GATULINE® EXPRESSION

Fast Track Smoothing
The fight against the appearance and deepening of wrinkles remains the legitimate crusade of the cosmetic industry which needs raw materials offering security and proven efficacy.

Facial skin is subjected to the emotions and various forms of environmental stress and is marked by so-called “expression” lines. These lines result from thousands of daily involuntary micro-contractions of the facial muscles. They lead to the appearance of real deep wrinkles, the inevitable consequence of movements and pulling on the skin.

Besides the solutions proposed by plastic surgery and other invasive techniques, GATTEFOSSÉ proposes a safe plant-based alternative that meets the principal requirement of a skincare product: rapid results.

GATULINE® EXPRESSION

A targeted anti-wrinkle ingredient: the reliable option for smoother skin.

Extracted from a tropical plant, GATULINE® EXPRESSION provides an effective solution to the demand for rapid reduction of facial wrinkles:

• Quick action shown in vitro and in vivo, as GATULINE® EXPRESSION immediately limits micro-contractions that create then aggravate facial wrinkles.
• Spectacular reduction of wrinkles leading to a significantly smoother skin.
ORIGIN & COMPOSITION

A plant based active

GATULINE® EXPRESSION is extracted from the upper parts of the *Acmella oleracea* plant belonging to the Compositae family (*Compositae-Heliantheae*). This small plant, which blossoms all year long, has a broad geographical footprint, covering the whole tropical zone in South America, Africa and Asia.

Originating from Peru and Brazil, *Acmella oleracea* is a cultivated non-endangered species, known and used for a very long time in Madagascar and La Réunion. Called “Mafane” in the Indian Ocean, this plant is used in food and as a medicinal plant. It is precisely in the wild region of La Réunion that GATTEFOSSÉ harvests it.

Composition

The bibliographic study has revealed a list of key majority compounds present in this plant. These are mainly isobutylamides of polyenic and polyenynic acids. Of the dozen molecules identified, spilanthol (or (E,Z,E)-N-2-isobutyl-2,6,8-decatrienamide) is the molecule mainly responsible for the activity of GATULINE™ EXPRESSION.
IN VITRO EFFICACY

Nerve-muscle co-culture model

The myorelaxing activity of the extract was first tested on a model reproducing muscle contractions. This model is produced by the co-culture of motor neurones with human muscle cells forming striated muscle fibres which, once innervated, spontaneously contract (fig 2).

The muscle contractions were counted to prove that GATULINE® EXPRESSION blocked these contractions (fig 3). This blocking process is fully dependent on the concentration of the tested extract.

As such, it was demonstrated that just 0.6% of GATULINE® EXPRESSION is enough for complete myorelaxation.

GATULINE® EXPRESSION shows a fully reversible function (complete recovery after 24 hours) and is thus positioned as a very safe extract while remaining highly effective.

In a second test, the efficacy of GATULINE® EXPRESSION formulated in a cream was quantified using another innovative in vitro model.
Bioavailability

In order to make sure that GATULINE® EXPRESSION does not deteriorate in the formulation or after topical application, a new model was tested. This was a co-culture described in the previous page topped with reconstructed skin containing epidermis and dermis (fig 4).

Fig. 4: Schematic representation of the tridimensional model nerve-muscles-reconstructed skin

The efficacy of a standard formulation (O/W emulsion) containing GATULINE® EXPRESSION was evaluated against a placebo. Muscle contractions were counted to highlight the activity of the cream containing GATULINE® EXPRESSION on human skin and cells.

Fig. 5: In vitro activity of formulated GATULINE® EXPRESSION

Figure 5 shows that GATULINE® EXPRESSION is a stable active ingredient, just as effective once formulated in a cream. Its activity is confirmed as dose-dependent and reversible. GATULINE® EXPRESSION used in a standard formulation presents good bioavailability.

The 24 hour residual relaxing power of the cream containing 3% GATULINE® EXPRESSION allows us to expect an interesting cumulative effect when used daily.
IN VIVO EFFICACY

The *in vivo* smoothing efficacy of GATULINE® EXPRESSION has been demonstrated on “crow’s feet” wrinkles.

