



ShapePerfection

Burns fat – fights cellulite



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Spicy Substances to Fight Cellulite and Excess Centimeters

ShapePerfection is a liposoluble anti-cellulite slimming active ingredient that is based on a purified extract of organic mustard sprouts combined with natural capsaicin.

Up until five years ago, it was believed that adult fat tissue was constituted by a single type of adipocytes: the white ones that store lipids. However, new findings have revealed that white adipocytes are able to transform – upon activation – into brown-like ones, a type of adipocytes that were thought to be present only in babies and which are able to burn lipids into heat.

Based on these new findings, Mibelle Biochemistry developed ShapePerfection, an active ingredient based on two potent vasodilators that are also able to induce the browning of adipocytes:

- an organic sprout extract from the *Brassica alba* species, the spicy mustard
- natural capsaicin, the active component of chili peppers.

In this way ShapePerfection:

- activates the microcirculation and therefore fights water retention
- “empties” the cells of the adipose tissue by converting fat-accumulating adipocytes into cells that actively burn fat.

Clinical studies performed for 8 weeks showed the rapid, strong and visible slimming and anti-cellulite effects of ShapePerfection:

- Waist: –3.4 cm
- Abdomen: –4.1 cm
- Upper arm: almost –1 cm
- Cellulite (dermis-hypodermis junction distance): –18.2%.

Claim Ideas for ShapePerfection

- Visibly reduces the appearance of cellulite
- Effectively shapes body contours
- Reveals a slimmer silhouette

Applications

- Anti-aging body care
- Anti-cellulite massage formulas
- Body slimming oils

Formulating with ShapePerfection

- Recommended use level: 1–2 %
- Shape Perfection can be formulated in emulsions (O/W, W/O), all types of oil based products and water-free formulations.
- Incorporation: Add ShapePerfection into the oil phase below 80°C.
- Thermostability: Temperatures of 80°C for a short time period do not affect the stability of ShapePerfection.

INCI (EU/PCPC) Declaration

Brassica Alba Sprout Extract (and) Capsaicin (and) Caprylic/Capric Triglyceride

Adipocytes

Recent findings revealed surprising properties

Two Main Types of Adipocytes

The adipose tissue, which is located beneath the skin, is constituted by two main types of adipocytes, which have different functions:

- White adipocytes (WA) constitute the white adipose tissue (WAT) that stores lipids in oil droplets. WA contain a large single lipid vacuole as well as a small number of mitochondria.
- Brown adipocytes (BA) constitute the Brown Adipose Tissue (BAT). These cells burn lipids into heat in order to maintain the body temperature at 37°C. In contrast to white adipocytes, brown ones contain numerous smaller vacuoles and a much higher number of mitochondria. Their brown color is the result of the presence of iron in mitochondria. BA were first identified in babies and have a specific location – close to the main blood vessels. This facilitates the diffusion of the heat that they produce in the entire body.

Brown Adipocytes Ensure Thermoregulation by Transforming Lipids into Heat

Unlike other cells, BA have the particularity to express the UCP1 gene which encodes the uncoupling protein 1. This protein short-circuits the proton gradient of the inner mitochondrial membrane. Instead of ATP, energy is produced and released in the form of heat (thermogenesis process). This explains why in BA fat is eliminated to produce just heat.

Recent Findings Highlighted the Capacity of White Adipocytes to Become Brown Adipocytes

Up until five years ago, it was believed that BAT could only be found in babies – it protected them against the cold. Based on this hypothesis, these BA would have lost their mitochondria and their activity and as a result transformed into WA.

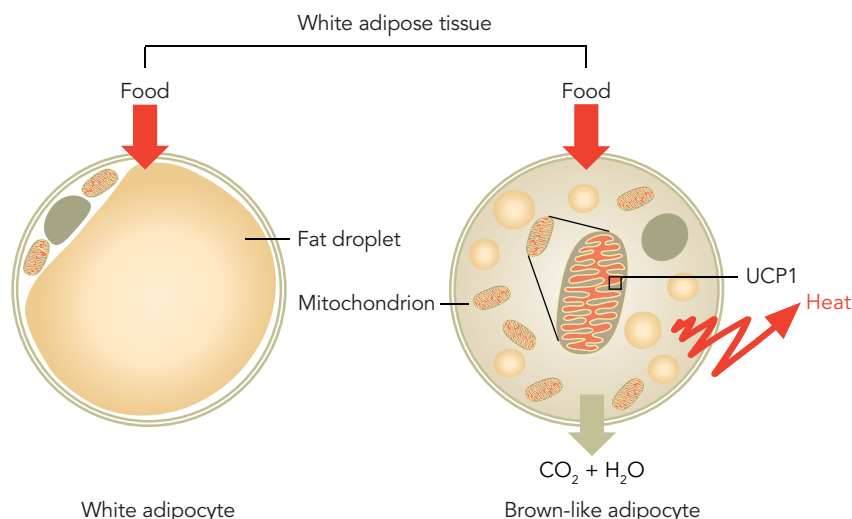
However, in just the last few years, new findings have revealed the presence of remnants of BAT in adults and, more surprisingly, ways of transforming WA into brown-like adipocytes. This transdifferentiation process is known as 'browning'.

