicated unit: C3 Complex is processed all over the year in its dedicated unit on a continuous batch extractor, without risk of cross contamination, from known fields (traceability)
- Various awards

Grades available
- Curcumin C3 Complex 95%
- Curcumin C3 Complex 95% DC (Direct Compression)
- Curcumin C3 Complex BW (with Bacouides)
- Curcumin C3 Complex Beadlets
- Water Soluble: uC3 CLEAR™ (New)

Full and Clear Water-Soluble now Available
Sabinsa introduce in 2015 a new form of Curcumin which is completely water soluble, a major breakthrough in Curcumin technology: uC3 CLEAR™, the nano-free water soluble curcumin.

Poor curcumin solubility and resulting sedimentation in beverage make it visually unappealing.

C3 CLEAR™ not only provides an improved, more convenient delivery system for Curcumin but also overcomes the challenges and limitations that can be present with solid dosage delivery systems such as poor disintegration, slow dissolution, or difficulty swallowing, thus enhancing the uptake of curcumin.

Sabinsa’s Curcumin C3 Complex® enjoys a special place among curcumin extracts. C3 Complex is obtained from the dried rhizomes of Curcuma longa (turmeric) and standardized to min. 95% Curcuminoids. The name C3 Complex has reference to its three main chemical compounds – Curcumin (75-85% of the composition), Demethoxycurcumin and Bisdemethoxycurcumin – collectively known as Curcuminoids.

New - Osteoarthritis
Another study on 53 subjects for 8 weeks with C3 Complex and BioPerine shows that this combination brought a significant improvement in arthritic indices such as VAS (SVisual Analogue Scale), WOMAC (WOM Osteoarthritis Index) and LPFI (Pain Index).
The pomegranate (Punica granatum) is a fruit-bearing shrub or small tree that has been cultivated over the whole Mediterranean region and the Caucasus since ancient times. In the Northern Hemisphere, the fruit is typically in season from September to January while in the Southern Hemisphere, the season runs from March to May. The name itself derives from the Latin pomum (apple) and granatus (seeded) (Lloyd, 1897).

There is a great interest in the scientific community in the properties of pomegranate, which is considered by many as a functional food because it has valuable compounds in different parts of the fruit displaying beneficial effects on health such as antioxidant, antitumoral, antihypertensive, antimicrobial, anti-inflammatory, antiviral, antidiabetic and improving cardiovascular, oral, and skin health. However, few well-controlled clinical trials have been completed and these effects have not been solidly established (Vilad-Martos, 2010).

**Pomegranate P40P**

P40P™ is a unique product, carrier free, soluble in water and is standardized to a full spectrum of all of the essential compounds responsible for specific health promoting benefits of pomegranate juice, manufactured under strict GMP procedures.

Approximately, 30 mg of P40p™ provides an equivalent amount of bioactives than 50 ml of pomegranate juice.

**Chemical Profile**

The key bioactive compounds in pomegranate fruit are a group of hydroxylizable ellagitannins generically called punicasides, including punicalins, punicalagins (A+B), ellagic acid glycoside and ellagic acid. Ellagic acid is commonly used to standardize commercial pomegranate extracts but this approach is unreliable, potentially misleading and vulnerable to adulteration (Zhang, 2009). Punicalagins have been identified as being responsible for most of the antioxidant activity present in the pomegranate fruit (Gil, 2000) and represent a more reliable means of standardization of commercially produced pomegranate extracts (Jimenez Del Rio, 2006).

Animal studies have shown that both ellagic acid and punicalagins are absorbed by the gastrointestinal tract after oral ingestion of pomegranate juice or extract, with the concentration of the latter being higher. Punicalagens are not absorbed in vivo directly but reach the colon and release EA that is metabolised by the human microflora (Jarrosa, 2006).

**Cardiovascular Health**

Atherosclerosis is a collection of patchy plaques (called atheromas) in medium-sized and large arteries. These plaques contain lipids, inflammatory cells, smooth muscle cells, and connective tissue. Several investigators have studied the influence on cardiovascular health of pomegranate supplementation.

They have measured how pomegranate affects several markers involved in the development of atherosclerosis, such as plasma lipid profiles, lipid-oxidation status, platelet aggregation, interaction between macrophages and stress to the arterial wall.

More recently Rosemblat has also confirmed that pomegranate juice daily consumption improves plasma lipid oxidant profile in patients with diabetes by reducing lipid peroxide and cellular peroxides and increasing glutathione levels, factors that all contribute to development of atherosclerosis in these patients (Rosemblat, 2006).

**Pomegranate Seed Oil**

Pomegranate seed oil (PSO) is rich in Punic Acid (PA) and contains other actives such as ellagic acid, other fatty acids and sterols (Schubert, 1999; Amakura, 2000; Abd El Wahab, 1999). Polinat manufactures PSO with at least 80% content of PA.

**Punicic acid**

Punicic Acid (PA) is structurally related to Conjugated Linolenic Acid (CLNA), and their potential beneficial biological effects (for instance significant decrease in hepatic tryacylglycerol deposits, as well as levels of monounsaturated fatty acids).

In fact PA has been found in animal models to accumulate in liver and perirenal fat, increasing serum levels of tryacylglycerol and phospholipids, which suggest PA mobilizes fat out of their storage sites into the blood (Yamasaki, 2006), corroborated later on in ICR CD-1 mice.

At the molecular level, investigators have found that PA activates a class of receptors (PPARγ) also activated by oral antidiabetic agents, which in principle could play an important role in glucose homeostasis and obesity related inflammation.

In summary, PSO has shown beneficial effects on the lipid storage and lipid serum profile in obesity animal models with a strong suggestion that it may also help uncontrolled blood glucose levels.

**Pomegranate Seed Oil in Xanthigen™**

Xanthigen™ is a nutraceutical combination product intended for weight management, partly based on Polinat’s PSO. In a clinical trial, investigators found that PSO acted synergistically with a fucoxanthin, increasing the resting energy expenditure (REE). Increase in REE leads to losing weight (Abidov, 2010). More recently, investigators have reported that PSO can down-regulate the expression of adipogenic genes (PPARy) in fat cells.
**Ultimate Nutrients Enhancer**

BioPerine® is the product sourced out of piperine studied for its ability to increase the bioavailability of nutritional compounds. It is also the only source from piperine to have undergone clinical studies to substantiate its safety and efficacy for nutritional use.

**Bioavailable curcuminoids**
Effect of BioPerine® on Serum Concentrations of Curcumin in Human Volunteers. The relative bioavailability is improved by more than 20 times when therapeutic effectiveness of curcumin is often limited due to its poor absorption from the GI tract.

**Bioavailable β-Carotene**
BioPerine® increased the absorption of co-administered beta-carotene in human volunteers by 160%, using 5mg BioPerine®.

**Bioavailable Selenium**
Effect of BioPerine® on serum selenium levels during a 6 week supplementation trial in human volunteers: increase by 145% of the selenium levels over the pre-supplementation value (50 µg of elemental selenium in the form of Selenomethionine versus 50µ+5mg BioPerine®).

**Bioavailable vitamins**
Efficacy of BioPerine® (5 mg) on the bioavailability of Vitamin B6 absorption in human volunteers: increase by 250% of the vitamin B6 serum level after 2 hours compared to control (100mg B6 / 100mg B6+BioPerine®).

**Bioavailable Resveratrol**
Many other studies have been conducted, the most recent one on the resveratrol: "We found that the degree of exposure (i.e. AUC) to resveratrol was enhanced to 229% and the maximum serum concentration (C max) was increased to 154% with the addition of piperine" (Mol. Nutr. Food Res. 2011, 55, 1–8). BioPerine® has legitimate application in the field of nutrition, particularly since we are becoming increasingly aware of the impact of nutritional deficiencies on our health.

**Bioavailable CoQ10**
Effect of BioPerine® on serum CoQ10 levels during a 21 day supplementation trial (+150% in serum, 90mg CoQ10+5mg BioPerine®).

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**Dosage**

The recommended dosage is 5mg per serving dose.

**Acute, subacute and chronic toxicity studies of piperine in laboratory animals indicate that piperine used even in a broad range of doses does not cause abnormalities in the general growth pattern, body to organ weight ratio, clinical symptomatology, or blood chemistry.**

The dose of piperine considered to be bio enhancing for absorption of nutrients is calculated as 0.04 to 0.08 mg piperine/kg body weight. That dose is 4,000 times less than the LD50 dose (dose toxic to 50% animals tested) of piperine established in mice and rats. Incidentally, the dose of piperine which increased the bioavailability of the actives studied, was several times lower than the estimated amount of piperine consumed daily in the diet by an average individual in the USA (Majeed, M. et al.; 1999).

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**BioPerine®**
- is a standardized extract from the fruit of Piper nigrum L (black pepper)
- contains 95% of piperine
- may be co-administered with various nutrients for both human and animal health.
- is Nature’s Bioavailability Enhancing
- has been studied by Sabinsa and many external labs
- is provided with full safety data

Get more for your body from this supplement.

**How does BioPerine® work?**

The metabolic process that generates energy at the cellular level in the human body is called thermogenesis. Though thermogenesis has been identified as a key factor in maintaining weight loss, it has also been identified as playing an integral role in utilizing the daily food and nutrients that the human body consumes. It sets in motion the mechanisms that lead to digestion and subsequent gastrointestinal absorption. Piperine, in the patented form of BioPerine® enhances the body’s natural thermogenic activity—hence the term Thermonutrient®. This enhancement may be explained as a means of increasing the thermal energy sufficient to «power up» the mechanism related to thermogenesis. This in turn results in increased metabolic processes that creates a «demand» for «supply» of a broad range of nutrients that contribute to metabolism, i.e. vitamins, minerals, herbs, amino acids, etc. It is as if BioPerine® activates a metabolic paddle wheel, of sorts, that selectively provides a more efficient mode of nutrient transportation into the blood. Non specific possible mechanisms promoting rapid absorption of nutrients:
- Increases blood supply to the GI tract
- Increases emulsifying content of the gut
- Increases active nutrient transport

**Advantages of BioPerine®**
BioPerine® is the only product sourced out of piperine to obtain a patented status for its ability to increase the bioavailability of nutritional compounds. Secondly, it is the only source from piperine to have undergone clinical studies in the U.S. and in other countries to substantiate its safety and efficacy for nutritional use. It’s an objectivated product, with a lot of sciences behind, for your kind support.

**Bioavailability Enhancer**
Bioavailability is the quantity of a substance, either nutrient, drug, or toxicant, that effectively reaches the target cells where it modifies, for good or bad, their metabolism and consequently their fate (Basu, T.K). The nutritional materials which may be co-administered with BioPerine® are the following groups:
- **Herbal extracts**: (e.g. Curcuma, Boswellic acids, Ashwagandha, Ginkgo biloba and Capsaicin)
- **Water-soluble vitamins**: (e.g. Vitamin B1, Vitamin B2, Niacinamide, Vitamin B6, Vitam B12, Folic acid and Vitamin C)
- **Fat-soluble vitamins**: (e.g. Vitamin A, Vitamin D, Vitamin E, and Vitamin K)
- **Antioxidants**: (e.g. Vitamin A, Vitamin C, Vitamin E, alpha-carotene, beta-carotene, beta-cryptoxanthin, lycopene, lutein/zeaxanthin, pine bark bioflavonoids complex, germanium, selenium and zinc).
- **Amino acids**: (e.g. lysine, isoleucine, leucine, threonine, valine, tryptophan, phenylalanine, and methionine)
- **Minerals**: (e.g. calcium, iron, zinc, vanadium, selenium, chromium, iodine, potassium, manganese, copper and magnesium).

If one believes that since BioPerine® is sourced out of black pepper, all one need to do is increase the consumption of black pepper. Again you have gone wrong, for the direct intake of black pepper will not help achieve enhanced nutritional absorption.
FOCUS

Probiotic Lactobacillus

LactoSpore® is a lactic acid producing Bacillus preparation providing 15 billion of spores per gram. After ingestion (medium for awakening), the spores revive and produce acid L (+) Lactic, with the positive action on other micro-organisms. Lactospore is used in dietary supplements, in dairy products, bakery products, in tablets or vaginal ovules and in veterinary products.

Bacillus coagulans as a probiotic

Clinical studies have revealed that L. sporogenes spores can be successfully implanted in the intestine: it satisfies the essential requirements of an efficient probiotic. Preparations of L. sporogenes in pharmaceutical dosage forms such as tablets, capsules, dried granules or powder have the following characteristics:
- Contain a large number of viable lactobacilli that retain viability during preparation in pharmaceutical dosage forms and during storage before consumption. The spores are thermostable as against viable L. acidophilus cells which may not withstand spray drying.
- Survive in gastric secretions and bile of the upper digestive tract and reach the intestine safely.
- Settle in the digestive tract and produce enough lactic acid and other antagonistic substances to inhibit the growth of pathogenic bacteria.
- Being sporulated, they germinate under favorable conditions and produce sufficient viable cells which proliferate and perform vital healthful functions as described earlier. In addition, L. sporogenes spores are semi-resident and are slowly excreted out of the body (7 days after discontinuation of administration).

Clinical Studies

Different studies are available, and detailed on the website. We just mention few of them. Gastro-intestinal and associated effects: administration of L. sporogenes markedly improved the general clinical condition of the subjects and provided relief from intestinal disorders and allergic skin conditions. Studies performed on patients suffering of gastrointestinal disorders proved the efficacy on:
- Acute and chronic intestinal catarrh
- Diarrhea
- Constipation
- Abnormal intestinal fermentation
- Dyspepsia infantum
- Allergic skin diseases
- Etc...