Skin smoothing was assessed by topometric analysis using a hi-tech method: the Fringe Projection technique. This allowed GATTEFOSSE® to demonstrate very precisely the benefits provided by daily application of GATULINE® EXPRESSION.

Fringe Projection, a purely optical method used to assess roughness of the skin, allows us to avoid artefacts due to contact with the skin.

Tests were carried on two panels of volunteers (20 and 30 people) with twice-daily application for 28 days:

- 1 panel using a placebo formulation on half of the face and a formulation containing 2% of GATULINE® EXPRESSION on the other half
- 1 panel using a placebo formulation on half of the face and a formulation containing 5% of GATULINE® EXPRESSION on the other.

For the first panel, the roughness was quantified several times. This revealed the strong activity of GATULINE® EXPRESSION formulated at 2% (Fig 6).

75% of volunteers reacted very rapidly to the smoothing effect of GATULINE® EXPRESSION, the very next day after the first application.

Fig. 6: Average roughness on 15 people

The smoothing effect is visible and is reinforced during the first month of use.

The activity is therefore instant on the reduction of expression lines with only 2% of GATULINE® EXPRESSION.
The results of the second panel confirmed the significant activity of the extract on wrinkle reduction. With 5% of GATULINE® EXPRESSION, more than 83% of volunteers benefited from a reduction in crow's feet wrinkles.

Tested against a placebo, GATULINE® EXPRESSION offers very visible results on the skin of volunteers. Figure 7 shows that wrinkle depth is reduced, the skin is smoothed and looks younger.

Fig. 7: GATULINE® EXPRESSION activity at 5% in formulation, before treatment and after 28 days

GATULINE® EXPRESSION is therefore a key ingredient for the reduction of facial wrinkles.

➡️ Very rapid effect in comparison with traditional anti-wrinkle ingredients.
Quality

The *Acmella oleracea* plant is harvested in a pollution free environment through a supply chain which guarantees full traceability.

Identified and measured by HPLC, the spilanthenol molecule is guaranteed in all batches with a minimum concentration of 50 mg/l of GATULINE® EXPRESSION.

Intellectual property

A patent on GATULINE® EXPRESSION has been filed for targeted application on wrinkle smoothing.

Conclusion

Expression lines result from the accumulated effect on the skin of movements constantly imposed by the subcutaneous muscles. GATTEFOSSE research has found a solution to attenuate these muscle contractions and thus delay formation and deepening of these wrinkles.

The *myorelaxing mechanism* has been clearly identified as being the cause of the activity of GATULINE® EXPRESSION.

*In vitro* tests conducted with GATULINE® EXPRESSION show that this *Acmella oleracea* extract *precisely and rapidly targets* the mechanism responsible for the formation of expression lines.

Finally, *in vivo* tests show that GATULINE® EXPRESSION *instantly and strongly reduces the wrinkled appearance* of the faces of a large majority of the panelists.

**GATULINE® EXPRESSION is thus destined to become a key active ingredient for the next generation of anti-wrinkle cosmetics.**
APPLICATIONS

GATULINE® EXPRESSION is the ideal active ingredient for facial anti-ageing and anti-wrinkle care, in particular aimed at smoothing out expression lines. This targets crow's feet, forehead wrinkles, frown lines between the eyebrows and the nasogenian fold.

This new active is precisely dedicated to skincare products and its easy formulation allows its use in emulsions, microemulsions, serums and gels.

The recommended concentration of use is between 2% and 5%.
**Specifications**

**Organoeleptic characteristics:**
Aspect...................................................................................................................... yellow to amber limpid liquid
Odour..................................................................................................................... characteristic

**Physico-chemical characteristics:**
Specific gravity at 20°C (D20/4) ........................................................................... 0.87 to 0.91
Refractive index at 20°C .......................................................................................... 1.345 to 1.385
pH .............................................................................................................................. 5 to 7
Dry extract................................................................................................................ > 0.5 g/100g
Solubility at 20°C ..................................................................................................... soluble in water, insoluble in oils
Spilanthol content .................................................................................................... > 50 mg/l

**Transport and storage conditions:**
This product does not contain preservative. Prevent exposure to light. Store under nitrogen at room temperature.