Upon Activation, Brown-like Adipocytes are also Able to Burn Lipids into Heat

In response to stimuli such as the cold, WA can transform into brown-like adipocytes. These are called Beige or Brite (for **B**rown and **W**hite) adipocytes.

- These beige adipocytes have a similar morphology to that of the brown ones: multiple lipid droplets and a high mitochondrial content. In addition, they express several brown fat-specific genes such as UCP1 and are able to undergo thermogenesis.
- However, both cells have many distinguishing characteristics and are not derived from the same embryonic precursor. Furthermore, BA express high levels of UCP1 under basal (unstimulated) conditions, whereas beige adipocytes express these genes only upon activation.

Two Main Types of Adipocytes



ShapePerfection

Fights cellulite and excess centimeters through adipocyte browning

Almost 9 Women out of 10 Experience Cellulite

Following puberty, almost 90% of women suffer from stubborn cellulite regardless of their weight. Conversely, men are less affected.

This fact is explained by the specific nature of the adipose tissue in the thighs and buttocks of women which contains more fat and is structured in a different manner to that of men. Indeed, the fat chambers in female women tissues extend much more easily and preferentially vertically to store fat cells.

Cellulite Impairs Blood and Lymph Microcirculation

Cellulite is characterized by an "orange peel" skin and results from the hypertrophy of adipocytes. Due to their enlargement, these fat cells compress the wrap (connective tissue) that contains them. The larger the adipocytes, the more the wrap deforms and hardens, which leads to a deficient blood and lymph return microcirculation and therefore water retention and a deficient elimination of fats and toxins.

ShapePerfection Fights Cellulite and Induces Slimming through a Double Mechanism:

- It activates the microcirculation and therefore fights water retention while optimizing the elimination of fats and toxins.
- It "empties" the adipocytes by inducing their browning.

ShapePerfection combines two potent vasodilators:

- natural capsaicin, the active component of chili peppers that enhances the blood flow by inhibiting vascular smooth muscle contraction
- an organic mustard sprout extract from the *Brassica alba* species, whose characteristic phytonutrients are responsible for its pungent taste and vasodilator effect.

These two substances are also able to induce the browning of adipocytes.

Clinical studies showed the rapid, strong and visible slimming and anti-cellulite effects of ShapePerfection.

ShapePerfection

Study results



Conversion of White Adipocytes into Brown-like Adipocytes

The capacity of the *Brassica alba* sprout extract to induce the formation of Beige/Brite Adipose Tissue (BBRAT), i.e. adipocytes that actively burn fat was assessed using pre-adipocytes from human adipose tissue collected following abdominal plastic surgery.

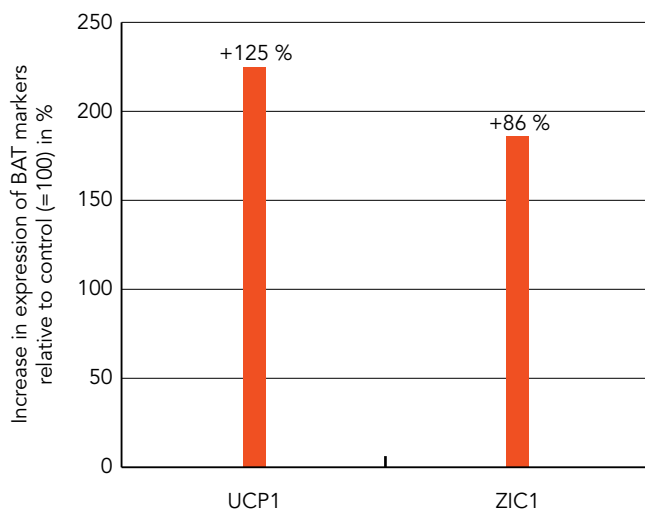
These pre-adipocytes were cultured in a differentiation medium either with or without the *Brassica Alba* sprout extract. Their conversion into mature adipocytes (a priori WAT) was followed by RT-qPCR analysis.

