DEXTRALIP® 10C
Soothing & Anti-ageing Active
CARACTERISTICS
CARACTERISTICS

- Hydrosoluble polysaccharide
- Produced by bio-fermentation
- ECOCERT approved

► I.N.C.I : Sodium Dextran Sulfate
► CAS : 9011-18-1
► N° CLS : 00 66 01
► MW : ≈ 10 000
► Composition : 100 % (neither additive nor preservative)
► Appearance : White to pale yellow powder
SOOTHING POWER
Clinical Tests

OEDEMATA REDUCTION

- DEXTRALIP®10C is present at 2% in the « Dextrarine Phenylbutazone® » ointment → Marketing authorisation registered in 1963.
- Anti-inflammatory and anti-oedematous activities

Pourcentages of variation in the volume of the oedemata with respect to the control batch

Pourcentages of variation in the weight of the abscesses with respect to the control batch

- Excipient
- Dextran ointment 2% Dextran Sulphate
- Phenylbutazone ointment
- Dextramine Phenylbutazone (2% Dextran Sulphate)
**In-vitro tests**

**INHIBITION OF PROSTAGLANDINS SECRETION**

-82%

*Measurement of DEXTRALIP® 10C and Enoxolone effect on the PGE₂ release* *(in % of inhibition)*

- **Indomethacine**
- **Enoxolone**
- **Dextralip® 10C**

- **Dextralip® 10C effect on prostaglandins (PGE₂) secretion**
  - by human keratinocytes
  - previously stimulated by a pro-inflammatory agent (PMA)
  - Strong inhibition of PGE₂ release
  - Dose-dependent effect

*Study carried out in 2007 by Bio-Alternatives*
## In-vivo tests

**ACTINIC ERYTHEMA REDUCTION** ……………………………………………………………… -70% 

<table>
<thead>
<tr>
<th>Decrease in an erythema compared with placebo</th>
<th>Between (T5H-T0)</th>
<th>Between (T7H-T0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEXTRALIP® 10C (1%) emulsion</td>
<td>-24%</td>
<td>-70%</td>
</tr>
<tr>
<td>Stearyl Glycyrrhetinate (0,4 %) emulsion</td>
<td>-30%</td>
<td>-90%</td>
</tr>
</tbody>
</table>

**Measurement of the decrease in an erythema by thermal conductivity**

(Measurement of the cutaneous micro-circulation in mW/cm °C)

![Graph showing the decrease in erythema](image)

- **DEXTRALIP® 10C reduces erythema induced by sun exposure**

  Recommended in:
  - Sun & after sun-care
  - Sensitive skincare

* Study carried out in 2006 by Synthelabo
In-vivo tests

**Booster Activity**

Variation of the cutaneous micro-circulation by thermal conductivity measurements (Hematron®)*

![Graph showing variation of cutaneous micro-circulation](image)

- Placebo
- Permethol® (1%)
- Permethol® (1%) + Dextralip® 10C (1%)

55% of volunteers 35% of volunteers

- Enhancement of the cutaneous microcirculation due to Permethol® activity, reinforced by the synergistic activity of the DEXTRALIP® 10C.

Recommended in:
- Heavy legs product
- Anti-cellulite
- Eye contour (rings and bags under the eyes)

* Study carried out in 2001 by Dermscan
ANTI-AGEING POWER
NEW IN-VITRO TESTS ➔ GENE EXPRESSION PROFILING*

EVALUATION OF DEXTRALIP®10C EFFECT ON THE EXPRESSION OF GENES INVOLVED IN SKIN AGEING:

► By RT-qPCR
► On a model of human dermal fibroblasts (NHDF)

RESULTS:

► COX-2 inhibition ➔ Fight against inflamm’ageing and photo-ageing
► Cyclin D1 stimulation ➔ Cellular renewal and proliferation
► TP63 stimulation ➔ Prevention of prematured skin ageing
► GADD45α stimulation ➔ DNA protection and repair

* Study carried out in 2016 by Bio-Alternatives
Invisible and silent chronic low-grade inflammation

Micro-inflammations triggered by UV and pollution exposure, lack of sleep, aggressive make-up removal...etc.

ROS production going with these cutaneous micro-inflammations promotes pro-inflammatory cytokines release more each time.