**Packing:**
Industrial standard pack....................................................................................... plastic packing of 800 g or 4 kg
Samples....................................................................................................................... brown plastic bottle of 50 g

**Regulatory:**
INCI name .............................................................................................................. Alcohol (and) Water (and) Acmella Oleracea Extract
CAS n° .................................................................................................................... 64-17-5/7732-18-5/90131-24-1
EINECS n° ............................................................................................................. 200-578-6/231-791-2/290-335-0
Australia and Japan .............................................................................................. Approved for cosmetic use

**Toxicological profile:**
Local toxicity on the skin .......................................................................................... not classified
Local toxicity on the eyes .......................................................................................... well tolerated
Phototoxicity assay in vitro .................................................................................. without phototoxic effect
Phototoxicity ............................................................................................................. without phototoxic effect
Sensitization .............................................................................................................. without allergic effect
Photosensitization .................................................................................................. without photoallergic effect
Systemic toxicity LD50>2000 mg/kg ....................................................................... not classified
Mutagenic effect (Ames test) .................................................................................. without mutagenic effect
### "WRINKLE CORRECTOR" SERUM

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<tr>
<th>INCI name</th>
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<td>Butylene Glycol</td>
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<td>CARBOPOL’ ULTREZ 20</td>
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<td>III Acrylates/Acrylamide Copolymer (and) Mineral Oil (and) Polysorbate-85</td>
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<td>IV Octyldodecyl Myristate</td>
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<td>ISOCTEARYL ALCOHOL (and) BUTYLENE GLYCOL COCOATE (and) ETHYLCELLULOSE</td>
<td>EMULFREE’ CBG</td>
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<td>V DIMETHICONE (and) DIMETHICONOL</td>
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<td>VII Alcohol (and) Water (and) ACMELLA OLEACERA EXTRACT</td>
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Sprinkle Carbopol’ Ultez 20 over I. Leave to stand. Add III. Mix well. Under rapid mixing (rotor stator), add IV, then V to I + II + III. Continue rapid mixing for 10 min. Add VI and the components of VII. Continue moderate stirring for 15 min.

### ANTI-WRINKLE SMOOTHING EMULSION

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<tr>
<td>I Cetyl Alcohol (and) Glycerin Stearate (and) PEG-75 Stearate (and) CETETH-20</td>
<td>EMULombie DELTA</td>
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<tr>
<td>II DEMINERALIZED WATER</td>
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<td>Glycerin</td>
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<td>III CARRAGEenan</td>
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<td>IV HYDROGENATED POLYSISBUTENE</td>
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Under stirring, disperse Carrageenan into II. Heat I and II + III to 75 °C. Under rapid mixing (rotor stator 3000 rd/min), add I to II + III, mix for about 5 min. Add IV then V and maintain rapid mixing for about 5 min. Cool under planetary stirring and at about 35 °C, add the other ingredients, one by one.

This information is presented in good faith, and we believe it is correct, but no warranty as to accuracy of results, or fitness for a particular use is given, nor is freedom from patent infringement to be inferred. It is offered solely for your consideration, investigation and verification.
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GATTEFOSSE® is an independent, multinational company headquartered in France which creates, manufactures and distributes specialty products used as ingredients by the cosmetic and pharmaceutical industries. Present in almost 50 countries worldwide, GATTEFOSSE® enjoys a strong know-how and position in lipochemistry, biology and extraction from natural sources.

GATTEFOSSE® offers the cosmetic industry a variety of high performance products classified as:
• BASES & ADDITIVES: emulsifiers, co-emulsifiers, emollients, dispersers, solubilizers, thickeners...
• TRADITIONAL PLANT EXTRACTS
• SUBSTANTIATED ACTIVE INGREDIENTS from vegetable, mineral and marine origins.