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IBR Ltd. is a privately held, specialty Research and Development company, dedicated to developing innovative and proprietary concepts and technological actives for the cosmetics and therapeutic industries. IBR extended research is designed to fit specific needs of the market with a twist of innovation and uniqueness including new products development and new discoveries for existing products. IBR base of unique approaches to anti aging include COLORLESS CAROTENOIDS branded as IBR-Phyto(flu)ene® for topical and dietary supplementation for Beauty from Within as well as DORMINs that slow aging by slowing down cell proliferation.
**IBR is all about actives, naturally**

**Take a look at these innovative, proprietary ACTIVES below**

<table>
<thead>
<tr>
<th>Product</th>
<th>INCI</th>
<th>Use Level %</th>
<th>Preservatives</th>
<th>Solubility</th>
<th>ECO status</th>
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</thead>
<tbody>
<tr>
<td>IBR-Gapture® 1101</td>
<td>Simmondsia Chinensis (Jojoba) Leaf Extract</td>
<td>1-3</td>
<td>Vegetable Glycerin &amp; Sodium Metabisulfite</td>
<td>w</td>
<td>Disperseable in water</td>
</tr>
<tr>
<td>IBR-Dormin® 0301</td>
<td>Water (and) Narcissus Tazetta Bulb Extract</td>
<td>0.5-2</td>
<td>Paraben mixture</td>
<td>w</td>
<td></td>
</tr>
<tr>
<td>IBR-Dormin® NP 0302</td>
<td>Water (and) Narcissus Tazetta Bulb Extract</td>
<td>0.5-2</td>
<td>Chlorophenesin, Potassium Sorbate</td>
<td>w</td>
<td></td>
</tr>
<tr>
<td>IBR-Dormin® all natural 0305</td>
<td>Glycerin (and) Water (and) Narcissus Tazetta Bulb Extract</td>
<td>0.5-2</td>
<td>No preservatives, in vegetable glycerin</td>
<td>w</td>
<td>validated by ECOCERT to be used in organic cosmetics</td>
</tr>
<tr>
<td>IBR-Dormin® Organic 0306</td>
<td>Glycerin (and) Water (and) Narcissus Tazetta Bulb Extract</td>
<td>0.5-2</td>
<td>No preservatives, in organic glycerin</td>
<td>w</td>
<td>organic certified by ECOCERT and COR/USDA</td>
</tr>
<tr>
<td>IBR-Tom® 0306</td>
<td>Solanum Lycopersicum (Tomato) Fruit Extract</td>
<td>1-3</td>
<td>Phenoxyethanol, Sodium Metabisulfite</td>
<td>w</td>
<td></td>
</tr>
<tr>
<td>IBR-Dragon® 0801</td>
<td>Hylocereus Undatus Fruit Extract</td>
<td>1-5</td>
<td>Phenoxyethanol, Sodium Metabisulfite</td>
<td>w</td>
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<tr>
<td>IBR-Dragon® BM 0803</td>
<td>Hylocereus Undatus Fruit Extract</td>
<td>1-5</td>
<td>Benzy] Alcohol, Benzoic Acid, Sodium</td>
<td>w</td>
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<tr>
<td>IBR-Snowflake® 1001</td>
<td>Water (and) Leucojum Aestivum Bulb Extract</td>
<td>0.5-2</td>
<td>Chlorophenesin, Potassium Sorbate, Phenoxyethanol</td>
<td>w</td>
<td>validated by ECOCERT to be used in organic cosmetics</td>
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<tr>
<td>IBR-Snowflake® all natural 1003</td>
<td>Glycerin (and) Water (and) Leucojum Aestivum Bulb Extract</td>
<td>0.5-2</td>
<td>No preservatives, in vegetable glycerin</td>
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<td>validated by ECOCERT to be used in organic cosmetics</td>
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<tr>
<td>IBR-CalmDeAge™ 1201</td>
<td>Glycerin (and) Water (and) Phoenix Dactylifera (Date)  Seed Extract</td>
<td>1-5</td>
<td>No preservatives, in vegetable glycerin</td>
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<tr>
<td>IBR-CLC® 0401</td>
<td>Hydrogenated Polydecene (and) Dunaliella Salina Extract</td>
<td>3-5</td>
<td>No preservatives</td>
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<tr>
<td>IBR-CLC® Concentrated 0402</td>
<td>Hydrogenated Polydecene (and) Dunaliella Salina Extract</td>
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<td>No preservatives</td>
<td>o</td>
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<tr>
<td>IBR-CLC® Concentrated in Squalane 0404</td>
<td>Squalane (and) Dunaliella Salina Extract</td>
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<td>o</td>
<td></td>
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<tr>
<td>IBR-CLC® in Jojoba Oil 0407</td>
<td>Simmondsia Chinensis (Jojoba) Seed Oil (and) Squalane (and) Dunaliella Salina Extract</td>
<td>3-5</td>
<td>No preservatives</td>
<td>o</td>
<td>validated by ECOCERT to be used in organic cosmetics</td>
</tr>
<tr>
<td>IBR-AAC® 0501</td>
<td>Hydrogenated Polydecene (and) Dunaliella Salina Extract</td>
<td>3</td>
<td>No preservatives</td>
<td>o</td>
<td></td>
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<tr>
<td>IBR-TCLC® 0701</td>
<td>Hydrogenated Polydecene (and) Solanum Lycopersicum (Tomato) Fruit Extract</td>
<td>0.1-2</td>
<td>No preservatives</td>
<td>o</td>
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<tr>
<td>IBR-TCLC® in Squalane 0702</td>
<td>Squalane (and) Solanum Lycopersicum (Tomato) Fruit Extract</td>
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<td>No preservatives</td>
<td>o</td>
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<tr>
<td>IBR-TCLC® in Jojoba Oil 0705</td>
<td>Simmondsia Chinensis (Jojoba) Seed Oil (and) Squalane (and) Solanum Lycopersicum (Tomato) Fruit Extract</td>
<td>0.1-2</td>
<td>No preservatives</td>
<td>o</td>
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<tr>
<td>PhytifiORAL® TP 0903</td>
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<td>1-2g/day</td>
<td>No preservatives</td>
<td>Disperseable in water</td>
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</tbody>
</table>

* Only available per special request

**Disclaimer:** This information is based on data we believe to be reliable. It is intended only as a guide for use at user’s discretion and responsibility. It cannot be taken as a license to apply for, or infringe on any patents.