Phenomenon intensifying with age

Progressive MEC damages +

Weakening of skin cellular systems of defense and detoxification
ANTI-AGEING POWER

INHIBITION OF COX-2 EXPRESSION ……………………………………………………… -62%

► These results demonstrate DEXTRALIP® 10C capacity to inhibit PGE₂ secretion by directly reducing COX-2 expression, the enzyme which is responsible for PGE₂ synthesis.

<table>
<thead>
<tr>
<th>GENES</th>
<th>DEXTRALIP®10C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,1mg/ml</td>
<td>1mg/ml</td>
</tr>
<tr>
<td>► COX-2</td>
<td>-46%</td>
</tr>
</tbody>
</table>

Measurement of DEXTRALIP® 10C effect on COX-2 expression* (in % of gene expression stimulation)

DEXTRALIP® 10C

fights against inflamm’ageing and photo-ageing

▪ Dose-dependent effect ▪

* Study carried out in 2016 by Bio-Alternatives
ANTI-AGEING POWER

ANTI-INFLAMM’AGEING DEXTRALIP®10C EFFECT

UV, pollution, stress → Cell membranes damages → Arachidonic Acid → Leukotriene + Histamine → PGE₂ → Immune cells recruitment → Hyaluronidase, Elastase and Collagenase Stimulation → Extra Cellular Matrix Damages

DEXTRALIP®10C

Stops the inflammatory cascade reaction ahead of the INFLAMM’AGEING vicious circle to prevent premature skin ageing.
**Journal of Cosmetic Dermatology - Septembre 2014**

Increase in cyclooxygenase-2 (COX-2) expression in keratinocytes and dermal fibroblasts in photoaged skin

Pawel Surowski MD, PhD, Tserenchunt Gansukh MD, PhD, Piotr Donizy MD, Agnieszka Halon MD, PhD and Zbigniew Rybak MD, PhD

► COX-2 expression increases with age.

► COX-2 expression in humans keratinocytes and fibroblasts is significantly higher in skin samples affected by photo-ageing compared to samples affected by endogenous ageing.

► Therefore *inhibition of COX-2 expression* may find application in *photo-ageing treatment* to fight actively against skin ageing.

**DEXTRALIP® 10C**

Fights against COX-2 over-expression induced by age and UV to prevent skin photo-ageing
ANTI-AGEING POWER

CYCLIN D1 STIMULATION ........................................................................................................... +116%

► Responsible for the « quality control » of the cell cycle, Cyclin D1 promotes cell renewal and proliferation.

<table>
<thead>
<tr>
<th>GENES</th>
<th>DEXTRALIP®10C (0,1mg/ml)</th>
<th>DEXTRALIP®10C (1mg/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclin D1</td>
<td>+78%</td>
<td>+116%</td>
</tr>
</tbody>
</table>

Measurement of DEXTRALIP® 10C effect on Cyclin D1 expression* (in % of gene expression stimulation)

DEXTRALIP® 10C
Promotes natural skin cell renewal

▪ Dose-dependent effect*

* Study carried out in 2016 by Bio-Alternatives
TP63 STIMULATION ......................................................... +171%

- Essential for the proper development of skin epidermis
- TP63 deficiency increases cellular senescence and causes accelerated skin ageing.
- Known as « The fountain of Youth » TP63 maintains the proliferative potential of skin stem cells which is critical for wounds healing and skin cell renewal.

<table>
<thead>
<tr>
<th>GENES</th>
<th>DEXTRALIP® 10C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0,1mg/ml</td>
</tr>
<tr>
<td>► TP63</td>
<td>+115 %</td>
</tr>
</tbody>
</table>

Measurement of DEXTRALIP® 10C effect on TP63 expression* (in % of gene expression stimulation)

DEXTRALIP® 10C

Protects skin tissue from premature ageing
by regulating cellular senescence

Promotes cell renewal and skin repair

- Dose-dependent effect *

* Study carried out in 2016 by Bio-Alternatives
ANTI-AGEING POWER

GADD45α STIMULATION

- Nuclear protein critical to fight cellular stress
- GADD45α maintains genomic integrity in UV-exposed skin.
- GADD45α prevents accumulated mutations in DNA and triggers different process of DNA repair.

