Quintessential Skincare of Today [PART II]

Fortify Skin Barrier for Enhanced Protection and Well-Being

NEW
Epigenetic Active
“Barrier Rescuer”
With full dedication & prudence, Corum inspired through knowledge to discover new efficacy and the best quality ingredients to you!

Cosmetics and Personal Care Ingredients

Active Pharmaceutical Ingredients

Supported by our expertise in innovation R&D, formulation, scientific research, supply chain, production, sourcing, regulatory and sales & marketing excellence, we manufacture a wide range of innovative ingredients and specialty chemicals for the personal care and pharmaceutical industries.
Post COVID-19: Cosmetic Megatrends
How consumer awareness is evolving and shifting??

01 Focus: [FITNESS]
Raise immunology & wellness

02 Focus: [MINIMALIST]
Skip care with less ingredients

03 Focus: [SHELF-LIFE STABILITY]
Safety + efficacy

04 Focus: [BE GOOD]
“Impactful Beauty” to reduce environmental impacts

05 Focus: [GENOME SCIENCE]
Precision + personalization

Reference: Mintel
What Cause Weakened & Compromised Skin?

**Physical Factors**
- UV rays
- Wound/Lesion
- Cosmetic Procedures

**Chemical Factors**
- Pollutant
- Over-Cleansing

**Physiological Factors**
- Stress
- Hormones

Environmental Stressors: Healthy Skin Barrier vs. Damaged Skin Barrier
Aesthetic Procedures

Top 5 non-invasive procedures

1. Botox injections
2. Dermal fillers
3. Laser Treatment
4. Microdermabrasion
5. Chemical peels

Properly executed, these skin resurfacing treatments cause small dermal injury with the aim to remove unwanted skin and stimulate the regeneration of new cells to form smoother, clearer and younger looking skin.

Other procedures: Microneedling, IPL Photorejuvenation, Brow Tattooing

According to ISAPA statistic, women worldwide undergo over 20 million cosmetic procedures while men account for 2,985,909 procedures each year.
Razor Rash brings about redness, bumps, and swellings which are unsightly as well as painful.

Sunburn is the common name for the SKIN injury that appears immediately after the skin is exposed to UV radiation.

Tattoo Redness is a normal sign on new tattoo, but it can sometimes be a cause for concern.
**Epi-On™**

INCI: Azelamidopropyl Dimethyl Amine (and) Water (and) Butylene Glycol

**Benefits**
- **New and patented** active ingredient
- Accelerate skin repair and healing
  - Increase cell migration
  - Promote growth factor secretion
  - Stimulate neo-epidermis formation
  - Anti-inflammation
- Blemish treatment
  - Anti-bacterial
  - Lower 5-α reductase
- Non-irritating, non-comedogenic

**Structure**

![Structure](image)

CAS: 1272659-40-1
MW: 272 g/mol

**Properties**
- **Appearance**: Colorless to light yellowish
- **Purity (HPLC)**: 99% min
- **Active**: 50%
- **pH value**: 5.0-7.0
- **Solubility**: Water soluble
Epigenetics

Epigenetic modifications are changes in DNA expression that do not change the DNA sequence. Two of the most characterized epigenetic modification are DNA methylation and histone modification.

NGS

Next Generation Sequencing is an advanced DNA sequencing technology that enable us to determine the order of nucleotides in millions of small DNA fragments simultaneously.

Sample Preparation
- Basal
- Control
- 0.5% Epi-On™

Library Preparation
- DNA

High-Throughput Sequencing

Clustering

Image Analysis

UVB irradiation

Base T, G, C, A

Histone
NGS

**Next Generation Sequencing** is an advanced DNA sequencing technology that enable us to determine the order of nucleotides in millions of small DNA fragments simultaneously.

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**Sample Preparation**
- Basal
- Control
- 0.5% Epi-On™

**UVB irradiation**

**Library Preparation**
- DNA

**Clustering**

**High-Throughput Sequencing**

**Image Analysis**

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**Mitochondria**
- All UV-regulated genes rescued by Epi-On

**Cell Cycle**

**Growth Factor**

**Inflammation**

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**Basal**
- UV
- UV+ Epi-ON
**NGS**

Next Generation Sequencing is an advanced DNA sequencing technology that enable us to determine the order of nucleotides in millions of small DNA fragments simultaneously.