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**Natural and Organic Cosmetic certified by Ecocert Greenlife according to Ecocert Standard available at http://cosmetics.ecocert.com**

**Vegetable Glycerin & Sodium Metabisulfite**

**Paraben mixture**

**Chlorophenesin, Potassium Sorbate**

**Phenoxyethanol, Sodium Metabisulfite**

**Benzy] Alcohol, Benzoic Acid, Sodium**

**Chlorophenesin, Potassium Sorbate, Phenoxyethanol**

**No preservatives**

**Hydrogenated Polydecene (and) Dunaliella Salina Extract**

**Hydrogenated Polydecene (and) Solanum Lycopersicum (Tomato) Fruit Extract**

**Squalane (and) Dunaliella Salina Extract**

**Squalane (and) Solanum Lycopersicum (Tomato) Fruit Extract**

**Simmondsia Chinensis (Jojoba) Seed Oil (and) Squalane (and) Dunaliella Salina Extract**

**Simmondsia Chinensis (Jojoba) Seed Oil (and) Squalane (and) Solanum Lycopersicum (Tomato) Fruit Extract**
<table>
<thead>
<tr>
<th>Product</th>
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<tr>
<td>IBR-Gapture® 1101</td>
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</tr>
<tr>
<td>IBR-Dormin® 0301</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>IBR-Dormin®NP 0302</td>
<td>✓ ✓</td>
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<tr>
<td>IBR-Dormin® all natural 0305</td>
<td>✓ ✓</td>
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<tr>
<td>IBR-Dormin® Organic 0306</td>
<td>✓ ✓</td>
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<tr>
<td>IBR-Tom® ACM 0606</td>
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<tr>
<td>IBR-Dragon® 0801</td>
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</tr>
<tr>
<td>IBR-Dragon® BM 0803</td>
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</tr>
<tr>
<td>IBR-CalmDeAge™ 1201</td>
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</tr>
<tr>
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</tr>
<tr>
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<tr>
<td>IBR-CLC® in Jojoba Oil 0407</td>
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</tr>
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<tr>
<td>IBR-TCLC® 0701</td>
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<tr>
<td>IBR-TCLC® in Squalane 0702</td>
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<tr>
<td>IBR-TCLC® in Jojoba Oil 0705</td>
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</tr>
<tr>
<td>PhytoflORAL® TP 0903</td>
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</tr>
</tbody>
</table>

* Whitening, lightening, evening of skin tone via: (1) melanin synthesis inhibition; (2) melanocytes proliferation inhibition; (3) anti oxidation; (4) anti inflammatory; (5) ET-1; (6) UVB & A absorbtion

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Natural Skin Performance and Appearance Enhancer

- Improving skin structure, strength and cohesion
- Improving skin barrier functions
- Reducing water loss

NATURALLY IMPROVING SKIN APPEARANCE AND INTEGRITY
AVAILABLE FORMATS:
IBR-Gapture® 1101
INCI name: Glycerin (and) Water (and) Simmondsia Chinensis (Jojoba) Leaf Extract
Scientifically proven as moisturizer, improving skin appearance and integrity
Sourced from jojoba leaves, optimally adapted to dry desert conditions to protect the plant from dehydration, maintaining its livelihood & making the desert lush and refreshing.

Recommended use level: 1 – 3%

Effect of Jojoba extract on gene expression profile of keratinocytes
cDNA array gene expression study was performed with Jojoba extract at 0.03%.

Analysis of differential expression by minichips
The analysis of gene expression was performed using standard minichips dedicated to the study of gene expression and specially adapted to screening purposes.

The following gene were shown to be stimulated:
cytokeratin 5: +229% relative expression (=stimulation);
desmoplakin I & II: +185% relative expression (=moderate stimulation)
cytokeratin 2E/A: +160% relative expression (=moderate stimulation)
cytokeratin 1: +165% relative expression (=moderate stimulation)
syndecan-1: +160% relative expression (=moderate stimulation)
cell matrix adhesion regulator: +146% relative expression
cytokeratin 10: +146% relative expression
involucrin: +154% relative expression
fibronectin: +146% relative expression
• Indicating improved cell strength, structure and cohesion

Data in-vivo – skin cohesion and appearance

EFFECT ON THE SKIN RELIEF
An evaluation of the cutaneous relief parameters (average roughness Ra, maximum amplitude Rt and average relief Rz) resulting from routine use of a cosmetic product containing 3% IBR-Gapture®: 28 days, twice a day application (n=25). The evaluation is done using DERMATOP® (EOTECH - France).

RESULTS
A significant decrease in the average roughness is observed - a smoothing effect.
A significant decrease in the average relief & a significant decrease in the relief amplitude are found – a significant tensor effect.