Hypcholesterolemic effects: Total serum cholesterol, LDL-cholesterol and total cholesterol to HDL-cholesterol ratios (p < 0.001) was reduced significantly over a period of three months.

Non-specific vaginitis: Increase the vaginal acidity by the action of the lactic acid (produced by Lactobacillus)

Veterinary probiotic (weight gain, feces)

ElimReal is covered by a patent for slimming applications, and promotes renal elimination functions (excretory function of the kidneys) / urinary elimination / urinary volumes, so works on detoxification and slimming.

The double-blind clinical study against placebo on 95 women for 1 month demonstrates its effectiveness:
- Increase urinary frequency: the subjects go to the toilet more often, a perfect marker of efficiency for subjects
- 76,92% of the women who took ELIMREAL® under its tablet form observed an increase in their daily urination after 28 days.
- Increase of the volume of urinary excretion of the day, thus participating in decongesting and detoxifying the body
- 58,34% of the women who took ELIMREAL® under its tablet form observed an increase of their 24th urinary volume after 14 days

Recommended dosage

Stability

The daily recommended dose is 100 to 200 Million organisms per dose - 3 times daily, in tablets, capsules, chewable tablets, vaginal tablets or ovules, etc... Recommended dosage in feed and veterinary products are upon request.

Sabinsa has studied the heat stability at 90°C and 140°C (stability on viable count of Lactospore with high temperature) and the viable counts remain over 90% even after 150 sec at 90°C or 30 sec at 140°C. Virtually 100% of spores are revived, one reason for the choice of Bacillus coagulans (sporogenes), and specific drying method. Spores will not grow during their action, and disappear by natural ways after working, hence the need for regular intake.

The natural patented proprietary formulation of 6 plant extracts (seeds and flowers), clinically proved for water elimination and detoxification. Water soluble, it’s the new solution for uses in beverages, sticks, as well as - or course - tablets.

ElimReal® is an exclusive and patented combination of extracts from:
- Carvi’s seeds (Carum carvi)
- Meadowsweet Flower buds (Spirea ulmaria)
- Guarana’s seeds (Paullinia cupana)
- Goldenrod’s plant (Solidago virgaurea)
- Fennel’s fruits (Foeniculum vulgare)
- Dandelion’s leaves (Taraxacum dens leonis)

Easy to use probiotic providing 15 billion Lactobacillus sporogenes spores (also called coagulans), stable. Activities are multiple, interacting for the whole body, including digestion, cholesterol management and health of the intestinal tract.

Recommended dosage / proofs of efficacy:

Increase sodium excretion, analytical objective marker of efficiency

Significant Increase of Sodium excretion for both groups which receive Elimreal™ (10,69 % and 8,78 % in the groups 1 and 2 respectively) in opposition to a decrease of -15,97% in the placebo group based on plants extracts with an authorization of the components inmost members of the European Union.

Elimreal is supported by very strong allegations, especially linked to the contribution of fennel extract.

Recommended dosage / proofs of efficacy: a randomized clinical double blind versus placebo study demonstrated the efficacy of Elimreal at the dose of 805 mg/day)
ForsLean® is manufactured by a proprietary process and is a standardized extract from the roots of the Coleus forskohlii plant, the only known plant source of forskohlin. ForsLean® is a registered trademark of Sabinsa Corporation and is the only Coleus forskohlii preparation supported commonly by Patent.

Forskolin® is Sabinsa’s new proprietary composition extract of Coleus forskohlii root, standardized for Forskolin. Forskolin® has shown promising results in three areas; enhancing lean body mass, promoting fat loss and promoting weight loss. In September of 1998 Sabinsa was granted a use patent for this application of Forskolin in its Forslean® composition.

Intended Application
The importance of maintaining or regaining lean body mass has recently come to light for two important reasons. First is the increased recognition that lean body mass plays a vital role in any successful weight training regimen, and second, there is a growing awareness that lean body mass is proportionate to the overall health of an individual.

Lean body mass is composed of muscle, vital organs, bone and bone marrow, connective tissue and body water. The percentage of lean body mass to fat not only determines the body’s aesthetic appearance, but more importantly, it is also an index of physical fitness, health status, susceptibility to disease and premature mortality. Because the body’s metabolic rate is directly proportional to the amount of lean body mass, there is substantial interest in products that safely increase lean body mass because they are most likely to work. The use of Forslean® may help to increase lean body mass and optimize body composition with one of the side effects being fat loss and/or weight loss.

A sluggish metabolic rate is an undesired effect of many weight-loss regimens. It was observed in one study that formerly obese subjects had a 3-5% lower resting metabolic rate than control subjects. The occurrence of a low resting metabolic rate is likely to contribute to the high rate of weight regain in formerly obese persons.

Clearly, we need to change and broaden our thinking on the objectives of weight management regimens for both active and not-so-active individuals. In particular, it should be emphasized that healthy functioning of the body depends not so much on a lower fat content, but rather on obtaining a higher percentage of lean body mass.

Again, it should be kept in mind that it is not only fat, but also lean body mass that is, or can be, lost through dieting. This fact often escapes our attention when we reduce our total body weight. The loss of lean body mass offsets any benefits derived from the reduction of body weight, and can potentially increase one’s chances for diabetes, cardiovascular disease and possibly some forms of cancer due to poor metabolic activity.

Mechanism of Action
The mechanism of action on how Forslean® works is well defined: Forskohlin, the active compound in Forslean®, is recognized as an adenylyl cyclase activator. Adenylyl cyclase is the enzyme involved in the production of cyclic adenosine monophosphate (cAMP), a significant biochemical agent in metabolic processes. The role of cyclic AMP is indispensable to many body functions. It induces a chain reaction of biochemical events that trigger metabolic processes and diet induced thermogenesis hereby providing the means to maintain healthy body composition and lean body mass levels.

Double blind studies
Dozen studies are available. In one on 12 weeks, 25-45 y, 60 obese males and female volunteers, Forslean® treated volunteers shed on average 1.73 kg from their body weight, in comparison placebo group gained 0.25 kg. During the 12 – week period of treatment volunteers treated with placebo gained 0.68% of body fat. On the other hand, the Forslean® treated group lost 0.46% of body fat.

In the group of volunteers that received Forslean®, there was an increase in the LBM as compared to the placebo group where, there was a decrease in LBM. Forskolin showed a statistically significant increase in volunteers treated with Forslean®. Other serum lipid profiles remained statistically unaltered in the Forslean® and Placebo treated groups.

50 subjects, male and female, were randomized to receive 250 mg of Fors Lean® capsules twice a day for 12 weeks. A significant decrease in body weight and fat content and a significant increase in lean body mass were observed (Kamath, M.S. et al (2004)).

The mean percentage lean body mass increased by 1.78% in the Forslean® group, while the placebo group showed a mean decrease of 0.2% of LBM from baseline values.

The mean percentage body fat content in the Forslean® group was 34% as compared to 39% in placebo receiving group at the end of the 12-week trial.

Dosage Form
Forslean® has been clinically evaluated at one dose, 250 mgs twice daily. This provides 50 mgs of forskohlin, the primary active compound in Forslean®. Dosage has been in the form of a two piece, hard shell capsule.

Toxicity
Acute toxicity LD50 : 2g / kg
Chronic toxicity : none at 1g / kg on 6 months
Mutagenicity : non-mutagenic (AMES). Salmonella t., and E. Coli also controlled.
Safety : A number of clinical studies investigating the efficacy of Forskolin® for body composition management have been conducted, and parameters related to safety have been monitored.

No significant changes in average systolic and diastolic pressures (12 weeks, 60 volunteers). None even on thyroid hormones.

There is a significant positive change (p<0.05) in the concentration of HDL.
FOCUS

In-vivo Antiox / Orac > 1 200 000

Focus hints

FOCUS

FruitOx™ is a formulation based on polyphenols from different fruits and plants (Plum, Blueberry Leaves, Apple, Pomegranate, Grape Leaves, White Cherry), developed by POLINAT with the idea of a soluble product, fruits based, antioxidant, and offering a wide spectrum if anti-radical properties (hence the selection of only certain specific polyphenols from each source) and stimulation of cellular defenses.

The selected combination of fruit extracts and concentrates with a wide spectrum of natural flavonoids and polyphenols provides diverse antioxidant profile and broad biological activity. FruitOx has a proven capacity to stimulate the cellular antioxidant defenses.

This is a unique and powerful in vivo antioxidant. Oxidative stress has been currently linked with many ailments. Epidemiological studies have yielded compelling evidence that suggests dietary phytochemicals (such as those present in fruits and plants) may protect our health through modulation of oxidative stress.

Digezyme is easy to use: the activity starts when the enzymes meet the specific conditions (humidity, pH, substrate…) they need, with enough reaction time in presence.

This multi enzyme complex help in the digestion of components when poorly assimilated by our bodies in cases of unbalanced diets, fatigue, or impaired pancreatic function or in case of intolerance. Digezyme helps to improve overall health and nutritional status:

- **Protease**: Breaks down protein and supports immune function
- **Lactase**: Breaks down lactose (milk sugar) and useful for lactose intolerance
- **Cellulase**: Breaks down cellulose and chitin. It helps free nutrients in both fruits and vegetables
- **Lipase**: Breaks down lipids and improves fat utilization and also supports healthy gall bladder function

This group of enzymes breaks carbohydrates, proteins and fats and all three groups of enzymes are resistant to the action of gastric juices, while retaining their digestive activity. DigeZyme is referenced in The Complete Book of Enzyme Therapy by Anthony J. Chichoke (Ref. 1). DigeZyme was also clinically evaluated for enhanced absorption of minerals and vitamins.

Why Digezyme?

This multi enzyme complex help in the digestion of components who experience a chronic gastrointestinal discomfort (e.g., gas, constipation, diarrhea, cramps) and as a preventive in the middle age and elderly individuals.

Dose & Quality

The daily dose is 50mg per dose, three times daily, in tablets, capsules or even powdered diet mixes. Digezyme is easy to use: the activity starts when the enzymes meet the specific conditions (humidity, pH, substrate…) they need, with enough reaction time in presence.

Digezyme is a formulation of food enzymes (non-animal origin). It contains Lactase, what got an approval by Efsa (extra lactase may be needed for the claim, depending on the dosage of Digezyme).

BECARRE Natural - 28 - May 2016
What effective Boswellic Acid?

Boswellia extracts contain Boswellic acids. Grades of Boswellin are not titled as ‘total boswellic acid’ - which means nothing since all acids would be included. It’s important to see the real content of the actives : the β boswellic acids (by HPLC) and more specifically the more potent Acetyl-11-keto-β-boswellic acid (AKBA).

Dual Inhibitory Action

Boswellin® PS offers a unique release profile for Boswellia serrata extracts, providing manufacturers with a more water soluble version with enhanced joint health support potential. Boswellin® PS offers a unique release profile for Boswellia serrata extracts, providing manufacturers with a more water soluble version with enhanced joint health support potential.

Recommended dosage

Oral: 75 to 200mg of extract - 2-3 times a day
Topical: 3% to 5%

As it acts as a strong anti-inflammatory agent, BS extract may be used in stand alone or in combination with COX-2 inhibitors or nutritional enhancer (Bioperine®)
Coconut water is often described as a natural isotonic sports drink, providing higher amounts of electrolytes such as potassium and magnesium than conventional sports drinks. Coconut water solids also have a prebiotic role, and beneficially influence the balance of microflora in the gastrointestinal tract. When topically applied, coconut water solids nourish the skin and hair, supporting healthy cell growth.

Cococin®, The Nourishment Factor® captures the goodness of coconut water in a convenient, free flowing, and powder form. Recently affirmed GRAS for use in foods and clinically validated for its topical benefits, Cococin finds multifunctional applications in cosmetic, personal care and food and beverage compositions.

Produced under a patented lyophilization process, the amorphous nature of the solid produced by this process protects the protein components and environment sensitive actives during subsequent pulverization and storage. During storage, the material transforms to the more stable, less hygroscopic, crystalline state.

Cococin blends seamlessly with cosmetic compositions, and easily disperses in water, making it a compact and versatile nutrient pool for use in topical formulations, as well as in functional foods & beverages that nurture from the inside out.

Nutritionally versatile
It is important to differentiate between coconut milk and coconut water. The ratio of RNA-phosphorus to DNA-phosphorus is significantly lower in the liquid endosperm of mature coconuts as compared to that of green coconuts. RNA plays an important role in amino acid transport and respiratory metabolism in living cells. Coconut water used to make Cococin is obtained from green coconuts at the optimal stage of maturity to ensure a high content of RNA and growth factors, including shikimic acid, quinic acid and indole-3-acetic acid, along with essential vitamins, amino acids, and minerals. At the completion of growth, the solid endosperm and the last of the coconut water provide nourishment for the forming embryo and seedling. Thus, coconut water serves the role as a reservoir of nutrients to support tissue growth (Tulecke, et al.; 1961).

Coconut water has been used in the tropics as a nutritive and rehydrating agent to restore electrolyte balance in cases of diarrhea (Adams, et al.; 1992). A published research report mentions that coconut water can be used as a short term intravenous (IV) fluid (Campbell-Falck et al.; 2000). Other reported applications include use in total parenteral nutrition (TPN) (Petroianu, et al.; 2004), and sports beverages (FAO; 1998). It's not ideally found important applications in:

- Rejuvenative health drinks
- Sports drinks
- Kids nutritional support formulations

**Xanthigen® for healthy body weight**

Xanthigen is an innovative product which combines the properties of brown seaweed extracts rich in fucoxanthin and punicic acids (PA) from pomegranate seed oil (PSO). Xanthigen® is the result of extensive research led by PoliNat SL to develop a highly efficacious, yet safe nutraceutical product which represents a serious alternative in weight management. Xanthigen® supports healthy body fat reduction. And Xanthigen® helps the liver to shed stored fats, improving metabolic function and energy expenditure.