**Epi-On™ - NGS**

19827 genes identified by NGS

5252 genes regulated by UVB irradiation

234 genes rescued by Epi-On™

### Skin Function

<table>
<thead>
<tr>
<th>Category</th>
<th>Skin Function</th>
<th>Related Genes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Growth Factor</strong></td>
<td>Tissue repair&lt;br&gt;Wound healing&lt;br&gt;Cell proliferation and migration&lt;br&gt;Cell survival</td>
<td>EREG, PDGFB, PDGFA, PFG...</td>
</tr>
<tr>
<td><strong>Inflammation</strong></td>
<td>Inflammatory response&lt;br&gt;Cell stress response&lt;br&gt;Genetic toxicity&lt;br&gt;Leukocyte recruitment</td>
<td>ACKR2, ATF3, PTGS2, IL1B, MYD88...</td>
</tr>
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</table>
Epigenetics

Epigenetic modifications are changes in DNA expression that do not change the DNA sequence. Two of the most characterized epigenetic modifications are DNA methylation and histone modification.

Epi-On™ - Histone Modification

Histone modification

-63.2%

Epi-On™

Relaxed Chromatin
Transcriptionally Permissive

Histone Deacetylation

Closed Chromatin
Transcriptionally Repressive

Upregulate Growth Factors

Histone Acetylation

H4K16ac

+269% on Keratinocyte

+246% on Fibroblast

Histone Acetyltransferases

Histone Deacetylases

Epi-On™

Chromosome

DNA

Histone

Histone modification

Epi-On™

Corum
Ex-Vivo Study
Evaluation of Skin Repair Activity

By Bio-EC Laboratorie, France

Aim:
Evaluation of wound healing activity of Epi-On™ at 2% and 4% concentrations

Explants Preparation:
From a 22 year-old Caucasian woman
30 rectangular (10x15 mm) skin explants

Mechanical lesion
On each explant, two mechanical lesions have been realized on day 0 with a biopsy punch.

General Morphology

Day 0
Day 10
Day 10

2% Epi-On™ (1% A.I.)
4% Epi-On™ (2% A.I.)

Epi-On™ does not induce any alternations to skin structure and effectively promote more intact stratum corneum.
**Ex Vivo Study**
Evaluation of Skin Repair Activity

**Growth of Bud Length on Day 3 and Day 10**

4% Epi-On™ significantly increases the growth of bud length by 40% and 34% on Day 3 and Day 10 respectively.

**Normal growth**
No treatment

+ 17%
2% Epi-On™

+ 40%
4% Epi-On™
**Ex-Vivo Study**

Evaluation of Skin Repair Activity

**Skin repair signaling pathway**
- Cell adhesion
- Cell motility
- Cytoskeletal dynamics
- Proliferation and migration

**Fibronectin**

**Edge of lesion on Day 3**
- No treatment
- 4% Epi-On™

**Integrin**

**Edge of lesion on Day 10**
- No treatment
- 4% Epi-On™

**Graphs:**
- % surface of papillary dermis:
  - No treatment: 33.5
  - Epi-On 4%: 53.1
  - Increases by 14%
- % surface of DEJ:
  - No treatment: 48.5
  - Epi-On 4%: 55.2
  - Increases by 59%

Clinical Study
Immediate Recovery After Cosmetic Procedure

Condition:
- 5 Caucasian females of 35-60 years old
- Applied 2%, 4% Epi-On™ gel after laser treatment
- Test time: 30 mins, 60 mins and 120 mins after application

Erythema red color index by Antera®

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pulse Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyelid</td>
<td>10-20 mJ</td>
</tr>
<tr>
<td>Deep wrinkles</td>
<td>25-70 mJ</td>
</tr>
<tr>
<td>Acne scars</td>
<td>25-70 mJ</td>
</tr>
<tr>
<td>Melasma</td>
<td>6-15 mJ</td>
</tr>
<tr>
<td>Hyperpigmentation after surgery</td>
<td>40-70 mJ</td>
</tr>
</tbody>
</table>

