Sun protection
Anti-photo aging
the most natural way to reinforce skin natural defenses against outdoor and indoor radiations

Anti-oxidation
Anti-inflammation
Anti-immunosuppression
Protection against sun and domestic radiations
**SUN RADIATIONS VS SKIN NATURAL DEFENSES**

**Light radiation and skin premature aging**
Luminous radiations: environmental and domestic lights, are composed of different wavelengths, from UVs to IR through visible lights.
Any luminous radiations participate to skin premature aging with more or less skin depth and damages.
UV are the most noxious sunrays that can strongly affect skin and cause major damages and premature aging.
Among Uvs, UV-B and UV-A have been at the center of attention since science identified their noxious effects.

**UVs, skin’s archenemies**
UV have direct and indirect damaging impacts:

1. **UV radiation can directly affect DNA and cause mutations.**
   These mutations may lead to three different outcomes:
   - reparation if the damage is low,
   - cell death if the damage is beyond repair; or
   - cell cancer if reparation genes were mutated.

2. **UV generate free radicals, especially ROS (reactive oxygen species) that will in turn affect:**
   - DNA,
   - skin proteins (enzymes and structural proteins)
   - skin cells metabolisms.

**SKIN DEFENSES AGAINST UVS**
SKIN DEVELOPED SEVERAL NATURAL PROTECTIONS AGAINST UV AMONG WHICH UROCANIC ACID AND MELANIN.

**Urocanic acid – barrier function defense**
Urocanic acid (UCA) is the 2nd most common skin natural defense system: chromophore, and absorbs UVs. It is mainly located in the stratum corneum.

**Melanin – keratinocytes defense**
Melanin is the most common mechanism of defense against UV and strongly absorbs UV. It is mainly located around living cells layer of the epidermis.

**OVERWHELMED SKIN DEFENSES**
SKIN NATURAL PROTECTIONS AGAINST UV UROCANIC ACID AND MELANIN ARE NOT FOOLPROOF.

Over radiation exposure, degrade these natural defenses protective potential.

**Urocanic acid –**
UCA isomerization generates ROS and inflammation.
In addition UCA (Cis) induces skin immuno-suppression as galectin 7 is over-expressed.

**Melanin –**
Once, it UVs absorbance potential is exceeded, as any proteins, melanin is degraded and generates ROS.

**INTENSE AND RECURRENT LUMINOUS RADIATIONS LEADS TO SKIN PREMATURE AGING**

**SHORT TERM CONSEQUENCES OF INTENSIVE SUN RADIATIONS EXPOSURE**
- DNA and metabolic damages
- Inflammation, and edema
- Dryness: barrier function degradation
- Sensitivity and redness

**LONG TERM CONSEQUENCES OF RECURRENT LIGHT (SUN-ENVIRONMENTAL + ARTIFICIAL-DOMESTIC) RADIATIONS EXPOSURE**
- Atopic skin: irritated and dry skin
- Dull complexion
- Dark spots
- Skin structural collapse
- Premature aging
Endadine
Cosmetic characteristics

Reduce sun induced skin damages by boosting skin natural defenses and immunity to prevent sun burn consequences and skin premature aging.

**Cosmetic applications**
- Sun protection
- Anti photo-aging
- Anti-inflammation
- Hydration and firming
- Photo induced spots prevention

**Beauty promises**
- Negates UV nocious effects
- Soothing effect
- Skin dryness prevention
- Even complexion
- Anti-wrinkles
- Atopic skin prevention

**Cosmetic Concepts**
- UV protection by absorbance: Reinforce skin natural defense (prevents melanin and urocanic acid isomerization)
  - Anti photo-aging:
    - avoids consequences of immuno suppression
    - toxic forms accumulation
  - Anti photo immunosuppression:
    - fights Sun induced immunosuppression
    - prevents galectine 7 overexpression
  - Prevents atopic skin senzitization
  - Long lasting UV absorbance: recycling active ingredient

**Metabolic targets**
- Anti-oxidant properties
- Limitation of trans UCA transformation in cis, the immunosuppressive form
- Prevents dermic matrix degradation: MMP-1 inactivation
- DNA protection
- Prevents Sun Burn Cells formation, source of age spots
- Limits inflammation, inhibiting synthesis of IL-8 and TNF-alpha
- Limits immunosuppression, inhibiting galectine 7 synthesis
Cells and metabolic degradations induced by sun overexposure leads to visible skin damages such as: oedema, dryness, sensitivity and redness, mainly due to UVB rapid effects.