Different published clinical studies are available:

- Significantly increased total weight loss; body fat loss, and resting energy expenditure (Xanthigen® compared with placebo).
- Study subjects using 600mg (dosage: 3 x 200mg) of Xanthigen® daily lost an average of 6.6 kg over sixteen weeks in a peer-reviewed, published, double-blind, placebo-controlled clinical (Abidov M, et al., The effects of Xanthigen in the weight management... study on 151 women). Subjects taking the placebo only lost 1.4 kg on average despite a restricted calorie diet.
- Xanthigen® significantly increased the resting energy expenditure (REE), indicating improved metabolism
- Xanthigen® supplementation resulted in significant body composition improvements as measured by liver fat, body fat, and reduction of total body weight: a group of 72 volunteers with fatty liver disease had elevated liver serum enzymes (ALT, AST and GGT) and C-reactive protein (a marker of chronic inflammation), which Xanthigen® actually improved
- Fucoxanthin and Xanthigen® markedly increased SIRT1, protein levels in differentiated 3T3-L1 adipocytes
- Xanthigen® significantly reduced waist circumference compared to placebo, and improved overall health as measured by improved blood lipids, liver enzymes and cardiovascular health.

Healthy Weight, Healthy Liver, Healthy Body!
A new class of weight management supplement that supports body fat reduction, weight loss and promotes liver health. Xanthigen is subject to existing local exclusivities with customers.
Sabinsa manufactures and markets phytonutrients and standardized herbal extracts, specialty & fine chemicals, and organic intermediates used in the nutritional, cosmetics, pharmaceutical, intermediary chemicals and food industries.

Founded in 1988 by Dr. Muhammed Majeed, Ph.D., Sabinsa is a company dedicated to the principles of tradition, innovation and research. Sabinsa’s efforts have begun to earn the company vast recognition, in addition to growing sales. Sabinsa confirms everyday its position of leader on botanical extract, and at the origin of so many objectivized products (Bioperine from Black Pepper, Garcinia Cambodgia, Coleus Forslean, etc...). Sabinsa is a group which includes all the needed activities to provide high quality botanical extracts - and not only ayurvedic plants. Sabinsa has a research and development facility in India and near Princeton, NJ and six manufacturing facilities in and around Bangalore, India, and in Utah. Today, Sabinsa manufactures over 100 such plant-derived products, besides some synthetic and hemisynthetic products for perfumery. Sabinsa also provides custom manufacturing from lab scale to pilot / semi-commercial scale, and process development.

PoliNat (Polifenoles Naturales) is the Spanish company dedicated to the identification, development and production of high quality active ingredients derived from plants, for use in the health-food and cosmetics industries. PoliNat (www.polinat.com) is located at Las Palmas, Canary Island, and focuses its efforts on the development and industrial production of high quality standardized products derived from plants, which are key ingredients in health food products. The company produces standardized extracts and novel ingredients and products, contributing to the prevention of diseases and improvement of quality of life through nutrition.

Manufacturing high quality extract starts with the selection of qualified raw material suppliers. Rhodiola roots - for instance - are strictly harvested from the Altai region of Siberia as a result of several years of a collaborative efforts. Purity and sustainability are the two main selection criteria. PoliNat stands for environmental preservation, sustainability and corporate responsibility.

Production activities and facilities are ISO, HACCP & GMP certified. Organic in progress.

Laboratoires ISOCELL is at the cutting edge of scientific research in the field of aging, and oxidative stress in particular. That’s how they developed GliSODin®, an oral grade of improved SOD. Based in Paris, Found in 2001, ISOCELL has an international dimension, being present in over 30 countries. ISOCELL also hold several International patents (Europe, US, Japan) in these areas of research and development. Innovative products have been developed to strengthen the antioxidant and immune systems and protect the body at the cellular level against external stresses and aging. The products of the GliSODin® line are manufactured in accordance with Good Manufacturing Practices (GMP).

Inoreal® is a firm created in 2006 which help nutrition and health manufacturer to be at the cutting edge of innovation by providing new ingredients, which demonstrated their efficacy. Supported by a meticulous sourcing, exclusive extraction process, clinical studies of safety and efficacy, Inoreal®’s products are formulated to allow innovation by having the agreement of international administrations, and are allowed for selling all across the world.

Synadiet is the Food Supplement Association and supports the interests of the French food supplements industry at all levels of the legislative and regulatory process. SYNADIET is a member of relevant organizations : EHPM (European Federation), IADSA (International Federation) and EBF (European Botanical Forum). SYNADIET represents more than 250 members which most of them export worldwide.
The plant decree was published on July 17, 2014 in the official journal, laying down the list of plants, other than mushrooms, authorized in food supplements and their conditions of use. Its implementation is January 2015, 1st. The list of fungi, and probably essential oils, will be the subject of further publication.

This decree includes 14 articles, describing the terms used and the applications, and 3 annexes.

This text is intended for all players acting in the production, processing and distribution of food supplements. It refers to the other decrees of this sector, such as the European Directive 2002/46 / EC and its amendments, including national decrees (2006/352, 1170/2009). It gives the list of plants authorized on the market and / or mutual recognition by Article 16.

Annex I
Annex I lists the 540 authorized plants (at the date of June 2014), with:
- Their scientific name and family : synonyms exist in several cases. If necessary, you can also visit the website www.theplantlist.org
- Their vernacular name
- The part(s) used
- The substances to be monitored: it is not necessarily substances to be absent or undetectable, but substances that the decree specifically request to be checked.
- The restrictions of use: mainly specific labeling warnings (child, pregnant women), sometimes about the process.

Annex II
Annex II contains information that may be provided by operators in the sector in order to understand the preparation. As such, a model was proposed by Synadiet and Food Supplements Europe. This model is split into several parts. There is no obligation to complete each field, as indeed it’s just a model-form:

- Plant (ie. Raw Material)
  - Plant Description: Scientific name, vernacular name, family, existing monograph, risk of falsification (by another similar plant for example)
  - Culture method: geographical origin, method of cultivation, specific agreements, licensing, 338/97 and collection (collected plant parts, mechanical or manual cleaning, drying)
  - Parts of the plant used and its identification (controls, markers, purity)
  - Production process (starting from the plant)
  - Geographical location of the process (unit), manufacturer, preparation before process (grinding, separation, ...)
  - Description of the extraction process from the raw material (ex. if it is extracted from an oleoresin, it is necessary to mention the process from the plant): solvent (concentration and quality) for extraction, purification, and any other step (elimination of compounds or hazardous compounds).
  - Other information related to the process, definition of a batch, size
- Plant preparation (ex. Plant extract for BECARRE Natural)
  - Name, PER (Plant Extract Ratio): final ratio after extraction and before any other addition and the initial amount of extracted plant - dry /dry if it is a dry extract), DER (Drug Extract Ratio: ratio between the final ratio of the preparation and the initial amount, so after addition any additives or carrier ...). A product without carrier shows a PER = DER. Sometimes indicated, the NER is the native ratio
  - Full composition (in %, with the nature and purpose of each component, purity criteria additives - 231/2012)
  - Standardization (markers, actives) with a detailed method of analysis (validated / internal validation) and the standard used as a reference
  - Substances to be monitored: with reference to Annex I or any other molecule needing to be monitored
  - Impurities (eg 2009/32), contaminants, bacteriological controls, other controls, see ... 1881/2006, 629/2008, 1259/2011, etc
  - Statements, other data: nutritional data, GMO (1829 and 1830/2003) Irradiation (1999/2, 1883/2003), allergens (2007/68, 2000/13), ... ...
  - Stability data with the reference (ICH ?), does it need homogenization, ...

In addition, BECARRE Natural completed the form of a preparation to additional food safety information when available, although Annex III is not needed.

  - Exposure Level: consumption of the plant, of the extract
  - Risk analysis: toxicity studies, genotoxicity, mutagenicity, safety, NOAEL
  - Traditional use
  - Possible evolution of the process

Annex III
This third part relates to the safety of the plant preparation, and it must be completed when there is a doubt, or when the plant preparation does not have enough history to justify its safety. Regarding the safety for the consumer, it is provided by the manufacturer of the food supplements, with the support - in our view - of each manufacturer involved. Annex III may correspond to a ‘simple’ analysis of the literature of available toxicological data and / or made by the producer, as an extensive risk analysis in the case of conflicting studies, or molecules interaction, or whenever the specific analysis needs.

Which products are concerned by Annex III?
All products are concerned since the risk analysis must be done on all extracts but not all require a Annex III.

It is important to understand that Annex III is applicable when the plant preparation cannot refer to an existing and traditional use enough to guarantee the safety of a plant preparation (or food supplements), as it exists and has existed on the market. Thus, a plant extract may be traditionally produced in a PER of 15:1 and by using a high solvent (eg, pure ethanol). It is this extract which is known, and can prove its safety - and so would not need an Annex III. Speaking of food safety, we can refer only to what is clearly known.

Collect of information
The traditional use can be justified by various ways, including probably monographs, references in pharmacopoeia (with specific description of the extract and not only of the plant), references to EMA, relation to the WEU (Well Established Use), or from pharmaceutical agency, etc ... describing the extract (plant part, solvents and concentration processes, ratio), and with the Annex II to confirm that the plant extract that is offered is conform to traditional extract.

From Risk analysis to Annex III
3 possible cases
The preparation is described in the literature to demonstrate the history of use and safety. It is sufficient to indicate.

The preparation is not described in the literature but the argument shows that the extract is equivalent to one described preparation. It should provide the rationale for comparing the described preparation and its extract.

The preparation is not described in the literature and no equivalent that can be demonstrated: it is necessary to bring the safety analyzes - including toxicology - in relation to the identified hazards to be indicated in Annex III.

You’ll find here below a reading of the publication - especially annexes II et III
L'arrêté plantes a été publié le 17 juillet 2014 : « Arrêté du 24 juin 2014 établissant la liste des plantes, autres que les champignons, autorisées dans les compléments alimentaires et les conditions de leur emploi ». Nous reprenons ici une lecture du texte - notamment des annexes II et III.

Quels produits sont concernés par l'Annexe III ?

L'annexe III est applicable dès lors que la préparation de plante n’a pas un usage existant et traditionnel suf-fisant pour justifier de la sécurité d’une préparation de plantes, tel qu'elle existe et existait. La traditionnalité porte donc sur l'extrait tel qu'il est connu ou défini – et il convient de démontrer que la préparation de plante est bien conforme à la préparation traditionnelle. Le texte de l'annexe III démontre qu'il est faux de penser qu’un extrait à l’eau ou à l’éthanol faible, ou avec un faible PER (alors que l’extrait dit traditionnel serait obtenu par une autre voie), permettrait de s’affranchir d’une Annexe III—l'inverse étant tout aussi vrai.

Quelque soient les cas, l’analyse de risque doit être effectuée.

Il est impossible de fournir une règle stricte applicable à tous extraits de plantes existant, mais une bonne expli-ration de votre position bien étayée de données (techni-ques, chimiques, réglementaires) et en accord avec le texte publié ne peut que tomber dans une oreille récep-tive. Synadiet a travaillé à un guide ainsi qu’à une aide à la décision.

Collecte des informations

L’usage traditionnel peut être justifié par différents moyens, dont les monographies, les rapports de ventes en quantités suffisamment significatives depuis - peut-être - plus d’une génération; le référencement dans des pharmacopées nationales (avec description spécifi-cque de l’extrait et pas seulement de la plante), des réfé-rences ÉMA, en rapport au WEU (Well established Use), voire des journaux de l’agence (cahiers n°3), etc... décri-vant l’extrait (partie de plantes, solvants et leurs concen-tration, process, ratio). L’annexe II permettra de confirmer que l’extrait de plante qui vous est proposé est bien conforme à l’extrait traditionnel.

De l’analyse de risque à l’Annexe III : 3 cas

La préparation est décrite dans la littérature, permet-ant de démontrer le recul d’utilisation et sa sécurité. Il suffit alors de l’indiquer.

La préparation n’est pas décrite dans la littérature mais l’argumentaire démontre que l’extrait proposé est équivalent à une préparation décrite. Il convient d’apporter l’argumentaire permettant la comparaison à la préparation décrite.

La préparation n’est pas décrite dans la littérature et aucune équivalence ne peut être démontrée : il convient d’apporter les analyses de sécurité - notam-ment toxicologiques - en rapport avec les dangers iden-tifiés, à indiquer dans l’annexe III.

Notre Lecture de l’Arrêté Plante


Leur nom vernaculaire

Les parties utilisées
Les substances à surveiller : il ne s’agit pas nécessairement de substances qui doivent être absentes ou non détectables, mais des substances que l’arrêté demande de vérifier spécifiquement.

Les restrictions d’utilisation : essentiellement des étiquetages spécifiques de mise en garde (enfant, femmes enceintes), parfois des process.