Reference: TEXTBOOK OF COSMETIC DERMATOLOGY, Fifth Edition

2% and 4% Epi-On™ effectively reduce redness and clam skin immediately after laser treatment

Clinical Study-After 5 days results
5-Day Recovery After Cosmetic Procedure

Condition:
- 20 Caucasian females of 28-52 years old
- Applied 2% Epi-On™ gel after laser treatment and once application per day
- Test time: 30 mins, 2 days and 5 days after application

Erythema red color index by Antera®

2% Epi-On™ significantly reduces laser redness at day 2 and day 5 after laser treatment

* p<0.05, ** p<0.01, *** p<0.001

Functions of Epi-On™
Skin Repairing & Strengthening Process

Inflammatory response
- Oxidative stress (ROS)
- Inflammatory cytokines (IL-6 & IL-8)

Cell migration
- Keratinocyte migration
- Fibroblast migration

Neo-epidermis formation
- Bud global morphology
- Fibronectin synthesis
- Integrin β4 synthesis

Epigenetic Mechanism
Epi-On™
Dermo-balancing lotion

Active: 2% Epi-On™

Ingredients: Microcrystalline Cellulose (and) Cellulose Gum, Aqua, Isohexadecane, Octyldodecyl Myristate, Cetyl Alcohol (and) Glyceryl Stearate (and) PEG-75 Stearate (and) Ceteth-20 (and) Steareth-20, 1,3-Butylene Glycol, Jojoba Ester, Macadamia Integrifolia Seed Oil, Dimethicone, Azelamidopropyl Dimethyl Amine, Persea Gratissima (Avocado) Oil, Glycerin, Phenoxethanol, Disodium EDTA, Phytosteryl Hydroxystearate, Fragrance

Appearance: White lotion

pH (25°C): 6.01

01 WHEN
Daily beauty routine, acne-prone skin treatment, after shave/waxing

02 WHY
Anti-bacterial, calm skin and fortify skin barrier

03 COMBO
Vitamins, Extracts, Adaptogens, Peptides
**Epi-On™**

**Soothing Jelly Masque**

Active: 4% Epi-On™

Ingredients:
Aqua, Carbomer, Azelamidopropyl Dimethyl Amine, Glycerin, Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer (and) Cetyl Alcohol (and) Glycol Stearate (and) Glyceryl Stearate (and) Caprylic/Capric Triglyceride, Sodium Hydroxide, Methylparaben, Fragrance

Appearance: Light orange opaque gel

pH (25°C): 5.39

**01 WHEN**
Overnight intensive treatment, post [superficial] chemical peel, daily care after procedures

**02 WHY**
Calm skin and fortify skin barrier

**03 COMBO**
Vitamin C & E, Retinol, Pantothenic Acid, Cica, Algea Extracts, Glycyrrhiza/Liquorice
Epi-On™
Advanced Recovery Gel

Active: 4% Epi-On™

Ingredients:
Aqua, Azelamidopropyl Dimethyl Amine, Glycerin, Butylene Glycol, Carbomer, Phenoxyethanol, Sodium Hydroxide

Appearance: Clear gel

pH (25°C): 5.55

01 WHEN
Post [non-invasive] aesthetic procedures, post tattooing

02 WHY
Sooth, reduce erythema and accelerate epithelialization

03 COMBO
Aloe, Chamomile, Glycyrrhiza/Liquorice
Restore weakened and damaged skin

Epi-On™

Azelamidopropyl Dimethyl Amine (and)
Water (and) Butylene Glycol

✓ Anti-inflammation
✓ Anti-bacteria
✓ Promote cell proliferation
✓ Accelerate skin repair via epigenetic pathway
✓ Reduce facial erythema after treatment
✓ Excellent water solubility & easy to use
✓ Excellent chemical stability

Applications:
- Night recovery creams
- Post-acne treatments
- Post-procedure treatments
- After-shave products
- Sun-burn soothing products

*Regulatory status:
Europe REACH compliant
Halal approved
Quintessential Skincare
of Today [PART II]

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Q&A

Email: sales@corum.com.tw