Data in-vivo Trans Epidermal Water Loss (TEWL)

TEWL
This study evaluates Trans epidermal Water Loss (TEWL), in vivo, resulting from routine use of a cosmetic product containing 3% IBR-Gapture®: 28 days, twice a day application (n=11; age between 43 to 67 years). TEWL is measured at D0 and D28 using Tewameter® (Courage&Khazaka). The TEWL variations in % are calculated between D0 and D28.

A decrease of the TEWL represents an improvement of the skin barrier state.

RESULTS
The active product with 3% IBR-Gapture® applied twice a day for 28 days by 11 female volunteers showed a statistically significant improvement of the skin barrier with 12% decrease of the TEWL.

IN-VIVO EFFECT ON CELLULAR COHESION – VIA DESQUAMATION
Stratum corneum desquamation was evaluated by analysis of skin samples removed with D-Squam® on legs. Samples were taken on the same zone before and after 28 days of use of the product with 3% IBR-Gapture®, (n=26; Ave. Age: 41±3 years) The samples were analyzed for surface size of the removed squamae (in mm²) and the desquamation index (ratio between the occupied surface and the thickness of the cellular layers). A decrease in these two effects indicate a better cohesion of corneocytes.

RESULTS
A better corneocyte cohesion, characterized by a significant decrease in the desquamation index of ~42% on average within 54% of the subjects (p<0.001) and a significant decrease in the surface occupied by squamae of ~38% on average within 62% of subjects (p<0.001) was observed and measured.
DORMINs CONCEPT OVERVIEW

Providing youthful looking skin and protecting skin from external aggressions are the primary goals of most cosmetics products. The normal process of skin renewal begins in the inner layer where proliferation of epidermal cells takes place. Following cell division, cells migrate through the epidermis, while maturing, to reach the external skin surface and form a protective horny layer. The Hayflick theory \cite{Hayflick1961, Hayflick1975} postulates that normal human cells have a finite capacity to replicate. This theory has recently gained support from the finding that with each cell division, the telomeres, which in effect serves as a molecular clock and limits the cell’s capacity to replicate are shortened \cite{Bondar1998, Buchkovich1996}. Therefore, slowing down cell proliferation, thereby preventing telomeres shortening, appears to be the proper solution for anti-aging applications. Slowing cell proliferation prolongs the life span of epidermis and provides the means for complete epidermal maturation. Matured, properly differentiated cells have a better ability to protect inner cell parts from environmental aggressions, such as UV irradiation and xenobiotics, resulting in an enhanced skin aging process \cite{Campisi1996, Gilchrest1984}.

Although the term dormancy is frequently used in association with plants as well as with animals, this term is still not fully defined. In all forms of dormancy, the development of new organs from a meristemic tissue is arrested. Therefore, dormancy may be generally defined as a special condition of arrested growth in which growth functions are slowed and cell proliferation is inhibited. When dormancy is broken, cell proliferation and meristemic growth resume. Thus, compounds such as DORMINs, capable of inducing dormancy may be particularly favorable as reversible anti-proliferative agents.

DORMINs are natural cell proliferation inhibitor naturally extracted from plants and plant organs in their dormant stage, which are able to slow down cell proliferation, maintain younger healthier skin and provide the means for better skin protection as well as prevention of hyper proliferative cell disorders.

IBR’s Dormin technology preserves skin cells youth and existing telomeres by slowing down cell proliferation, expanding time between replications, thus preventing telomeres from getting chopped too fast. That way, the telomeres are preserved without active interference with cellular processes and the cells are kept in a younger, chronological age.

Reference:
**Slowing down cell proliferation slows down aging and leads to a beautiful skin**

**BENEFITS & USES:**
- Anti Aging & youth capital preservation: Dormancy, the Hayflick limit theory and telomers preservation
- Delay of hair growth - undesired body hair, men and women facial hair, underarm products
- Anti Sebum - face and scalp care
- Age Spots - whitening and lightening
- Elongation of sunless tanning
- Hair care - scalp protection, anti-dandruff

**IBR-Dormin®** is a natural aqueous extract from narcissus bulbs in dormancy that is able to capture and transfer flower bulbs dormancy and rejuvenation to skin.

*Award winning – Natural Active*

**AVAILABLE FORMATS:**
- **IBR-Dormin® 0301**
  - **INCI name:** Water and Narcissus Tazetta Bulb Extract
  - Preserved with parabens

- **IBR-Dormin® NP 0302**
  - **INCI name:** Water and Narcissus Tazetta Bulb Extract
  - Preserved without parabens

- **IBR-Dormin® all natural 0305**
  - **INCI name:** Glycerin and Water and Narcissus Tazetta Bulb Extract
  - Without preservatives
  - Ingredient validated to be used in cosmetic formulations according to ECOCERT Natural and Organic Standards*
  
  * Natural and Organic Cosmetics certified by ECOCERT GREENLIFE according to ECOCERT standards available at www.cosmetic.ecocert.com

- **IBR-Dormin® ORGANIC 0306**
  - **INCI name:** Glycerin and Water and Narcissus Tazetta Bulb Extract
  - Without preservatives
  - Certified organic according to USDA/COR/ECOCERT standards.

**Recommended use level: 0.5 - 2%**
Hair growth inhibition

Results
Hair Shaft Elongation

Sensory analysis of IBR-Dormin® in cosmetic cream

Hair growth inhibition

Hair Shaft Elongation [%]

=> IBR-Dormin® significantly reduces hair growth

Men Facial Hair Growth Delay in vivo

Under these study conditions, the white gel-cream with IBR-Dormin presented a significant delay of hair regrowth effect. The effect is characterized by a significant decrease in the speed of hair growth in 74% of the subjects (n=17), and averaged within this group at -13%. This corresponds to a delay of 03:32 hours in the appearance of the 5-o’clock shadow, i.e. in the need for the next shave (p<0.0001).
THE ANCIENT POWER OF DRAGON FRUIT

Legendary preservation of youth and prevention of aging

DORMINs Concept – please see overview

BENEFITS & USES:
An emerging beauty out of arid climates with an ancient legendary background:
- to preserve youth and prevent aging
- for brighter, radiant skin

The ancient legend
According to an ancient Chinese legend, the Dragon Fruit was created thousands of years ago by a fire breathing dragon. During a battle when the dragon breathed fire the last thing that came out of its mouth was the fruit. It is believed that those who nurture on the flesh of dragon fruit are endowed with the strength and the immortality of the dragon.