Annexe II

L’Annexe II présente les informations suscepti-bles d’être communiquées par les opéra-toires du secteur afin de bien comprendre la préparation. A ce titre, une modèle a été pro-posé par Synadiet et Food Supplements Eu-rope, un modèle est désigné dans plusieurs parties. Il n’y a pas obligations de compléter chaque champ, s’agissant bien d’un modèle :

Plante (ie. Matière première)

Description de la plante : Nom scientifique, vernaculaire, famille, monographie existante, risque de falsification (par une autre plante similaire par exemple)

Méthode de culture (origine géographique, mode de culture, accords censées, règlement 338/97)

Collecte (parties de la plante collectée, mécanique ou manuelle, nettoyage, séchage)

Partie de la plante utilisée et son identifica-tion (contrôles, marqueurs, pureté)

Procédé de production (partant de la plante)

Localisation géographique du process (unité, producteur, préparation avant process (broyage, séparation...))

Description du procédé d’extraction : après la matière première (ex. s’il s’agit d’une extraction depuis une oléorésine, il convient de mentionner le process avant) : solvants (concentration, qualité) pour l’extraction, purification, ainsi que toute autre étape (éli-mination de composés ou de risques).

Autres informations liées au process, lots

La « Préparation de plante »

Dénomination, PER (Plant Extract Ratio : rapport entre le ratio final après extraction et avant tout autre ajout, et la quantité initiale de plante extraite, en rapport sec/sec s’il s’agit d’un extrait sec), DER (Drug Extract Ratio : rapport entre le ratio final de la préparation et la quantité initiale, donc après ajout des supports, …). Un produit sans support à un PER=DER. Parfois indiqué, le NER correspond au ratio natif.

Composition intégrale (en %, avec la nature et l’objet de chaque constituant, critère de pureté des additifs - 231/2012)

Standardisation (marqueurs, actifs) avec pour chacun la méthode d’analyse détaillé-lée (validée ou non) et le standard utili-sé comme référence

Substances à surveiller : en référence à l’annexe I ou toute autre molécule susceptible d’être surveillée


Stabilité avec indication du référentiel (ICH), besoin ou non d’humogénisation,...

En outre, BECARE Natural a complété le formulaire d’une préparation aux informations de sécurité alimentaire, même si une annexe III détaillée n’est pas exigible.

- Niveau d’exposition : plante et extrait
- Analyse de risque : toxicités, génotoxi-cité, mutagénicité, innocuité, NOAEL
- Usage traditionnel trouvé
- Evolution possible du process

Annexe III

Quelque-sonsoit les cas de figure, l’intérêt est de garantir la sécurité aux consommateurs. L’Annexe III peut tout aussi bien correspondre à une ‘simple’ analyse bibliographiques des données toxicologiques connues et/ou ef-féctuées par le producteur, qu’à une analyse poussées des risques

Il est impossible de fournir une règle stricte applicable à tous les cas des très nombreux extraits de plantes existant, mais une bonne explication de votre position bien étayée de données (techniques, chimiques, réglementaires) et en accord avec le texte publié ne peut que tomber dans une oreille réceptive. Synadiet a travaillé à un guide ainsi qu’à une aide à la décision.
vent, environmental components, legal uses, registration or notification (reach, organic grades, ...), labeling, claims, certification (GMP, ISO), etc...

**FOCUS**

The filter press uses increased pressure to maximize the rate of filtration. However, certain steps may require a long time of process.

**WHAT IS AN EXTRACT?**

A plant extract is a substance or an active with desirable properties that is removed from the tissue of a plant, usually by treating it with a solvent, to be used for a particular purpose. Extracts may be used in various sectors of activities: Food and functional properties for foodstuffs (antioxidant, texture, etc.), medical applications, life sustaining aids, additives – chemical replacements, pharmaceutical for therapeutic properties – preventive and/or curative – cosmetic for functional properties for beauty and well-being, etc...

Some sectors of activities clearly define an extract. For cosmetic uses, for instance, a “cosmetic product” shall mean any substance or preparation intended to be placed in contact with the various external parts of the human body (epidermis, hair system, nails and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance and/or correcting body odors and/or protecting them or keeping them in good conditions.

An extract may be common to different sectors based on its chemical description, although different sectors mean different technologies (different forms, solubility, stability), different regulation, different claim, different problematic. As representing manufacturers, we feel very concerned by the request of the end-users and may adapt its proposal.

An extract must also respect:

- The quality constraints in terms of irradiation, allergens, toxicity, aduleration, activity, stability, sustainable resources, traceability, etc...
- The chemical and physical request in terms of description (TLC, physical recognition, genotype) as well as heavy metals, nitrates, solvents, residues such as pesticides or residual solvents, additives, foreign bodies, etc...
- The regulation in terms of assay, solvents, environmental components, legal uses, registration or notification (reach, organic grades, ...), labeling, claims, certification (GMP, ISO, etc...)

**Raw Material**

It’s important to understand that an extract starts from the raw material: the plants. The Identification of a good source includes the description of areas and type of collect, the capacity of collect, the use and not-used area and the impact of our needs for extraction to guarantee a sustainable source. It’s so important to analyze the supply chain starting from the collect, including the exporters and the different middle men, which may cause variability on the quality besides the natural variability linked to the weather and the soils. Finally, an overview of the needs of the local citizens and the risk (government, war, weather, ...) allows to find the right partners for the long-term, and minimize the impact on the nature while checking the return to the people.

**Preparation**

All equipment may not use the same materials, and the quality of the extractions may vary depending on the preparation of the raw materials. This goes from the cleaning to avoid foreign bodies to the cut or grinding. Dried herbals are more common, with the risk to put out some gaseous components and the benefit that the plant does not start to hydrolyze or produce non needed metabolites. Preparation may also consist in thawing (fruits may be frozen for instance), cooking (to produce aromas for instance), decoating, destemming, or even enzymatic reaction before the extraction.

**Solvents**

A solvent must comply with the local regulation, be effective and be selective enough (when needed). Most common are Water, Ethanol, Ethyl acetate, CO2, Methanol, Aceton, Acetic acid, Hexane, ... the choice of the solvent will impact on the yield of extraction (acquaintance with the targeted actives) in the full respect of the request from customers and environmental components (depletion of the ozone layer, solvent in atmosphere, groundwater pollution, air pollution).

On a chemical point of view, the best solvent may be chosen after looking at the dipolar moment: an electric dipole is a separation of positive and negative charges, characterized by their dipolar moment, a vector quantity (Coulomb. meter or Debye), subject to continuous electrostatic attraction and repulsion. Each solvent may be classified based on its dipolar moment (cf. ‘Vern De Waals Forces’).

- Apolar and low polar solvent, mainly lipophilic characteristic, with a moment from 0 to 1.5 (Hexane, cyclohexane, dimethoxyethane, Chloroform, Ethylc ether, phenol)
- Polar aprotic solvent, mainly hydrophilic characteristic
- Protilic solvent (a protic solvent is a solvent that has a hydrogen atom bound to an oxygen as in a hydroxyl group or a nitrogen as in an amine group). Polar protic solvents are solvents that share ion dissolving power with aprotic solvents but have an acidic hydrogen. These solvents generally have high dielectric constants and high polarity.

Moment of most common solvents: Hexane (0), Ethanol (1.69), Methanol (1.70), Ethyl acetate (1.78), water (1.85), aceton (2.88). Depending on their miscibility, solvents may be used together (combined solvents, or separation from one solvent to another solvent).

**Extraction process**

The process must generally be simple, fast, economic, in compliance with the local regulation, effective and selective when needed. However, certain steps may require a long time of process.

**Pressing**: One of the more usual extraction (the morning orange juice), pressing may be used complementary or prior to other process, for instance to prepare the materials, defat it, etc... It causes mechanical perturbation and gives a liquid product.

**Distillation and hydro-distillation**: By direct heating or steam, this process is mainly used for oils and volatile components. It may cause degradation (oxidation, hydrolysis, enzymatic reaction, ...)

**Solid / Liquid extraction**: It consist in the extraction or separation of one active or more from solid materials working on the solubility in a liquid to obtain the soluble part or the insoluble part, or fractionation of an homogenous solution. The typical Solid / Liquid extractions are:

- Maceration: solid in solvent, room temperature
- Digestion: solid in solvent, over room temperature, below ebullition
- Decoction (reflux): solid in solvent, temperature of ebullition
- Infusion (teas): solid in liquid at temperature of ebullition, then cooling of the suspension
- Elution, leaching (Lixiviation): solvent goes through the solid

The regulation in terms of assay, solvents, environmental components, legal uses, registration or notification (reach, organic grades, ...), labeling, claims, certification (GMP, ISO, etc...), Processing aids, additives – chemical replacers, pharmaceutical for therapeutic properties – preventive and/or curative – cosmetic for functional properties for beauty and well-being, etc...

Some sectors of activities clearly define an extract. For cosmetic uses, for instance, a “cosmetic product” shall mean any substance or preparation intended to be placed in contact with the various external parts of the human body (epidermis, hair system, nails and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance and/or correcting body odors and/or protecting them or keeping them in good conditions.

**Concentration**

This step consists in the increase of the dry matter content to facilitate the further steps, using for instance evaporation.

**Separation / Purification**

Different type of separation, based on size, weight, charge, hydrophilic / lipophilic capacity (separation liquid / liquid), solubility, volatility (liquid / steam), etc...

**Filter press**: the filter press uses increased pressure to maximize the rate of filtration and produce a final filter cake with a low water content.

**Membranes, Ultra filtration, Nano filtration**: membrane filtration or cross-flow filtration technology which ranges between ultrafiltration (UF) and nanofiltration (NF). The fundamental principle of Nanofiltration membrane technology is the use of pressure to separate soluble insolubles ions through a semi permeable membrane.

**Liquid / Liquid**: Liquid-Liquid Extraction (LLE) is a method used in the recovery of a key component from a multi-component stream using an immiscible solvent. The two steams are contacted and separated. The solvent absorbs the key component stripping it from the original stream.

**Crystallization**

Crystallization is the (natural or artificial) process of formation of solid crystals precipitating from a solution. Crystallization is also a chemical solid-liquid separation technique, in which mass transfer of a solute from the liquid solution to a pure solid crystalline phase occurs. The crystallization process consists of two major events, nucleation (the solute molecules dispersed in the solvent start to gather into clusters, on the nanometer scale) and crystal growth (subsequent growth of the nuclei that succeed in achieving the critical cluster size). Nucleation and growth continue to occur simultaneously while the supersaturation exists.

- **Single-solvent recrystallization**: «compound A» and «impurity B» are dissolved in the smallest amount of hot solvent to fully dissolve the mixture, thus making a saturated solution. The solution is then allowed to cool => different solubility of compounds in solution drops => compound dropping (recrystallization) from solution. The
slower the rate of cooling, the bigger the crystals formed. The solid crystals are collected by filtration.

- **Multi-solvent recrystallization**: similar to the single-solvent but where two (or more) solvents are used. The proportion of first and second solvents is critical. Possible removal by distillation or by an applied vacuum.
- **Hot filtration-recrystallization**: separate «compound A» from both «impurity B» and some «insoluble matter C».
- **Seeding**: this can be spontaneous or can be done by adding a small amount of the pure compound (a seed crystal)

### Chromatography

Chromatography is used for separation of mixtures. A mixture dissolved in a ‘mobile phase’ passes through a stationary phase, which separates the analyte. The ultimate goal of chromatography is to separate different components. The stationary phase or adsorbent in column chromatography is a solid. The most common stationary phase for column chromatography is silica gel, followed by alumina. Also possible are ion exchange chromatography, reversed-phase chromatography (RP), affinity chromatography or expanded bed adsorption (EBA). The mobile phase or eluent is either a pure solvent or a mixture of different solvents. It is chosen so that the retention factor. The Van Deemter equation in chromatography relates the variance per unit length of a separation column to the linear mobile phase velocity by considering physical, kinetic, and thermodynamic properties of a separation.

- **Column chromatography**: the stationary bed is within a tube. The particles of the solid stationary phase or the support coated with a liquid stationary phase may fill the whole inside volume of the tube (packed column) or be concentrated on or along the inside tube wall leaving an open unrestricted path for the mobile phase in the middle part of the tube (open tubular column). Differences in rates of movement through the medium are calculated to different retention times of the sample.
- **Flash column chromatography**: the solvent is driven through the column by applying positive pressure. This allowed most separations to be performed in less than 20 minutes, with improved separations.
- **Thin layer chromatography (TLC)** is similar to paper chromatography. However, instead of using a stationary phase of paper, it involves a stationary phase of a thin layer of adsorbent like silica gel, alumina, or cellulose on a flat, inert substrate. Compared to paper, it has the advantage of faster runs, better separations, and the choice between different adsorbents.
- **Ion exchange chromatography** uses ion exchange mechanism to separate analytes. It uses a charged stationary phase to separate charged compounds, including amino acids, peptides, and proteins. In conventional methods the stationary phase is an ion exchange resin that carries charged functional groups which interact with oppositely charged groups of the compound to be retained. Ion exchange chromatography is commonly used to purify proteins using FPLC (fast protein liquid chromatography).
- **Chiral chromatography** involves the separation of stereoisomers.

### HPLC

(High Pressure Liquid Chromatography) and LPLC (low pressure). Preparative high performance liquid chromatography is similar to analytical HPLC but features increased injected mass with possibility to “stack” injections automatically. There’s technically no product limitation, but usually expensive.

### Semisynthesis

Hemisynthesis or Semisynthesis or partial chemical synthesis is a type of chemical synthesis that uses compounds isolated from natural sources (e.g., plant material) as starting materials. These natural biomolecules are usually large and complex molecules. This is opposed to a total synthesis where large molecules are synthesized from a stepwise combination of small and cheap (petrochemical) building blocks.

It is also possible that the semisynthetic derivative outperforms the original biomolecule itself with respect to potency, stability or safety. Drugs derived from natural sources are usually produced by harvesting the natural source or through semisynthetic methods.