<table>
<thead>
<tr>
<th>GENES</th>
<th>DEXTRALIP® 10C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0,1mg/ml</td>
</tr>
<tr>
<td>GADD45α</td>
<td>+74 %</td>
</tr>
<tr>
<td></td>
<td>1mg/ml</td>
</tr>
<tr>
<td></td>
<td>+157 %</td>
</tr>
</tbody>
</table>

Measurements of DEXTRALIP® 10C effect on GADD45α expression* (in % of gene expression stimulation)

Dextralip® 10C

- Protects DNA from UV damages
- Promotes DNA repair
  - Dose dependent effect

* Study carried out in 2016 by Bio-Alternatives
GLOBAL ANTI-AGEING POWER

UV + Pollution + Environmental Stress

Cell membranes damages

PLA₂
Arachidonic Acid

COX-2
PGE₂

GADD45α
DNA lesions & mutations

D®10C
Dextralip® 10C

REPAIR

NUCLEUS

TP63

Cycline D1

CELL PROLIFERATION

MMP, Hyaluronidase, Elastase, Collagenase

ROS

CHRONICAL INFLAMMATION

MEC DAMAGES

PREMATURE & ACCELERATED SKIN AGEING

CELLULAR SENESCENCE

LEGEND:
PLA₂: Phospholipase A2
COX-2: Cyclooxygenase 2
PGE₂: Prostaglandins E2
ROS: Radical Oxygen Species
MEC: Extra Cellular Matrix
(+): Stimulation
(-): Inhibition
→ Action of Dextralip® 10C (D®10C)
→ Normal cellular reaction under stress conditions

MARCH 2016 │ DEXTRALIP® 10C
INTIMATE HYGIENE
INTIMATE HYGIENE

TOLERANCE TESTING*

- DEXTRALIP® 10C at 5%
- On a model of vaginal mucosa
- Assessment of cell viability (by MTT assay)

<table>
<thead>
<tr>
<th>Cellular viability (%)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>After 1 hour application</td>
<td>97.60 Percentage NON IRRITATING</td>
</tr>
<tr>
<td>After 8 hours application</td>
<td>85.35 Percentage NON IRRITATING</td>
</tr>
</tbody>
</table>

DEXTRALIP® 10C at 5% is classified as NON IRRITATING for vaginal mucosa

Recommended in:

Intimate Hygiene products

* Study carried out in 2015 by Farcoderm
SUMMARY

Recommended use level: between 0.2 and 1%

Applications:

- Sensitive skincare
- Sun and after-sun care
- Anti-ageing skincare
- Eye contour
- Slimming and anti-cellulite
- After-shave
- Intimate Hygiene
SUMMARY

**SENSITIVE SKINACRE**
- COX-2 inhibition *(in-vitro)*
- Inhibition of PGE<sub>2</sub> secretion *(in-vitro)*
- Actinic erythema reduction *(in-vivo)*

**SUN & AFTER-SUN CARE**
- Actinic erythema reduction *(in-vivo)*
- COX-2 inhibition *(in-vitro)*
- Inhibition of PGE<sub>2</sub> secretion *(in-vitro)*
- GADD45α stimulation : DNA protection from UV damages

**ANTI-AGEING SKINCARE**
- Stimulation of Cyclin D1, GADD45α and TP63 *(in-vitro)*
- COX-2 inhibition : Fight against inflamm’ageing and photo-ageing *(in-vitro)*

**EYE CONTOUR**
- Oedemata reduction *(in-vivo)*

**SLIMMING & ANTI-CELLULITE**
- Oedemata reduction *(in-vivo)*
- COX-2 inhibition *(in-vitro)*
- Inhibition of PGE<sub>2</sub> secretion *(in-vitro)*

**AFTER-SHAVE**
- COX-2 inhibition *(in-vitro)*
- Inhibition of PGE<sub>2</sub> secretion *(in-vitro)*

**INTIMATE HYGIENE**
- Tolerance testing : Non irritating for vaginal mucosa *(in-vitro)*
- COX-2 inhibition *(in-vitro)*
- Inhibition of PGE<sub>2</sub> secretion *(in-vitro)*
REFERENCES
References