The Source - An emerging beauty out of harsh areas

Pitaya is a common name applied to a broad variety of warm-climate cacti fruit, from different species and genera. Hylocereus undatus is one of the Pitaya species, named “Dragon Fruit” as well. The “fruit of the 21st century” is getting increasingly popular recently all over the world for its exotic tasty fruits and magnificent flowers1,2. The exact origin of these species is unknown, but is likely to be from Central to South America1. These fruits are cultivated and grown in Israel along with substantial research1,2,3. Besides the exotic fruits, Pitaya has beautiful nocturnal flowers propagated as ornamentals. The flowers bloom only at night, and usually last just one night where pollination is necessary to set fruit4. Some Pitaya plants, like in Japan, bloom only on the 1st and 15th day of the lunar calendar, and some species in the Caribbean bloom once a year, usually in late summer. H.undatus is used in traditional and homeopathic medicines to treat heart problems from severe pain to hypertension and anxiety. The fruit juice is used to treat urinary tract infections.

References:

IBR-Dragon® is an aqueous composition obtained directly from Dragon Fruit (Pitaya) without the use of any organic solvent.

AVAILABLE FORMATS:
IBR-Dragon® 801
INCI name: Hylocereus Undatus Fruit Extract with Phenoxyethanol, Sodium Metabisulfite

IBR-Dragon® BM 803
INCI name: Hylocereus Undatus Fruit Extract with Benzyl Alcohol, Benzoic Acid, Sodium Metabisulfite * Only available per special request

Recommended use level: 1-5 %
Inhibition of cell proliferation

The research performed by IBR Ltd. showed anti proliferative activity of IBR-Dragon®, Dragon Fruit (Pitaya) extract, both on meristemic plant cells and normal human dermal fibroblasts. Therefore we believe that the extract, produced from the fruit liquid surrounding the seeds, is a source of inhibitors responsible for the seeds Dormancy.

Inhibition of seedling growth by IBR-Dragon®

Study in vivo

IN VIVO EFFICIENCY ASSESSMENT OF TWO COSMETIC PRODUCTS (CREAM WITH 5% IBR-DRAGON® / PLACEBO), USING IMAGE ANALYSIS FROM VISIA CR®.

The test of a cream containing IBR-Dragon® 5% on 12 healthy female volunteers aged 52-60; double blind placebo controlled and in randomized hemi-face application; twice a day for 28 days. Efficacy of the matifying effect was measured by analysis of images taken under parallel polarized light from VISIA CR® in order to enhance the skin shine. The skin intensity parameter was used for evaluation of skin illumination and brightening.

The intensity of the skin significantly increased for cream with IBR-Dragon® meaning that the skin hue is brighter.

Increase in skin intensity (brightening/luminescence) of active cream at day 28 compared to baseline.

In conclusion, the cream with 5% IBR-Dragon® applied in normal conditions of use, at home, during 28 days, by 12 female adult volunteers, significantly brighten the skin.
For skin as smooth and bright as snow

DORMINs Concept – please see overview

**BENEFITS & USES:**

**IBR-Snowflake® brings a new dimension to Anti-Aging:**
- Anti-Wrinkles: smoothen the skin and reduces wrinkles; affecting muscle cell contraction
- Slowdown Skin Aging: reduction of cell proliferation through dormancy
- Anti-Oxidant: increase Super Oxide Dismutase (SOD) production for natural skin defense
- Skin Whitening: through dormancy of the melanocytes

**Skin Aging:**
Skin extrinsic aging is the result of accumulated damage to skin due to several factors such as:
- UV and free radicals that both induce inflammation and damage the extracellular matrix including collagen and elastin fibers as well as the cell membranes; Muscle contractions subcutaneously create creases in the face: ruptures of the collagen and elastin fibers.

_This results in the appearance of wrinkles._

**Skin intrinsic aging:** is the natural and programmed aging.
- The Hayflick limit theory of aging is based on a finite number of cell replication; the higher the cell renewal, the shorter the cell life; Slowing down cell proliferation thus could preserve the youth capital delaying the aging process.

**IBR-Snowflake®**
Natural, aqueous extract from dormant Summer Snowflake bulbs.
Slowdown skin aging by reduction of cell proliferation through dormancy and increasing the natural defense against external aggression by enhancing SOD production in the skin cells.
Clinically proven to smooth the skin and reduce wrinkles - affecting muscle cell contraction. Contributing to lightening and whitening of the skin through dormancy of the melanocytes. Clinically proven and safe.