### Drying

Drying means putting out the liquid. Dryers may be atmospheric (spray dryer, fluid bed dryer, etc.), or vacuum (belt dryer, tray dryer, etc.).

### Spray Dryer

By definition, spray drying is the transformation of feed from a fluid state into a dried form by spraying the feed into a hot drying medium. The process is a one step continuous operation. The feed can be either a solution, suspension or a paste. The spray dried product conforms to powder consisting of single particles or agglomerates, depending upon the physical and chemical properties of the feed and the dryer design and operation.

### Vacuum dryer

At constant volume, when the pressure decreases, the boiling temperature decreases. Evaporation at a lower temperature makes possible to get a preserved product. In addition the high rate of heat efficiency is said to result in the best drying performance in the world. The drying process is greatly accelerated due to the fact that the loaded material makes contact with the heating panel in the form of a thin layer. Vacuum drying does not cause the emission of any exhaust gases or hazardous smells.

### Lyophilization or cryodesiccation

A lyophilizer needs to cool (for freezing and trapping water), create a vacuum (to sublimate water), generate heat and transfer heat energy to the product.

Others: Rotary Drum Dryer: Wet material is introduced from one end of the dryer, and then stirred evenly by the ear of the inner barrel - Plate Dryer: kind of high-efficiency conductive and continuous drying.

### Adulteration & Falsification: get the extract you asked for

Adulteration means falsification of an extract in terms of origin, assay, extraction, actives or analysis, mostly in order to improve the price.

- **Method of analysis**:
  - UV versus HPLC: except for very few actives / markers, UV methods always give much higher response than HPLC (when the standard exists of course) without being able to find a correlation. This may be versus HPLC, or can be many others, especially when using internal method.
  - Wave lengths: a different wave length or the use of a different Specific Absorption Coefficient
  - Standard: the use of a different standard for a better response by HPLC.
  - Family of the actives: refer to the global family of the actives instead of the active alone.
  - Reduction of the number of markers: what allows to use addition of chemical origin. The more there are markers in the description, the most difficult it is to falsify them.
  - Plant Extract Ratio: difficult to be sure to get a 4:1 extract when there’s no marko to control.

**Solvents**: use of another solvent than the one mentioned for a more selective and efficient extraction.

**Geographical Origin**: plants may offer a different profile depending on the geographical origin, that you may need specifically. It can be also collected from a non-authorized zone.

Those are the most common noted origins of adulterations.

**Drug**: drying or cooling paste-like, granular, powdery and pulpos material - etc...

### Before Packing

Further steps before packing consist in Milling, compacting (to increase the bulk density for instance), grinding (to tune the size reduction in a safe way, especially with fragile particle or components) and then homogenization and standardization: those steps guarantee a optimized repartition and the correct and needed content of actives as mentioned in our CoA (certificate of analysis).
Boswellin® AKBBA in the management of psoriasis

The cream with Boswellin from Sabinosa, *Boswellia serrata* Roxb extract standardized for 5% of 95% 3O Acetyl-11 Keto Beta Boswellic Acid (AKBBA) was studied in an open label, multi centered phase III clinical trial, evaluating 200 psoriatic patients with application of AKBBA cream three times daily for a period of 12 weeks. The researchers observed significant changes in LTB4 (p<0.001) & TNF alpha (p<0.01) values from the baseline along with significant changes (p<0.05) in VEGF & PGE2. The evidence shows superior anti-inflammatory responses rates, demonstrating that this non-toxic treatment is beneficial for those suffering from this condition.

3 actives against Acne with Sebum Control

Extracted from *Vitex agnuscastus* berries, Vitex oil has a standardized level of artemetin. It features a high antimicrobial activity by inhibiting the growth of *P. acnes* (from 0.4%), *E. coli* (from 0.1%) and *S. aureus* (from 0.5%).

Oil obtained from the fresh roots of *Coleus forskohlii*, Coleus oil is titrated to 15% in bornyl acetate and 15% in decanal. It is also effective on the growth of skin pathogens such as *P. acnes*, *S. aureus*, *S. epidermidis* and *C. albicans*.

Finally, standardized to 55-60% in octacosanol, Policosanol is a blend of fatty alcohols derived from a sugar cane wax extract. It has anti-microbial and sebum controlling properties, useful in the treatment of skin inflammations, in particular acne.

Fresh and Long moisturizer

This tender coconut extract, produced by a unique lyophilisation process, targets cell growth (in the hair follicle), as well as inhibiting 5-α reductase. It is recommended for use in regenerative skincare products and preparations, thanks to its cytokine and mineral concentrations, and is available in the form of a powder or a solution. In a lotion, it’s a very pleasant easy-to-use moisturizer giving a feeling of freshness and hydration, for a long time.

Glabridin 98%

Glabridine is renowned for its ability to inhibit tyrosinase and its anti-inflammatory properties, achieved through the inhibition of cyclooxygenase in the arachidonic acid cascade.
Becarre Natural represents, distributes and develops natural actives supported by sciences for nutrition, cosmeceutical and pharmaceutical purposes from manufacturers selected for their seriousness, quality and competencies.

Becarre Natural acts as the centralized European sales and marketing organization for selected manufacturers of plants extracts, either as your local contact or through appointed distributors who are then in direct contact with the manufacturers but followed up by Becarre Natural.

Because industrials are more looking for reliability and know-how than an immeasurable list of products, Becarre Natural focuses on a specific origin of activities: standardized actives extracted from the nature under very strict process of production, with proven efficacy and sustainable resources. As per today, Becarre Natural represents by agreement different manufacturers, including Sabinsa Corp., PoliNat, Isocell, Inoreal, Herbamed … besides few others specific extracts from reputed sources.

As the right note at the right time makes the music, the right product in the right formulation makes your success. ‘Becarre’ - that you may pronounce ‘be care’ - is the French word for the musical mark which cancels the alterations such sharp sign or flat signs. The English translation is ‘the natural sign’.

**Natural anti-fungal remedy for Skin, Hair (anti-dandruff) & Nails**

TetraPure® shows great anti-mycosis and anti-dandruff activities. It completely inhibits the growth of dermatophytes Trichophyton rubrum, Microsporum gypseum and Epidermophyton floccosum. It enhances the activity against Malassezia furfur at all tested concentration. It reduces the colony counts of Candida albicans to less than 100cfu / ml. As other actives of the family of THC, TetraPure shows tyrosinase inhibition as well as great inhibition of Melamin.
**KEY PRODUCTS**

**Tetrapure®**
Natural anti-fungal remedy for Skin, Hair (anti-dandruff) & Nails

*Source:* Vanillin and Acetylacetone

*Inci:* Tetrahydrofurfuryl methyl ether

*Dose:* 0.1-0.5% w/w (Skin Lightening), 0.15% w/w (Anti-fungal)

**Bio-active ingredients:** Tetrahydrocucurmin Research reveals that Tetrahydrocucurmin (THC) is one of the major metabolites of Curcumin. THC is reported to exhibit many of the same physiological and pharmacological actions as Curcumin, in some systems, better. It can be used safely (tests available) in shampoo, cream, lotion, spray or powder form.

**Anti-Fungal activity:** TetraPure® shows anti-mycosis and anti-dandruff activities.
- It completely inhibits the growth of dermatophytes Trichophyton rubrum, Microsporum gypseum and Epidermophyton floccosum.
- It enhances the activity against Malassizsaita furfur - all tested concentration
- It reduces the colony counts of Candias albicans to less than 100cfu / ml. so... it's also an anti-dandruff

**Tetrahydrocucurmin adapts a two pronged approach to the free radical onslaught** (ORAC > 10 000 / g)
- Prevention of free radical formation.
- Intervention whereby already preformed radicals are quenched by THC.

**Skin Lightening:** as other actives of the family of THC, Tetrapure shows a tyrosinase inhibition of 1.8 IC50, µg/ml - so much better than Kojic acid (7) or Vitamin C (9,33), as well as great inhibition of Melanin (better than Vit. C - 25 - or Kojic acid - Arbutin - 100).

**Boswellin**
Under eye, Puffness, Night repair, Age-defying, Anti-ageing

*Source:* Boswellia serrata gum

*Inci:* Boswellia Serrata Resin Extract

*Dose:* 0.5-2%

**Bio-active ingredients:** AKBBA, J boswellic acids, >75% Boswellic acid

**Anti-inflammatory:** Boswellin is a natural extract from the gum resin. Boswellin contains boswellic acids that inhibit two pro-inflammatory enzymes 5-lipoxygenase and elastase, thereby supporting skin texture and integrity. Inhibiting inflammation is known to be an effective approach to slow skin aging. Trials on 22 women, for 4 weeks

There was a reduction of dark circles on application of the cream vs. application of placebo. A double blind placebo controlled clinical study was conducted on 21 healthy female subjects in the age group of 20-35 years. The subjects were provided with “Under Eye cream” containing 1% of Boswellin (and other natural ingredients) and a placebo, to be applied under each eye twice a day for a period of 4 weeks. The appearance of dark circles and puffiness was assessed by a dermatologist at predetermined time intervals.

A new clinical study of AKBBA in the management of psoriasis has been published in Clinical Dermatology 2014: open label, multi centered phase III clinical trial, evaluating 200 psoriatic patients with application of AKBBA cream three times daily for a period of 12 weeks.

**Glabridine 98%**
Skin whitening, Anti-inflammatory

*Source:* Glycyrrhiza Glabra

*Inci:* Glycyrrhiza Glabra (Licorice) Root Extract

*Dose:* 0.05% - 1% depending on concentration of Glabridine

**Bio-active ingredients:** 4% to 90% Glabridine (98% in partnership)

Glabridine is the main compound in the hydrophobic fraction of licorice extract. It is known for its beneficial effects on the skin due to its anti-inflammatory and antioxidant properties. In addition, Glabridine greatly inhibits melanogenesis. Some researchers have established that this effect may be due to the inhibition of tyrosinase activity, and Inhibition of the production of active oxygen species.

**FruitOx®**
In-vivo cellular antioxidant, ORAC > 1 200 000 µmol TE / 100g
Water soluble, no carrier

*Origin:* PoliNat (Spain)

**Cococin**
Hair Growth, Moisturizer

*Source:* Fresh tender coconuts Cocos Nucifera

*Inci:* Cocos Nucifera (Coconut) Fruit Juice

*Dose:* 0.5% - 2.0%

**Cococin™** has been evaluated for its efficacy as a hair growth promoter, in comparison with Minoxidil as standard

Augments new cell growth while promoting healthy tissues / hairgrowth. Cococin can be safely used in oral care as well as lip care compositions.

Helps restore the skin health in aged and damaged skin

**Helps in skin hydration:** It provides reservoir of vitamins, minerals, RNA phosphates and organic acids that support tissue health. Nutrition and reviving skin.

Cococin can be safely used in oral care as well as lip care compositions.

Cococin is « The Nourishment Factor® » that provides a valuable nutrient.
**Forslean CG**

**Anti-cellulite, Conditioning agent, Anti-ageing**

Tanning

**Source:** Coleus forskohlii

**Indi.:** Coleus Forskohlii Root Extract

**Dose:** 0.5% to 1%

**Bio-active ingredients:** 95% to 98% Forskolin

Forskolin bypasses the adrenergic receptors, increasing cAMP levels directly, thereby stimulating lipolysis. It is therefore potentially useful in dislodging localized fat deposits immediately under the skin, when applied topically. Forskolin accelerates lipolysis through the activation of hormone-sensitive lipase.

**Saberry**

**Water soluble skin lightening agent, Hair care**

**Source:** Emblica officinalis fruits (Amla)

**Indi.:** Emblica Officinalis Fruit Extract

**Dose:** 0.2-1% w/w

**Bio-active ingredients:** 10% b-Glucogallin, 50% gallates (tanins)

**Skin Whitening:** Skin lightening by inhibition of melanin formation, stronger melanin than ascorbic acid. Melanogenesis inhibitory activity against both MSH and cAMP induced melanogenesis at IC50 14μg/ml

**MMP-1 Inhibitor:** Amla Extract has been reported to inhibit MMP-1 production from fibroblasts. Saberry also showed mild anti-tyrosinase activity compared to Kojic acid, using the mushroom tyrosinase activity assay (Saberry IC50 321μg/ml)

**UV Protector:** Protects the fibroblast cells from UV radiation, with activity higher than ascorbic acid at same concentration.

**5-alpha reductase inhibitory activity (about 80%)**

**Xymenyinic**

**Skin Firmer / Cellulite, Anti-inflammatory, Hair care**

**Source:** Santalum album seeds

**Indi.:** Xymenyinic acid

**Bio-active ingredients:** Xymenyinic acid

**Dose:** 0.2% - 0.5% (up to 1.5% in the oil phase)

Traditional used as a dermal application to treat skin lesions. Stimulates the microvasculokinetic activity of the scalp. Help preserve the integrity and texture of the skin (Hyaluronidase and Collagenase inhibition).

Xymenyinic acid improves the skin elasticity and minimizes the damage and imperfections linked to cellulite (orange peel aspect).

**Ursolic, Ursolate**

**Anti-ageing, Anti-wrinkle, Collagen build up**

**Source:** Salvia officinalis

**Indi.:** Salvia Officinalis (Sage) Leaf Extract

**Bio-active ingredients:** Standardized in Ursolic acid or even ursolate (70% Ursolic acid Na salt and up to 30% of Oleanolic acid Na salt), from Sage (Rosemary available).