**Optimized skin’s cells survival**

Among most noxious effects of sun radiations over cells are DNA damages such as CPD that can lead to cells apoptosis. These dying cells are characterized by a dense nucleus and described as the “sun burn cells”.

**Prevention of sun burn noxious and visible effects**

Immuno suppression and inflammation are generated by mediators following sun overexposure. Both mechanisms induce visible consequences: dryness and redness.

**ANTI SKIN SENSITIVITY AND REDNESS**

**ANTI INFLAMMATORY EFFECT**

**ANTI SKIN DEHYDRATION**

**ANTI IMMUNO SUPPRESSION**

**ENTADINE benefits against sun-burning:**

- Extends skin natural defenses efficacy for delayed erythema
- Limits immuno-suppression responsible for skin dryness
- Prevents inflammation redness and sensitivity
- Limits sun burn visible effects consequences.
Over life time, recurrent luminous radiations exposure leads to accumulation of inflammation and immuno-suppression. These will induce deep skin disorders and premature aging.

Protection against environmental radiations

Life time sun exposure is known to induce skin premature aging, slowly but globally disorganizing skin metabolisms and structure.

Protection against Domestic radiations

Artificial lights and multimedia electromagnetic radiations, known as the feared blue lights are representative of domestic light pollution. It was reported to cause skin hyperpigmentation, to delay skin barrier recovery and to produce ROS leading to an overexpression of MMP-1.

ENTADINE benefits against photo-aging:

- Protects against environmental (sun) and domestic (artificial) radiations
- Protects against loss of immunity and accumulation of toxic forms
- Prevents metabolic disorders, source of dull complexion and age spots
- Limits inflammation participating to structural collapse
- Prevents skin premature aging.
ENTADINE
Mechanism of action: Global natural luminous radiations protector

ENTADINE is obtained by a patented extraction method from the seeds of entada phaseoloides. This innovative extraction method relies on endogenous enzymes self activation to induce specific hydrolysis.

Entada phaseoloides is a large liana climbing into tropical and coastal forests of the intertropical zones. Its seeds have been used as traditional medicine to treat different skin diseases. Anti-inflammatory and anti-oxidant activities are also reported in the literature.

Identified active molecules

Entadamide A
Prevents urocanic acid isomerization
Prevents inflammation and immunosupression
Inhibits melanin production

Phaseolidin
Multi potent anti-oxidant
Photoprotector

ENTADINE is a natural source of Entadamide A, a completely safe natural UV absorber. By absorbing UV, it has the ability to be recycled into and from SOLEXYL, one of our latest released biomimetic active ingredient for long lasting benefits.

Anti oxidant properties

As expected, ENTADINE is endowed with significant anti-oxidant activities, probably due to Phaseolidin, a major constituent of the extract. The activity is confirmed thanks to the DPPH and ABTS usual procedures.
ENTADINE

INCI NAME

Entada Phaseoloides bark/seed extract

ANALYTICAL COMPOSITION

Entada Phaseoloides bark/seed extract .............................................. 13%
Propanediol ........................................................... 50%
Water (sq) ............................................................ 100%

PHYSICO-CHEMICAL CHARACTERISTICS

Limpid to slightly opalescent liquid, orange to red
Miscible with water and glycols
Entanamide A content: 0.23 - 0.27%
Phaseoloidine: > 3%

PRESERVATIVES

No preservative system

TOLERANCE AND TOXICITY STUDIES

ENTADINE does not show any toxicity, and tolerance studies show that it is perfectly tolerated

FORMULATION

Advised doses: 1.5 to 4%

AVAILABILITIES

ENTADINE is available in 5kg and 30kg drums