**AVAILABLE FORMATS:**

**IBR-Snowflake® 1001**
INCI name: Water (and) Leucojum Aestivum Bulb Extract.

**IBR-Snowflake® all natural 1003**
INCI name: Glycerin (and) Water (and) Leucojum Aestivum Bulb Extract.
-Ingredient validated to be used in cosmetic formulations according to ECOCERT Natural and Organic Standards*

* Natural and Organic Cosmetics certified by ECOCERT GREENLIFE according to ECOCERT standards available at [www.cosmetic.ecocert.com](http://www.cosmetic.ecocert.com)

**Recommended use level:** 0.5-2.0%
Cell proliferation inhibition: IBR-Snowflake® inhibition of fibroblasts proliferation

IBR-Snowflake® effect on MnSOD expression in keratinocytes

Naturally the skin eliminates oxidative stress through enzymes like SOD;
IBR-Snowflake® increases significantly MnSOD in keratinocytes (*20% increase at 0.15% IBR-Snowflake®); improving the natural skin protection and reducing oxidative damages

Clinical efficacy study (under the supervision of Dr. Alain Khaiat, President of Seers Consulting)

Improvement of the micro relief furrows with the use twice a day of a cream containing 2% IBR-Snowflake®

After 28 days of twice daily use, the cream with 2% IBR-Snowflake induced a:
- Significant decrease in the number of micro relief furrows (30% on average)
- Decrease was observed in 86% of the subjects
- Decrease in the number of median wrinkles (15% on average)
- Decreased was observed in 62% of the subjects

Improvement of the medium depth wrinkles with the use twice a day of a cream containing 2% IBR-Snowflake®

NICR-Snowflake Concentration (%)
DORMINs Concept – please see overview

**BENEFITS & USES:**

- **GLOBAL ANTI AGING**
  - Derives from IBR-CalmDeAge’s ability to:
    - Slow down cell proliferation (DORMINs) affecting intrinsic aging
    - Excellent anti-oxidation affecting extrinsic aging.

- **DARK CIRCLE REDUCTION** and **ROSACEA RELIEF**
  - Resulting from its alpha 2 adrenergic receptor agonist activity, leading to vasoconstriction
  - In addition to significant ability to reduce irritation

**The Source and Story**

Palm trees are naturally found in oases and are considered a source of life, providing refreshment and rejuvenation, a sign for moisture in the ground, as well as shade which provides protection from the harmful and intense sun irradiation and heat so abundant in the desert. The palm trees are some of the only trees that can tolerate the extreme conditions of the desert. Ancient date seeds were found that remained dormant for over 2000 years. One of these seeds was able to germinate and grow into a viable palm tree. It is thought that the dormins, which kept the seeds viable, but dormant for so long, are also able to slow down skin cell proliferation, thereby preserving skin youth and affecting intrinsic aging factors.

**The Concept**

IBR-CalmDeAge® is an aqueous extract from palm date seeds able to slow down cell proliferation as well as prevent oxidative damage, thereby slowing down aging, globally. The GLOBAL ANTI-AGING effect is observed in vitro and in vivo. Capturing the oasis calming, soothing and restful environment where date palms are naturally grown providing refreshment and rejuvenation, the product is able to DIMINISH DARK CIRCLES & significantly RELIEVE ROSACEA symptoms via vasoconstriction and reduction of irritation.

Rosacea is a chronic condition characterized by facial erythema (redness) as a result of blood capillary breakage, irritation and inflammation. Rosacea is a harmless condition, but it may cause one to be self-conscious or embarrassed. There is no known cure for rosacea. Under-eye Dark Circles are dark blemishes around the eyes. There are many causes of dark circles, including heredity, allergies, eczema, and bruising.

**AVAILABLE FORMATS:**

- **IBR-CalmDeAge® 1201**
  - **INCI name:** Glycerin (and) Water (and) Phoenix Dactylifera (Date) Seed Extract
  - **Recommended use level:** 3-5%

**GLOBAL ANTI AGING,**
**reduction of DARK CIRCLES**
**and RELIEF of ROSACEA**
**ANTI OXIDANT EFFECT**

Trolox Equivalent Total Antioxidant Activity (TAA Or TEAC)
Total Anti Oxidant activity of 100% IBR-CalmDeAge® is equivalent to 60-100 mM Trolox

The Folin—Ciocalteu Reagent (FCR) Also Named The Gallic Acid Equivalence Method (GAE)
Total polyphenols equivalent of IBR-CalmDeAge® is: 5000-10000mg/L Gallic Acid Equivalent

**MODERATION OF CELL PROLIFERATION**

Dormin-Like Effect on Keratinocytes Proliferation
Increased concentration of IBR-CalmDeAge slowed down keratinocytes proliferation as measured using MTT assay for proliferation of Normal Human Epidermal Keratinocytes (NHEK)

**ANTI-IRRITATION**

Modified Het-Cam Irritation Test
Method: irritation reduction in pre-irritated tissue, using a modified HEN’s EGG TEST - CHORIOALLANTOIC MEMBRANE (HET-CAM) model (n=3). The key measure is the time to appearance of irritation symptoms. A delay is considered as indicating an anti-irritant activity (results in table 1).

---

### Results:

<table>
<thead>
<tr>
<th></th>
<th>Hemorrhage</th>
<th>Vascular Lysis</th>
<th>Coagulation</th>
<th>Mean Irritation Score</th>
<th>Irritation Classification</th>
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<tbody>
<tr>
<td>Negative Control</td>
<td>301</td>
<td>301</td>
<td>301</td>
<td>0</td>
<td>Non-Irritant</td>
</tr>
<tr>
<td>Positive Control</td>
<td>6.7</td>
<td>301</td>
<td>24</td>
<td>13.22</td>
<td>Severe-Irritant</td>
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<tr>
<td>Irritant</td>
<td>44.3</td>
<td>127.3</td>
<td>301</td>
<td>8.33</td>
<td>Moderate-Irritant</td>
</tr>
<tr>
<td>Irritant + Vehicle</td>
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<td>224</td>
<td>301</td>
<td>5.69</td>
<td>Moderate-Irritant</td>
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<tr>
<td>Irritant + IBR-CalmDeAge 3%</td>
<td>52.3</td>
<td>301</td>
<td>301</td>
<td>4.14</td>
<td>Slight-Irritant</td>
</tr>
</tbody>
</table>

Table 1: Irritation protective activity of IBR-CalmDeAge® vs placebo, positive and negative control (n=3).