- Tissue repair, anti-inflammatory (resistant barrier on skin/ hair)
- Collagen and elastin synthesis
- Beneficial to the overall health and functions of photo-aged skin
- Efficient inhibitor of Human Leukocyte Elastase
- Hair care for conditioning and repair

**Fucoidan**

**Anti-ageing, Skin lightening, Skin protection**

**Source:** Laminaria japonica / Cystoseira canariensis – whole plant

**Indi.:** Laminaria Japonica Extract

**Bio-active ingredients:** Sulfo-Polysaccharides ≥ 40% to ≥ 85%

Sulfated polysaccharide fractions of Fucoidan from Laminaria have shown potent antioxidant activity in vitro tests. Cell viability and subsequent animal studies using Fucoidan as the test substance showed that both immune cells and mice were protected from the oxidative damage induce by ionizing radiation. Further testing in rats confirmed that polysaccharides from Laminaria japonica protected the male reproductive organs from radiation.

**SabiWhite**

**Skin lightener, Evening skin tone, UVB protectant**

**Source:** Curcuma longa

**Indi.:** Tetrahydrodiferuloylmethane

**Dose:** 0.05-2.0% in creams / lotions

**Bio-active ingredients:** 95% Tetrahydrocurcumin

A double blind placebo controlled clinical study with Fairness cream with 0.2% of the compound proved the significant decrease in melanin content.

**Di-Hydroxymyricetin**

**Lipogenesis, Adipogenesis, Antioxidant**

**Source:** Myrica cerifera – leaves

**Indi.:** Myrica Cерifera Leaf Extract

**Dose:** in-vitro tests

**Bio-active ingredients:** di-hydroxymyricetin ≥ 90%

Many scientific researches has suggested that Dihydroxymyricetin, a type of flavonoid, can be used as a new cosmetic ingredient for weight loss. Traditionally, active compounds act only on the two pathways (Lipogenesis inhibition & Lipolysis stimulation), usually via adrenergic receptors, such as caffeine, etc.

Dihydroxymyricetin acts on three pathways:

- Lipogenesis inhibition: reducing synthesis of new triglyceride into the adipocytes.
- Lipolysis stimulation: activating degradation of TG stored in the adipocytes.
- Adipogenesis decrease: suppressing cell differentiation from pre-adipocytes into mature adipocytes, thus preventing adipocyte cell renovation and reducing triglyceride accumulation.
Pomegranate Seed Oil
Moisturizing, Nourishing, Elasticity, Eczema

Source: Punica granatum – seeds
Ind.: Punica Granatum Seed Extract
Dose: 0.1% - 1%
Bio-active ingredients: Punicic acid ≥ 80% (CLnA)
Remarkable ability to nourish, moisturize and repair the epidermis and improve skin elasticity.

Pomegranate seed oil is commonly used in cosmetic products to revitalize dull or mature skin, assist with wrinkles, and to soothe minor skin irritations, due to its unique composition of fatty acids, mainly punicic acid (CLA). The high content of conjugated fatty acids in pomegranate oil gives it strong anti-inflammatory properties and makes it a highly beneficial ingredient in formulations intended to reduce swelling and ease muscular aches and pains. Pomegranate oil can promote pro-collagen synthesis and strengthen the epidermis. It provides relief from minor skin irritations and inflammation, including dry skin, eczema, psoriasis and sunburned skin.

Apple Phloridzin
Antioxidant, Immunoprotective (also in dermato. preparation), Anti-wrinkle, Soothing

Source: Malus domestica – fruit skin
Bio-active ingredients: Phloridzin ≥5% or ≥20%, Polyphenols
Ind.: Pyrus Malus Extract
Dose: 0.05% to 0.3% depending on concentration
Apple contains the secrecy of youth and beauty through its unique polyphenols. Among these, phloridzin is particularly recognized for its benefits through its antioxidant and its protective effects for skin.

Three levels to control the mechanisms of skin aging
Protection of the extracellular matrix (Matrix Metalloproteinases release). Positive absorption profile in UVB and UVA.

EcdyNat (Ajuga)
Optimal skin hydration

Source: Ajuga turkestanica – whole plant
Ind.: Ajuga Turkestanica Extract
Dose: 3 x 50 mg (children) to 3 x 100 mg (adult)
Bacopin and the antioxidants help to dispel toxins epithelium layer, and improve skin complexion and stimulates skin cell regeneration. Brahmi - the other name - is used in treating of psoriasis, eczema, abscess and ulceration. Ayurvedic uses: Memory Enhancing, Anti-inflammatory, Analgesic, Antipyretic, Sedative, Anti-ulcerogenic, Anti-epileptic.

Gigartina (Red Algae)
Protection against viral infections

Source: Gigartina skottsbergii – whole seaweed
Ind.: Gigartina Skottsbergii Extract
Dose: 0.1% to 0.3%
Bio-active ingredients: S-polysaccharides ≥ 30%
Natural carrageenans have in vitro anti-herpetic activity. In a murine model of genital herpes, a Gigartina extract showed virucidal action by preventing virus replication and mortality in mice. Sulfated compounds from the Gigartina increase the affinity of the lymphocyte tryptase to induce the production of cytokines, thus supporting an immune response to infection. Effective for skin such as psoriasis, eczema, and herpes from UVB damage. A study in Taiwan has been performed in keratinocyte cells (HaCaT) exposed to UVB radiation (what decreases the cell viability), successfully reversed by treatment with myricetin. Also led to an increase of cell viability on non exposed cells (positive effect on normal skin cell proliferation). Inhibits the lipid peroxidation and hydrogen peroxide production induced by UVB. Also protect cells from UV light by inducing apoptosis (cellular death) of cells damaged by the radiation.
Vitex
Chromium Picolinate, Seleno-Methionine, Methyl Selenocystein, Molybden Methionate, Gamma-Glutamyl-L-Selenomethionine, N-Acetyl L-Cysteine, etc...

Damascenone, Allyl, Applitone, Isoeugenol, Citronellyl Safranal, Sandanol, Super Santol, Metoxy Melonal

– leaves:

Vaccinium angostifolium

Plant Name | Common actives
---|---
Momordica charantia | Momordica Bitter Principles, Charantin
Myrica cerifera | Myricetin, di-Hydroxymyricetin
Ocimum sanctum | Eugenol, Caryophyllene, Ursolic acid
Olea europaea | Oleanolic Acid, Oleuropein
Phyllanthus amarus | Bitter Principles, Phyllanthin, Tannins
Piper nigrum | Cosmoperine Tetracyclodipiperine
Polygonum cuspidatum | Resveratrol, Stilbens
Prunus armeniaca | Polyphenols
Pterocarpus marsupium | Tannins, Stilbens, Pterocarposide
Punica granatum | Ellagic Acid
Punica granatum | Punicic acid CLnA
Quercus infectoria | Polyphenols
Rhododendron caucasicum | Polyphenols
Saccharum officinarum | Policosanol
Salvia officinalis | Ursolic Acid, Na Ursolate
Sambucus nigra | Anthocyanins, Polyphenols
Santalum album | Xymenynic Xymenynic Acid
Sesamum indicum | Sesamin
Synthesis | Alpha Lipoic, 1,2-Hexanediol, Octanediol, Decanediol
Undaria pinnatifida | Fucoxanthin
Vitex negundo | Magnolol, Honokiol
Zingiber officinale | Gingerols

Flavors

Microcirculation, Sensitive skin, Hair growth

Source: Vitex vinifera - leaves
Incl: Vitex vinifera Leaf Extract
Bio-active ingredients: ≥ 90% dihydroquercetin
Dosage: 0.01% to 0.05%
Dihydroquercetin refers to their strong antioxidant properties as well as actions against acne (with healing properties), UV protection, preservative. This flavonoid—also known under the name of Taxifolin—tested in murine melanoma cells | enhances protective functions of the skin against external toxicities, radiation, germs, and other environmental factors. Normalize general metabolic processes specifically, those in lymphatic and blood system, thus, slowing skin aging.

- Dry and aging body and facial skin
- Sensitive skin prone to irritation and allergy
- Skin with weakened microcirculation
- Capillaropathy
- Contribute to the general health of hair and hair growth.

Pomegranate P40P
Antioxidant, Anti-ageing, Lightening

Source: Punica granatum – mashed fruits
Incl: Punica Granatum Extract
Dose: 0.5% - 5%
Bio-active ingredients: Total punicosides ≥ 40%, Punicalagins A+B ≥ 30%, Total polyphenols ≥ 50%

There are several cosmetic formulations that include an extract of pomegranate juice or oil. Pomegranate is rich in ingredients such as vitamins B5 and C, potassium, polyphenols etc., that enhance the beauty and life of skin. It is a good source of elagic acid and antioxidants, which are helpful in destroying free radicals. It’s a great remedy for skin that is damaged due to sun exposure or aging, to get smooth and youthful skin. Pomegranate is said to extend the life of fibroblasts, and for the production of collagen and elastin. Collagen and elastin pump up the skin and render it elasticity. This in turn, keeps the skin youthful for years and minimizes the visibility of wrinkles.

Bio-active ingredients

Inci: Vaccinium angostifolium (Blueberry) Leaf Extract

against oxygen free radical damage ,as well as inflammatory and skin redness.

Blueberry Leaves
Antioxidant, Anti-ageing

Source: Vaccinium angostifolium – Spring leaves
Incl: Vaccinium angostifolium (Blueberry) Leaf Extract
Bio-active ingredients: Polyphenols, Chlorogenic acids
Dosage: 0.05% to 0.2%
Polyphenol antioxidants from Blueberry leaves fend off free radicals-molecules leading to signs of aging. Chlorogenic acid is a major phenolic compound acting against oxygen free radical damage , as well as inflammatory and skin redness.

Rhododendron
Microcirculation, Sensitive skin, Hair growth

Source: Rhododendron caucasicum – leaves
Bio-active ingredients: polyphehols ≥ 50%, flavonoids (DHQ) ≥5%
Dosage: 0.05% to 0.2%
Source of polyphenols and more specifically dihydroquercetins.

MAG, Licorice Derivatives
Calming, Soothing (skin and scalp), Oily skin, Toothpaste

Source: Glycyrrhiza Glabra
Dosage: 0.3% to 2%
The plant’s major active component is glycyrrhizin, an extremely sweet glycoside. During metabolism in the plant, as well as in the human organism, glycyrrhizin is hydrolyzed in two isomers, 18 a and 18 b glycyrrhetinic acid. Only the 18 b glycyrrhetinic acid is active and is particularly known for its powerful anti-inflammatory effects, anti-irritant and soothing. Due to its sebum regulation activity, it is used in formulations designed to counteract an oily skin or oily scalp. MAG also available.
Two forms of melanin are produced in the epidermis: phaeomelanin, which is red to yellow in color, and eumelanin which is dark brown to black. The relative proportions of these also influence skin color. In addition, individuals differ in the number and size of melanin particles.

Skin pigmentation is influenced by several factors like:
- Hemoglobin in the blood vessels
- Carotenoids in the dermis
- Particularly, the dark pigment, melanin in the epidermis.

Production of Melanin
Melanin biosynthesis (melanogenesis) is influenced by genetics, environmental factors, diet and medication. The production of melanin by specialized cells called melanocytes (in the basal layer of the epidermis in light skinned people and in the basal as well as horny layer in dark skinned people) occurs through the action of the enzyme tyrosinase. The rate-limiting step in melanogenesis is the conversion of L-tyrosinase to melanin, through the action of tyrosinase. Copper and oxygen act as catalysts. Other enzymes also control melanin production, particularly in the presence of sulfur. These include the following:
- Dopachrome oxidoreductase which controls melanogenesis in the absence of tyrosinase. It helps to convert dopachrome into 5, 6-dihydroxyindole.
- Alpha-glutamyl transpepsidase which helps to maintain the balance in the biosynthesis of eumelanin and pheomelanin.

Variation in skin pigmentation is attributed to the levels of melanin produced and the number of melanocytes present. Although light skinned and dark skinned people may have the same number of melanocytes present, the rate of melanin production is greater in darker skin tones. Additionally, the melanin present in the epidermal layers of darker skins is resistant to enzymatic degradation.

Increased production of melanin on one side of the skin and dramatically reduced decomposition of melanin on the other side results in darker skin tones, in light skinned people. Melanin granules synthesized in the melanocytes are then transferred from the cytoplasm of the melanocytes to the basal cyttoplasm of the keratinocytes. They thus form a protective covering in the inner layers of the epidermis, absorbing UV rays and inhibiting their penetration.

Controlling Melanin Synthesis
Various types of inflammatory mediators such as leukotrienes and prostaglandins, cytokines and growth factors may influence melanin synthesis by affecting the proliferation and functioning of melanocytes. This explains why inflammatory diseases often induce hyperpigmentation or hypopigmentation. The enzyme, protein kinase C that phosphorylates proteins may also influence the growth and differentiation of melanocytes.

Cytokines such as endothelins (also known as vasoconstrictive peptides) are also reported to accelerate melanogenesis.

Quick view of our Main Products
- TetraPure and SabiWhite (tetrahydrocucurminoids): anti-tyrosinase activity along with High ORAC value, and Inhibition of Melanogenesis
- Glabridine (from 4% to 98% from licorice): the well-known whitening agent from licorice
- Saberry (B-glucogallin from Amla): white water soluble Skin Whitening, MMP-1 Inhibitor, UV Protector
- OxyResveratrol Artonox: strong and dose dependent inhibition of Tyrosinase enzyme activity and melanogenesis inhibitory activity
- Ellagic Acid (pomegranate), lightening, UV protection, also in oral form
- Fucosaxthine (wakame): lessened UVB-induced epidermal hypertrophy, VEGF, and MMP-13 expression
- Apple polyphenols & Phloridzin: skin whitening (restrict the tyrosinase) and treat the acne by sebum secretion
- Soy extract: lightening action in solar lentigenes (hyperpigmentation due to sun)

Skin lightening cosmeceuticals
The toxicity associated with hydroquinone use, induced researchers to identify less dangerous botanicals with comparable activity. The general modes of action include inhibition of the formation of melanosomes, inhibition of tyrosinase biosynthesis, and inhibition of melanin biosynthesis and interference of the transfer of melanosomes into the keratinocytes. Some agents also have a chemical effect on melanin with an increase in the degradation of melanosomes in the keratinocytes.

Antioxidants such as ascorbic acid and others help to decompose preformed melanin. Hyperpigmentation due to UV and UVB damage may also be addressed by preventive measures using antioxidant compounds with sunscreen effect and free radical scavenging action. Research efforts are generally aimed at achieving one or more of the following effects:
- Regulation/inhibition of tyrosinase, dopachrome oxidoreductase and dopachrome tautomerase involved in melanogenesis
- Regulation of the cytokine network including endothelin
- Regulation of genes related to melanogenesis
- Combinations of the above approaches

Skin Brightening
When Skin Needs Brightening
Optical properties modulate the appearance of skin. Skin needs brightening when:
- Too transparent or too highly pigmented skin appears spotted and unhealthy.
- Early aged skin is also dull and rough due to loss of surface integrity.

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- Combinations of the above approaches.

Skin Brightening
What Skin Brightening Cosmeceuticals do
The effects of skin brighteners are:
- Radiant complexion.
- Beautiful skin glow.
- Even skin tone, without freckles, age spots or other types of discoloration.
- Rejuvenated, nourished and smooth skin.

Other related products
Tyrosinase inhibitors such as Arbutin (from the leaves of the common bearberry), Arctophylos urva ursi and other plants, Glabridin from licorice (Glycyrrhiza glabra roots), ascorbic acid and its derivatives, Kojic acid (a bacterial carbohydrate metabolite) are better tolerated than hydroquinone. Aloesin from Aloe is reported to be a non-competitive inhibitor of tyrosinase, affecting (...)
A new study on one of the most famous and powerful anti-inflammatory. Boswellic acids - and especially AKBBA - have been found to inhibit 5-lipoxygenase by one of two ways on 5-LO as well as (HLE) and psoriasis.

Mean scores of arthritic symptoms as evaluated in an open field study of boswellic acids-containing topical analgesic Chilisin® (TM of Sabinsa Corp). In addition, a four week study as well as a three month toxicity study showed that administration of boswellic acids at 5 to 10 times the ED50 value did not cause side effects.

Inhibition of Leukotriene Synthesis

The presence of a specific AKBA-binding site on 5-LO that is distinct from the arachidonate substrate-binding site was determined using photo affinity labeling. Among the several compounds classified as leukotriene synthesis inhibitors, nonredox inhibitors, such as boswellic acids, are preferred. Unlike redox type inhibitors they do not interact with other biological redox systems, lessening the likelihood of side-effects like methaemoglobin formation. AKBA has been identified as the only leukotriene synthesis inhibitor so far that inhibits 5-LO activity by noncompetitive, nonredox mechanisms (3-5% of topical formulation as cream, lotion or gel).

Management of psoriasis

A study on Sabinsa's Boswelia cream for treatment of psoriasis, Clinical Evaluation of AKBBA in the management of psoriasis, was published in Clinical Dermatology 2014; 2(1): 17—24. US clinical trials, intended to have AKBBA eventually approved as a drug by FDA for treatment of psoriasis, will begin in the near future. This will be a significant step for a nutraceutical company in USA.

The cream of Boswellia serrata Roxb extract standardized for 5% of 3-O-Acetyl-11-Keto Beta Boswellic Acid (AKBBA) was studied in an open label, multi centered phase III clinical trial, evaluating 200 psoriatic patients with application of AKBBA cream three times daily for a period of 12 weeks. The researchers observed significant changes in LTB4 (p<0.001) & TNF alpha (p<0.01) values from the baseline along with significant changes (p<0.05) in VEGF & PGE2. Reduction in ‘modified’ PASI score from the baseline visit was in consensus with the global evaluations by physician and patients. The evidence shows superior anti-inflammatory responses rates, demonstrating that this non-toxic treatment is beneficial for those suffering from this condition. Although far from the scope of a dietary supplement, the exploratory process that has gone into such a traditional ingredient showcases Sabinsa’s passion for applying modern day technology to traditional botanicals to help create natural solutions for health.

“Our understanding of this ingredient, originating from one of the earliest compounds released by Sabinsa, called Boswellin®, is growing, and we want the world to know the positive research and the impact it has on human health,” said Sabinsa founder Dr. Muh hammed Majeed. “Such indications prevalent in Ayurvedic texts are now being proven by modern research, in terms of correctly standardizing, isolating the unique compound(s) and ultimately formulating safe and effective products.” The cream product is sold and marketed as a drug in India. Sabinsa holds several patents for this and other uses of Boswellia.

Clinical evaluation of AKBBA in the management of psoriasis, Muhammed M., Nagabhushanam K., San kanan N., Sood B., Kanti S.K.

(…) the action of tyrosinase complex in the stratum and reducing the conversion of DOPA into melanin. Arbutin and Kojic acid inhibit tyrosinase directly, while L-ascorbic acid and its derivatives are believed to act as reducing agents on intermediates in melanin biosynthesis at various points in the oxidation chain reaction from tyrosine/DOPA to melanin. Our products are usually compared to Arbutin and to Kojic acid. Green tea is also reported to be a competitive tyrosinase inhibitor through the galloacatechin moiety in the major catechin constituents epicatechin gallate, epigallocatechin gallate and galloacatechin gallate. Paper mulberry extract (from the root bark of Broussonetia kazinoki x B. papyrifera ) also contains active depigmenting agents, which were shown to be more efficacious than hydroquinone (IC 50 of 2.5 mg/ml against 5.5 mg/ml for hydroquinone).

![Focus Rich AKBBA Boswellin and Psoriasis](https://example.com/image.png)

**Table 1**

Comparative table sheet

<table>
<thead>
<tr>
<th>Product</th>
<th>Orac</th>
<th>DPPH</th>
<th>Tyrosinase</th>
<th>Melanin</th>
<th>Elastase</th>
<th>Collagenase</th>
<th>UV Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbutox</td>
<td>19 735</td>
<td>2,700</td>
<td>0,049</td>
<td>12,000</td>
<td>120,000</td>
<td>92,000</td>
<td>n.c.</td>
</tr>
<tr>
<td>Glabridine 40%</td>
<td>3 256</td>
<td>49,000</td>
<td>0,250</td>
<td>3,000</td>
<td>n.c.</td>
<td>n.c.</td>
<td>n.c.</td>
</tr>
<tr>
<td>Pterowhite</td>
<td>12 508</td>
<td>4,900</td>
<td>6,900</td>
<td>0,550</td>
<td>n.c.</td>
<td>n.c.</td>
<td>30</td>
</tr>
<tr>
<td>Resveratrol</td>
<td>25 223</td>
<td>5,010</td>
<td>5,500</td>
<td>2,500</td>
<td>n.c.</td>
<td>n.c.</td>
<td>31</td>
</tr>
<tr>
<td>Saberry</td>
<td>2 682</td>
<td>n.c.</td>
<td>321,000</td>
<td>14,000</td>
<td>n.c.</td>
<td>n.c.</td>
<td>15 [UVA] 42 [UVB]</td>
</tr>
<tr>
<td>Sabiblue</td>
<td>10 786</td>
<td>n.c.</td>
<td>1,770</td>
<td>3,000</td>
<td>n.c.</td>
<td>n.c.</td>
<td>n.c.</td>
</tr>
<tr>
<td>Tetrapure</td>
<td>10 212</td>
<td>1,300</td>
<td>1,800</td>
<td>3,200</td>
<td>n.c.</td>
<td>n.c.</td>
<td>n.c.</td>
</tr>
<tr>
<td>Kojic Acid</td>
<td>- 500,000</td>
<td>7,000</td>
<td>100,000</td>
<td>100,000</td>
<td>n.c.</td>
<td>n.c.</td>
<td>n.c.</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>3 400</td>
<td>1,930</td>
<td>9,330</td>
<td>25,000</td>
<td>n.c.</td>
<td>n.c.</td>
<td>n.c.</td>
</tr>
<tr>
<td>Arbutin</td>
<td>- 500,000</td>
<td>193,600</td>
<td>100,000</td>
<td>100,000</td>
<td>n.c.</td>
<td>n.c.</td>
<td>n.c.</td>
</tr>
</tbody>
</table>

- **ORAC Value**: μmol Trolox equivalents/g (Higher is greater)
- **DPPH Inhibition**: IC50μg/ml (lower is greater)
- **Tyrosinase Inhibition**: IC50μg/ml (lower is greater)
- **Melanin Inhibition**: IC50μg/ml (lower is greater)
- **Elastase Inhibition**: IC50μg/ml (lower is greater)
- **Collagenase Inhibition**: IC50μg/ml (lower is greater)
- **UV Protection**: IC50μg/ml (lower is greater)

**References**

1. ____...
Anti-Acne

Acne is a common skin disorder which is a visible end result of hormonal, bacterial and inflammatory disturbances that take place at the level of the oil pore (pilosebaceous follicle). It is characterized by presence of open comedones (black heads) and closed comedones (microcysts).

Some of the common causes of acne
- Growth and multiplication of acne causing bacterium Propionibacterium acnes.
- Higher levels of the hormone Dihydrotestosterone by the activity of the enzyme 5-alpha reductase.
- Increase in androgens during puberty and adolescence which in turn, triggers an enlargement of the sebaceous glands.

Prevention of acne
Acne may be prevented by:
- Reducing sebum production (secreted by sebaceous glands)
- Reducing bacteria (P. acnes) on the skin
- Reducing the inflammation
- Exfoliation-peeling of the skin which unclogs pores

Anti-microbial Vitex
Vitex oil is extracted from the berries of Vitex agnuscastus and is standardized for 0.40% of Artemetin. It is made up of long chain fatty alcohols and long chain fatty acids like lauric, myristic, palmitic, stearic, oleic, linoleic and linolenic acids. The oil has potential anti-microbial activity. Vitex oil inhibits the growth of Propionibacterium acnes (anaerobic bacteria), E. coli (from 0.1%) and S. aureus (aerobic bacteria, from 0.5%).

At concentrations above 0.4%, it effectively inhibits the P. acnes bacteria and the activity is well comparable to 1% Clindamycin gel.

Anti-microbial Coleus oil
Coleus oil is an oil obtained from the fresh roots of Coleus forskohlii. It is standardized to 15% Bornyl acetate and 15% Decanal. The oil having good anti-microbial activity is a potent anti-acne ingredient. Coleus oil was found to effectively inhibit the growth of skin pathogens such as:
- Propionibacterium acnes (associated with acne) : Inhibition of more than 25% at 1.25µg/ml (versus 15% for tea tree oil), and still 15% at 0.5 mg/ml
- Staphylococcus aureus (a bacterial strain found in infected wounds and skin eruptions including acne) : Inhibition by 40% at 30µg/ml, so about 3x more than tea tree oil, and still 30% at 7.5 mg/ml when tea tree oil is then not active anymore
- Staphylococcus epidermidis (a bacterial strain occurring in a variety of opportunistic bacterial skin infections): Inhibition by ca. 30% at 30µg/ml, so double than tea tree oil, and still 15% at 7.5 mg/ml when there’s no more activity from tea tree oil.
- Candida albicans : Inhibition by 40% at 30µg/ml and ca. 20% at 15µg/ml, so always more than Tea Tree Oil, without the unpleasant odor.

Sebum control Policosanol
Policosanol is a mixture of fatty alcohols derived from waxy extract of sugarcane. It contains a minimum of 55 – 60% Octacosanol.

Formulations may include as well the Cosmoperine - our Dermal Penetration Enhancer for a better efficacy, or Monolaurin, potent against P. acne

useful in managing inflammatory skin conditions, particularly acne.

In a 2 week study on 16 human subjects between 8 and 25 yrs of age, 2% and 5% Policosanol colloidal solutions were found to be safe for local application. Topical applications of the Policosanol colloidal solutions were found to decrease the sebum secretion in a concentration dependent manner. (Reduction from 11.6% to 27.6%).

A unique formulation to fight the various form of acne and work on the sebum control

Vitex oil is extracted from the berries of Vitex agnuscastus and is standardized for 0.40% of Artemetin

Coleus oil is obtained from the fresh roots of Coleus forskohlii standardized to 15% Bornyl acetate and 15% Decanal.

Policosanol is a mixture of fatty alcohols derived from waxy extract of sugarcane, containing a minimum of 55 – 60% Octacosanol.

Cosmoperine
Tetrahydrocurcuminoids (THC) as enhancers of nutrient and drug bioavailability

Cosmoperine has been subject to various studies : for instance, it has been found to enhance the Tetrahydrocurcuminoids (THC) due to increase penetration by min. 30% of the active across the barrier. Even at the highest dilution of 0.0001%. Other actives such as green tea polyphenols, synthetic pyrethroid, Albenzadole, Betamethasone Dipropionate, etc... have been also performed with same proofs of efficacy (absorbed faster rate and more completely)

Recommended use: 0.01% to 0.1%

Cosmoperine is a 95% tetrahydroperipiperine, prepared from pepper by a patented proprietary process. It may operate by increasing the membrane fluidity and affinity of drug / nutrient to the cell membrane, for a broad range of delivery through the skin.
Cococin™, The Nourishment Factor® captures the goodness of green coconut water in a convenient powder form. Coconut water is the nutrient-rich liquid endosperm of coconut abounding in proteins, amino acids, sugars, vitamins, minerals and growth hormones that support healthy cell growth & hydration. Coconut water solids are freeze-dried using a special process that preserves the activity of nutrients...