*IBR-CalmDeAge® refers here to date seed extract in water w/o stabilizers.

IBR-CalmDeAge® at 3% reduced pre-induced irritation by SLS by at least 50%.
**ALPHA 2 ADRENERGIC RECEPTOR, VASOCONSTRICTION: EFFECTS AND SUGGESTED MECHANISM OF ACTION**

**VASCULAR MICROCIRCULATION**

**Alpha 2 Adrenergic Receptors Activation and Vasoconstriction**

An agonistic effect on the alpha-2 adrenergic receptor of smooth muscle cells may result in a vasoconstrictive effect which may result in improved, homogenous appearance of the skin in that area it occurs and reduction of the dark circles and rosacea symptoms (Figure 2).

**Figure 2. Suggested mechanism of action of IBR-CalmDeAge on reduction of dark circles and rosacea by optimized microcirculation resulting from its alpha 2 adrenergic receptor agonistic effects and possible vasoconstriction.**
Table 2. alpha 2 adrenergic receptor agonistic effect of increased concentrations of IBR-CalmDeAge®

IBR-CalmDeAge® showed a significant activity as an alpha-2A adrenergic receptor agonist, potentially affecting the capillary blood vessels constriction, and alleviating dark circles and rosacea.

<table>
<thead>
<tr>
<th>Product</th>
<th>Concentration (%)</th>
<th>Alpha 2A adrenergic receptor agonist % of positive ctrl. response</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBR-CalmDeAge®</td>
<td>0.5</td>
<td>24</td>
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<tr>
<td>IBR-CalmDeAge®</td>
<td>1.5</td>
<td>65</td>
</tr>
<tr>
<td>IBR-CalmDeAge®</td>
<td>4.5</td>
<td>102</td>
</tr>
</tbody>
</table>

IBR-CalmDeAge® Anti-Aging, Dark Circle Reduction
IBR-CalmDeAge® at 5% Placebo controlled, double blind study twice daily, 28 days evaluation using Visia®, n=12

IBR-CalmDeAge® Anti-rosacea effect
IBR-CalmDeAge® at 5% Placebo controlled, double blind study twice daily, 28 days evaluation using Visia®, n=12

Allow your skin to rest, relax, revive and rejuvenate as under the shade of the date palm trees.
Biologically, carotenoids are an important group of compounds with more than 700 members. Carotenoids are found widely throughout nature, but they are synthesized *de novo* only by plants, algae, fungi and bacteria where they can aid in the absorption of light and the capture of additional energy, which helps neutralize tissue-damaging free radicals (1).

Unfortunately, most carotenoids are sensitive to light, a property that considerably limits their use and shortens the shelf life of products that contain them (2). In addition, almost all carotenoids have a distinctive color, which limits their utility for cosmetic and some food applications.

In contrast to all other carotenoids, phytoene and phytofluene, the first carotenoid precursors in the biosynthetic pathway of other carotenoids, are colorless (or alternatively, lacking visible color) and absorb light in the UV range only. Phytoene has been shown to be anti-carcinogenic in the mouse skin cancer model (3), and experiments performed with phytoene-producing transgenic mice suggest that phytoene may play a role in cell-to-cell communication (4). It is important to note that dietary phytoene and phytofluene are accumulated in human skin (5,6). The accumulation of these colorless carotenoids can potentially protect the skin by several mechanisms: acting as UV absorbers, as anti oxidants, as anti inflammatory. The distribution of phytoene and phytofluene in human serum, prostate, and skin (6) suggests that phytoene and phytofluene may be responsible for the carotenoid protective effects observed in beauty and skin applications.

IBR-Phyto(flu)ene® COLORLESS CAROTENOIDS products containing phytoene and phytofluene, naturally produced and/or extracted from special non-GMO tomatoes and algae.

The COLORLESS CAROTENOIDS have effective and beneficial activities for beauty applications, specifically in protection against UV and oxidative damage, which is known to lead to pre-mature aging and other phenomena. Able to control pigmentation by inhibition of melanin synthesis, IBR-Phyto(flu)ene® COLORLESS CAROTENOIDS lighten the skin. They also present abilities of inflammation reduction, anti oxidation and UVA/UVB protection that enhance skin lightening.

Additionally, IBR-Phyto(flu)ene® COLORLESS CAROTENOIDS are capable of stabilization, protection and boosting of bio-molecules.

Reference
**Un-Visible <UV> carotenoids for beauty inside and outside**

**BENEFITS & USES:**
- Anti-aging
  - anti oxidants
  - anti inflammatory
  - UV absorbers
  - protection against damage to DNA
- Sun protection – reduce UV damage
- Skin whitening agent
  - inhibition of melanin synthesis

**AVAILABLE FORMATS:**

**IBR-CLC® Colorless Carotenoids 0401**
- INCI name: Hydrogenated Polydecene (and) Dunaliella Salina Extract
- Recommended use level: 3-5 %

**IBR-CLC® Concentrated 0402**
- INCI name: Hydrogenated Polydecene (and) Dunaliella Salina Extract
- Recommended use level: 0.1-1 %

**IBR-CLC® Concentrated in Squalane 0404**
- INCI name: Squalane (and) Dunaliella Salina Extract
- Recommended use level: 0.1-1 %

**IBR-CLC® in jojoba oil 0407**
- INCI name: Simmondsia Chinensis (Jojoba) Seed Oil (and) Squalane (and) Dunaliella Salina Extract

**IBR-AAC® Anti Aging Carotenoids 0501**
- INCI name: Hydrogenated Polydecene (and) Dunaliella Salina Extract
- Recommended use level: 3-5 %
- Qualities: Oil soluble, NATURAL, safe, multifunctional ingredient.