**Cococin**

Coconut water is often described as a "natural isotonic sports drink", providing higher amounts of electrolytes such as potassium and magnesium than conventional sports drinks. Coconut water solids also have a prebiotic role, and beneficially influence the balance of microflora in the gastrointestinal tract. When topically applied, coconut water solids nourish the skin and hair, supporting healthy cell growth.

Cococin™, The Nourishment Factor® captures the goodness of coconut water in a convenient, free flowing, and powder form. Recently affirmed GRAS for use in foods and clinically validated for its topical benefits, Cococin finds multifunctional applications in cosmetic, personal care and food and beverage compositions.

Produced under a patented lyophilization process, the amorphous nature of the solid produced by this process protects the protein components and environment sensitive actives during subsequent pulverization and storage. During storage, the material transforms to the more stable, less hygroscopic, crystalline state.

Cococin blends seamlessly with cosmetic compositions, and easily disperses in water, making it a compact and versatile nutrient pool for use in topical formulations, as well as in functional foods & beverages that nurture from the inside out.

**Nutritionally versatile**

It is important to differentiate between coconut milk and coconut water. The ratio of RNA-phosphorus to DNA-phosphorus is significantly lower in the liquid endosperm of mature coconuts as compared to that of green coconuts.

RNA plays an important role in amino acid transport and respiratory metabolism in living cells. Coconut water used to make Cococin is obtained from green coconuts at the optimal stage of maturity, to ensure a high content of RNA and growth factors, including shikimic acid, quinic acid and indole-3-acetic acid, along with essential vitamins, amino acids, and minerals. At the completion of growth, the solid endosperm and the last of the coconut water provide nourishment for the forming embryo and seedling.

**Cosmetics and nutricosmetics**

Cococin is The Nourishment Factor® that provides a valuable nutrient pool for enhancing food and beverage, as well as cosmetic product formulations. Cococin can be safely used in oral care as well as lip care compositions.

- Helps restore the skin health in aged and damaged skin
- Augments new cell growth while promoting healthy tissues
- Helps in wound healing
- Helps in skin hydration

**Cell Proliferation enhancement**

Cococin was used in the growth medium for fibroblast cell lines in an in vitro study (in Swiss 3T3 fibroblast cell line). Cell proliferation was significantly enhanced in cells treated with Cococin containing nutrient medium as compared to controls receiving standard nutrient medium.

**Hair Growth**

Each individual hair is formed inside a hair bulb deep in a hair follicle. The follicle is a tiny but powerful factory, which throughout many people’s lifetime hardly ever stops working. From a baby’s birth for many decades, as much as a century in some people, the follicle continues to produce hairs. Finally the hair spontaneously falls out. The follicle rests for a little while, and then starts to produce yet another new hair.

Between starting to grow and falling out years later, each hair passes through three distinct stages: Anagen (the growing phase), Catagen (the intermediate phase), Telogen (the shedding phase).

Cococin™ has been evaluated for its efficacy as a hair growth promoter, in comparison with Minoxidil as standard. Histological evaluation of the skin biopsies showed that the hair follicles were transformed from Telogen to Anagen phase of hair growth in the animals, showing a response to the topical application of formulations containing Cococin™ with hair growth promoting activity.

Animals treated with reference standard viz 2% minoxidil showed telogen to anagen transition in more than 70% animals. The maximal induction of Anagen was observed with 2% Cococin™ cream, which equaled that of the reference standard (2% minoxidil) in the experimental conditions of this study (see picture).

**Reducing the appearance of skin aging**

Twenty-two females in good health of ages 20-35 years old were subjects in a double blind placebo controlled clinical study (Research Report Sami Labs Ltd., 2005). A cream containing 1% coconut water solids (Cococin INC): Cocos nucifera (coconut) fruit juice was applied onto the left arm of each subject, and the cream base was applied onto the corresponding area of the right arm, to serve as control. 200 mg of the cream and cream base was applied daily for eight weeks, to the marked areas on the left arm and right arm respectively (see figure).
Rhodiola rosea is also known historically as “Golden Root” from the “Golden Mountains” (Mongolian word ‘Altan’)

While Rhodiola as a genus may have originated in the mountainous regions of Southwest China and the Himalayas, botanists have established that *Rhodiola rosea* naturally display a circumpolar distribution in mountainous regions in the higher latitudes and elevations of the Northern Hemisphere. In central and Northern Asia, the genus is distributed from the Altai Mountains across Mongolia into many parts of Siberia. *Rhodiola rosea* is used for the production of Rhodiolife® which is wildcrafted from this part, under the Russian Government License. Altai Mountains represents a pristine area free from contamination of the most well preserved and remote natural environments. PoliNat is involved from the early beginning in the collection practices, with SOPs describing the stage of the plant growth, best time of collection and ecologically non-destructive systems.

**Active Ingredients**

Activities related to *Rhodiola rosea* have been traditionally attributed to the presence of four principal active ingredients: salidroside, rosarin, rosavin, and rosarin (Sokolov, 1985; Furmanowa, 1998). The root of R. rosea shows six distinct groups of chemical compounds. The Phenyalkanoïd is the main contributors, incl.:  

- **Phenylpropanoids**: Rosavins are products of the phenylpropanoid metabolism. Rosavins (ie. rosavin, rosin and rosarin) are specific to the root from Rhodiola rosea. The rosavins are the constituents currently most often selected as the marker compounds for standardization of extracts, although they are not necessarily the only pharmacologically active ingredients for its medicinal properties.

- **Principal phenylethanoids**: consist of glycosides and salidrosides have been reported as the most active tyrosol glycoside, being associated, together with rosavins, to the anti-depressive and anxiolytic effects (Maslowa, 1994; Tolonen, 2003). Other phenylethanoids have also been isolated but with today limited scientific literature concerning the bioactivity (Jiménez 1994).

Supplementing with *Rhodiola rosea* is a whole-body approach to maintaining health and wellness. While most supplements address specific conditions, *Rhodiola rosea* acts on many biological systems and can counteract one of the primary causes of illness – chronic stress, asthenia and premature aging. In today’s frenetic society, a one-size-fits-all supplement regimen with herbs and vitamins is ineffective. Each person is physiologically unique and requires a specific protocol for health. Supplementing with *Rhodiola rosea* is the foundation for an individualized supplement protocol because of its ability to heighten the body’s innate ability fight stress related illness. *Rhodiola rosea* has been demonstrated to be effective in different important applications:

**Stress**

The effects of the stress on skin have been extensively proved. Stress is a well-known triggering factor in the appearance or exacerbation of psoriasis, alopecia areata, atopic dermatitis, acne, and other skin disorders. Francinou et al. described the psychophysi-ology of stress in dermatology and found that the skin and central nervous system are related embryologically. The parasympathetic nervous system is critical to regulating our stress response. *Rhodiola rosea* enhances parasympathetic function and fortifies the stress response system, improving our ability to overcome stress and reducing our risk of stress-related health problems.

**Anti-aging properties**

Application of *Rhodiola rosea* extract as a useful method of retarding the signs of photoaging and protecting the skin from UV damage. Photaging can include signs of aging such us skin atrophy and means the thinning and/or general degradation of the dermis caused by free radicals damage which is both character-ized by an alteration and degradation of collagen and/or elastin due to extrinsic factors such as photodamage caused by exposure to UV radiation. *Rhodiola rosea* extract can help in the prevention or retarding skin aging, including wrinkles lines appearance, skin atrophy and thinning appearance reduction.

Those properties of *Rhodiola rosea* extract are associated with:

- DNA Repair
- Collagen synthesis
- Oxidative scavenger
- UV Radiation absorption

Figure on the right shows dose-dependent sunburn cell formation in living skin equivalent cells. Pretreatment with *Rhodiola rosea* significantly reduces the formation of sunburn cells via UVB irradiation. *Rhodiola rosea* pre-treatment significantly reduces UVB induced sunburn cell formation in LSE. Looking at the UV-Vis spectrum of Rosavins (Rosarin, Rosavin, Rosin), the absorption spectrum has a maximum in same wavelength than UV radia-ions.

**Wrinkles**

Enhances Skin Barriers: first, preventing your skin from wrinkling is protecting it from sun damage, which is the chief culprit in pre-mature aging of the skin. One study published in the June 2008 issue of the *Journal of Cosmetic Dermatology* showed that extracts of *Rhodiola rosea* improved the skin’s defensive barrier functions against the stress of UV rays. Subjects of this study were classified as having sensitive skin.

Supports Elastin Production: Elastin is the rubber band effect in the skin that enables it to bounce back instead of sagging or wrin-
**FOCUS**

**Forslean Coleus**

Forslean® is manufactured by a proprietary process and is a standardized extract from the roots of the Coleus forskohlii plant, the only known plant source of forskohlin. ForsLean® is a registered trademark of Sabinsa Corporation.

**Sustainability**

Sabinsa is growing Coleus in part of its 44 000 acres, and do the extraction in its own plant selection fully dedicated to the production of Coleus extracts, to provide you the best quality and the best sustainability.

**TetraPure®** is standardized for a minimum of 99% of Tetrahydrocurcumin (INCI Name: Tetrahydrodiferuloylmethane) : research reveals that Tetrahydrocurcumin (THC) is one of the major metabolites of Curcumin, reported to exhibit many of the same physiological and pharmacological actions as Curcumin, in some systems, better.

Fungal infection of the skin is the 4th most common skin disease in 2014: the major metabolites of Curcumin, reported to exhibit many of the same physiological and pharmacological actions as Curcumin, in some systems, better.

**Mechanism of Action**

The mechanism of action on how Forslean® works is well defined : «Forskohlin, the active compound in Forslean®, is recognized as an adenylate cyclase activator. Adenylate cyclase is the enzyme involved in the production of cyclic adenosine monophosphate (cAMP), a significant biochemical agent in metabolic processes. The role of cyclic AMP is indispensable to many body functions. It induces a chain reaction of biochemical events that trigger metabolic processes and diet induced thermogenesis, thereby providing the means to maintain healthy body composition and lean body mass levels.

**Cosmeceutical applications**

Topical fat reduction in specific areas of the body is a common concern for women. Ronsard popularized the term “cellulite” to describe the dimpling and “orange peel” external appearance of the thighs, the cause of which was attributed to the aging process by later researchers. The structure of subcutaneous adipose tissue accounts for the development of the “orange peel” appearance. Groups of fat cells are attached to the underside of the dermis by fibrous connective tissue. As fat cells enlarge, the fibers are stretched and pull down on the underlying skin. This causes the indentation or dimpling of the skin called cellulite.

It has been demonstrated that adipose tissue metabolism varies from one region of the body to another, for example, in severely obese women losing weight after the jejunoileal bypass surgery, fat was seen to be absorbed more slowly in the thigh region than the abdominal region. These differences lead to the hypothesis that localized application of agents that trigger lipolysis or fat breakdown could help in cases of fat accumulation at specific subcutaneous sites.

Forskolin accelerates lipolysis through the activation of hormone-sensitive lipase — adrenoreceptors playing important roles in the regulation of lipolysis (adrenoreceptors are neurons that are activated by adrenaline (epinephrine) or similar substance). Based on clinical studies reported in literature, Coleus forskohlii extract 95% is potentially useful in the treatment of obesity.

Forskolin is a natural extract to support weight loss. In September of 1998 Sabinsa was promoting fat loss and promoting weight loss. Forskolin offers several potential advantages over other weight loss aids, including:

- **No Stimulation:** Forskolin does not cause the stimulatory effects associated with many diet supplements.
- **No Jitters:** Forskolin is not associated with the jitters or nervousness sometimes encountered with other dietary supplements.
- **Natural Source:** Forskolin is derived from Coleus, a natural plant.

**Dosage Form**

The recommended levels of use as a skin conditioning agent : 0.1 to 0.5% of a topical formulation, such as an ointment, cream or lotion.

**Anti-fungal remedy for Skin, Hair & Nails**

Malassezia furfur

Checking the activity against MF (Agar Dilution Method - Sabourauds Dextrose Agar with an overlay of coconut oill), it is observed that TetraPure® enhanced the activity at all tested concentration.

**Candida Species**

It is observed that TetraPure® at 0.15%, reduces the colony counts of Candida albicans NCM3471 (Yeast) from 14.6 10³ to less than 100 cfu/ml with an overall percentage reduction of 99.99% over a test interval time of 28 days.

**Anti-fungal formulation : 0.15%w/w Skin lightening form : 0.1 - 0.5%w/w**

**Dermatomyositis**

Non-dermatophyte moulds

Hendersonula toruloidea, Scytalidium hyalium, Scopulariopsis brevicaulis

**Tetrapure® inhibits superficial and cutaneous mycosis**

**Focus**

**Disease**  | **Causative Organism**  | **Incidence**
--- | --- | ---
Phytrasisis versicolor | Malassezia furfur | Common
Seborrhoeic dermatitis, including Dandruff and Follicular phytrasisis | Malassezia furfur | Common
Tinea nigra | Epidermophyton floccosum | Rare
White piedra | Trichosporon beigelli | Common
Black piedra | Piedra furtive | Common
Dermatophytes | Dermatophytes (Microsporum, Trichophyton, Epidermophyton) | Common
Candidiasis | Candida albicans | Common
Dermatomyositis | Non-dermatophyte moulds | Rare