*The product is validated by ECOCERT for use in natural and organic formulations*

**IBR-AAC® Anti Aging Carotenoids with additional pro-retinol component**

* Natural and Organic Cosmetics certified by ECOCERT GREENLIFE according to ECOCERT standards available at www.cosmetic.ecocert.com
Colorless carotenoids - in vitro anti-inflammatory activity Phytohemaglutinin (PHA) Activated Human Peripheral Blood Lymphocytes (PBLs)

Carotenoids stability - 6 hr at 80°C

<table>
<thead>
<tr>
<th>Sample</th>
<th>IC_{50} (g/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IL-1</td>
</tr>
<tr>
<td>IBR-CLC®</td>
<td>&gt;1000</td>
</tr>
</tbody>
</table>

Colorless carotenoids quench hydroxyl radicals
Hydroxyl radicals are of the most destructive free radicals in nature
Un-Visible <UV> carotenoids for beauty inside and outside

**BENEFITS & USES:**

- Protection against UV damage
- Anti-aging and photo-aging (Harman’s theory)
- Skin whitening, lightening & evening of skin tone
- Protection & boost of other active ingredients

**AVAILABLE FORMATS:**

**IBR-TCLC**® 0701  
**INCI name:** Hydrogenated Polydecene (and) Solanum Lycopersicum (Tomato) Fruit Extract  
**Recommended use level:** 0.1-1 %

**IBR-TCLC**® in Squalane 0702  
**INCI name:** Squalane (and) Solanum Lycopersicum (Tomato) Fruit Extract  
**Recommended use level:** 0.1-1 %

**IBR-TCLC**® in Jojoba oil 0705  
**INCI name:** Simmondsia Chinensis Seed Oil (and) Squalane (and) Solanum Lycopersicum (Tomato) Fruit Extract  
**Recommended use level:** 0.1-1 %

**Qualities:** Oil soluble, NATURAL, safe, multifunctional ingredient
COLORLESS CAROTENOIDS quench free radicals.

COLORLESS CAROTENOIDS effectively quench hydroxyl radicals which are of the most destructive free radicals in nature.

Demonstrating DPPH free radical quenching, lipophilic free radicals, by the COLORLESS CAROTENOIDS.

Inhibition of melanin synthesis in a dose dependent manner by the COLORLESS CAROTENOIDS in B-16 murine melanocytes leading to reduced pigmentation = skin whitening.

The ability of the COLORLESS CAROTENOIDS to whiten the skin (patented technology of IBR Ltd) is a combined effect of melanin synthesis inhibition, reduction in UVA, anti oxidation and anti inflammatory effect.

IBR-TCLC IN VIVO STUDY FOR ANTI AGING AND SKIN PROPERTIES

The phytone and phytofluene extract, IBR-TCLC showed excellent complementary anti-aging properties in a clinical testing at 1.5% in cosmetic cream. The study show significant improvement of skin elasticity and firmness, anti wrinkle effect as well as lightening and radiance benefits.

The effect strengthening the positioning of the phytone and phytofluene as unique actives that protect the skin, maintain beautiful, healthy, radiant and younger looking skin from within as well as topically.

Anti inflammatory effects (reduced PGE-2 expression in IL-1 induced normal human fibroblasts).
Revolution in Photo-Protection, Lightening and Evening of Skin Tone

Beauty from Within; a NutriCosmetics Innovation

Non-novel food (FSA)
A natural powder from IBR proprietary, non-GMO tomato rich in phytoene and phytofluene

BENEFITS & USES
- Sun protection - anti aging and photo aging
- Skin whitening/lightening & evening of skin tone
- Protection and boost of biomolecules

Beauty from Within
Natural carotenoids with:
- Unique anti oxidative capacity
- UV absorbency = invisible color
- Anti inflammatory
- Inhibition of melanin synthesis
- Inhibition of MMP-1 (collagenase)
- Prevent damage to DNA
- Protection and boost of other biomolecules and actives

Phytoene, Phytofluene

- Protection against UVA & UVB
- Anti oxidant
- Anti inflammatory
- Inhibits collagenase expression and subsequent collagen degradation
- Prevents damage to DNA
- Protection & boost of biomolecules
- Protection & Boost of Sun Screens
**EVALUATION OF PHOTOPROTECTION AND SKIN LIGHTENING POTENTIAL OF PhytoflORAL® in TWO CLINICAL studies**

**Aims:**
- To evaluate skin photo-protection and lightening due to dietary consumption of PhytoflORAL®
- To evaluate the effect of PhytoflORAL® on skin quality
- To evaluate the subjects’ appreciation of PhytoflORAL® efficacy and characteristics
- Open and intra-individual study
  - n=22 Average age: 24±1 years old (between 20 and 40)
  - Skin photo type II and IV respectively

**Results and conclusions:**

**Photoprotective effect:** PhytoflORAL® presented a significant photoprotective effect after 84 days of product use, highlighted by a significant increase of the Minimum Erythemal Dose (MED) after UV exposure. MED increase was observed in 65% of the subjects and increased 20% in average within this group.

**Lightening effect:** The study results indicate a significant skin lightening effect, with increases in L* value and ITA among up to 82% of panelists.

In both studies: PhytoflORAL® induced an improvement of skin quality after 42 and 84 days of use, shown by clinical scoring by the dermatologist as well as by the panelists evaluation. Resulting in: significant improvement in skin dryness, roughness, suppleness, eveness and texture.

Subjects found an improvement especially in skin radiance, evenness, hydration, smoothness, suppleness, elasticity and irritability. They found their skin more resistant to sun damages, more beautiful and visually healthier.

The data so far provide evidence that dietary intake of phytoene and phytofluene such as in the form of PhytoflORAL® will result in accumulation of the phytoene and phytofluene in the skin delivering thereby their skin benefiting activities:
- Protection against oxidative and photo damage
- Skin lightening and even skin complexion
- Anti aging overall

**PhytoflORAL® provides a natural and unique product to maintain beautiful, healthy, radiant and younger looking skin from within**
A multi functional complex of actives effectively and significantly lightens the skin tone protects the skin keeps skin younger and younger looking
Skin benefits and dermal relief and beautification of sensitive, discomforted skin.

A proprietary complex of actives

Clinical study reveals:
IBR-PROPHYDERM® DELIVERS EQUIVALENT ACTIVITY TO 1% HYDROCORTISONE, WITHOUT RESORTING TO STEROIDS

Total scoring and efficacy index of both treatments (IBR- ProPhyDerm® cream vs. Hydrocortisone 1% cream) was identical.
**Colorless Carotenoids Combinations**

### Carotenoids
- **Phytoene & Phytofluene** - ß-carotene
  - Stabilization and protection against degradation
  - IBR-AAC® Anti Aging Carotenoids - Phytoene, phytofluene and ß-carotene: anti oxidation, anti inflammation, UV protection and pro-retinol addition

### DHA
- DiHydroxy Acetone
- **Phytoene & Phytofluene** - DHA (di hydroxy acetone)
  - Stabilization and protection against degradation
  - Anti oxidants - extending artificial sun tan

### Omega 3 oils
- **Phytoene & Phytofluene** - Omega 3 oils
  - Stabilization and protection against degradation
  - Combined activities:
    1. Prevention of UV damage
    2. Anti aging, anti-inflammatrory & protection from UV damage
    3. Reduced stretch marks and wrinkles via combined activity of induction of new collagen (degradation and enhancement of new collagen synthesis)
    4. Skin protection

### Vitamin C
- **Phytoene & Phytofluene** - Vitamin C
  - Stabilization in emulsions
    - Activities:
      1. Combined skin whitening/brightening activity
      2. Oil soluble and water soluble anti oxidants combination
      3. Reduced stretch marks and wrinkles via combined activity of induction of new collagen synthesis

### IBR-Dormin®
- **Phytoene & Phytofluene** - IBR-Dormin®
  - Combined effect of short and long term anti aging activities
  - IBR-Phyto(flu)eneTM:
    - Anti oxidation >> maintaining collagen levels
    - UV protection >> DNA damage prevention

### IBR-CLC®
- **Phytoene & Phytofluene**
  - ORAL
    - Efficacy
    - Protection and stability
    - Synergism
    - Boosting activity

### TiO2 & ZnO
- **Phytoene & Phytofluene** - TiO2 & ZnO
  - Stabilization
  - Boost of SPF
  - Reduces generation of free radicals and damage derived from irradiation of TiO2 & ZnO

### CoQ10
- **Phytoene & Phytofluene** - CoQ10
  - Stabilization and protection against degradation
  - Synergism
  - Anti Aging via:
    1. Reduced MMP-1 expression*
    2. Reduced inflammation - PGE-2*
  - Anti Aging via reduction of fatigue and stress

### Retinol
- **Phytoene & Phytofluene** - Retinol
  - Stabilization and protection against degradation
    - 5% Retinol
    - 0.5% IBR-Phyto(flu)ene
    - 0.1% Retinol
    - 0.05% IBR-Phyto(flu)ene

### Avobenzone
- **Phytoene & Phytofluene**
  - Stabilize and Boost Avobenzone

### Omega 3 oils DHA & EPA
- **Phytoene & Phytofluene** - Omega 3 oils
  - Stabilization and protection against degradation
  - Range of peroxide number
  - Effective stabilization of avobenzone (6.67%) by Phyto(flu)ene 0.0075% following 10 minutes exposure to sunlight, an in vitro study performed in duplicate

### Retinol levels in cream after 4 weeks
- 0.5% IBR-Phyto(flu)ene = 93% or 0.05% BHT = 68%

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NEW CONCEPT

**IBR-Phyto(flu)ene®**
The Colorless Carotenoids

A Perfect Skin Supplement to stabilize, boost and support broad-spectrum sunscreen, sun protection and care.

- **Carotenoids**
- **TiO₂ & ZnO**
- **Avobenzone**
- **CoQ10**
- **IBR-CLC®**
- **DHA DiHydroxy Acetone**
- **Phytofl ORAL**
- **IBR-TCLC®**
- **Colorless carotenoids: Phytoene & Phytofluene**
  - Efficacy
  - Protection and stability
  - Synergism
  - Boosting activity
- **Omega 3 oils**
- **DHA & EPA**
- **Vitamin C**
- **IBR-Dormin®**
- **IBR-Dormin®**

**IBR-Dormin®**

A Perfect Skin Supplement to stabilize, boost and support broad-spectrum sunscreen, sun protection and care.
Beauty from inside and outside IS COUPLED
IBR-Phyto(flu)ene®: IBR-TCLC® & PhytoflORAL®

Beauty Inside and Outside with Phytoene & phytofluene, The Colorless Carotenoids

IBR-Phyto(flu)ene® Products are a Perfect Skin Supplement from Within and Outside for the Support of Skin Anti Aging Capabilities, Protection and Care Against Sun as well as lighter and Even Skin Tone
Thank You

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