The gene expression profile obtained from the adipocytes formed in presence of the *Brassica alba* sprout extract was compared to the expression profile of untreated differentiated adipocytes (control).

Results showed that pre-adipocytes treated with the *Brassica Alba* sprout extract differentiated into cells that expressed much more UCP1 (+125%) and ZIC1 (+86%), both of which are specific markers of brown adipocytes. Therefore the *Brassica Alba* sprout extract can induce the browning of WAT and as a result instruct the cells in fat deposits to burn the lipids into heat.

Induction of Beige/Brite Adipocytes

■ 0.33% Brassica alba sprout extract





Increase of the Blood Microcirculation after a Single Application

In a study performed with 21 women aged from 23 to 54 (mean age: 37.7 years), the capacity of ShapePerfection to stimulate the blood microcirculation was confirmed.

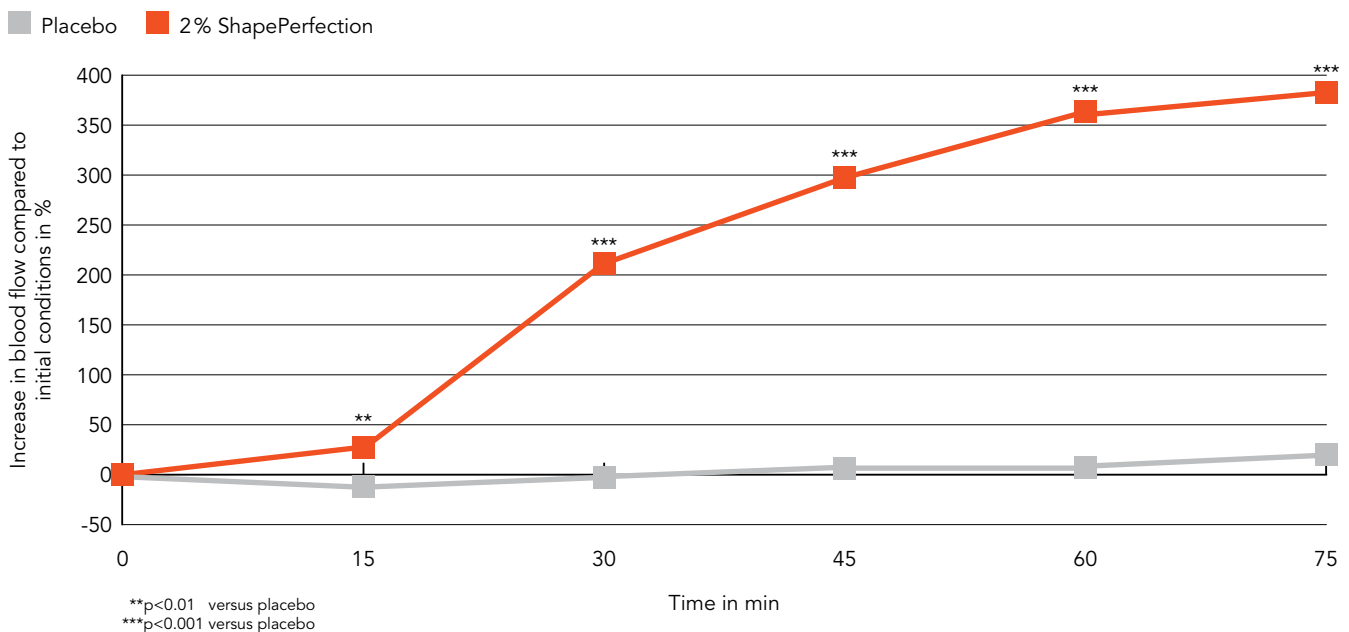
A defined quantity of the test products (2% ShapePerfection emulsion or the corresponding placebo) were applied once onto the thighs of the volunteers by a professional at the test institute.

The blood flow was measured by using the Laser Doppler technique following the application of the test products over a period of 75 minutes.

Results showed that ShapePerfection increased the cutaneous blood microcirculation both significantly and very quickly:

- +212% compared to initial conditions after 30 minutes
- +354% compared to initial conditions after 60 minutes.

Increase of Cutaneous Blood Microcirculation



ShapePerfection

Study results



Slimming Effect on the Waistline

The slimming effect of ShapePerfection was evaluated in a study performed with 18 women aged from 21 to 54 (mean age: 42.3 years) and presenting cellulite on the waist and abdomen.

Volunteers applied a 2% ShapePerfection emulsion on their waist and abdomen twice a day for eight weeks.

Waist and abdomen girth were determined on the skin surface by centimetric measurements through the navel for the waist and at the equidistance between the navel and the pubis for the abdomen.

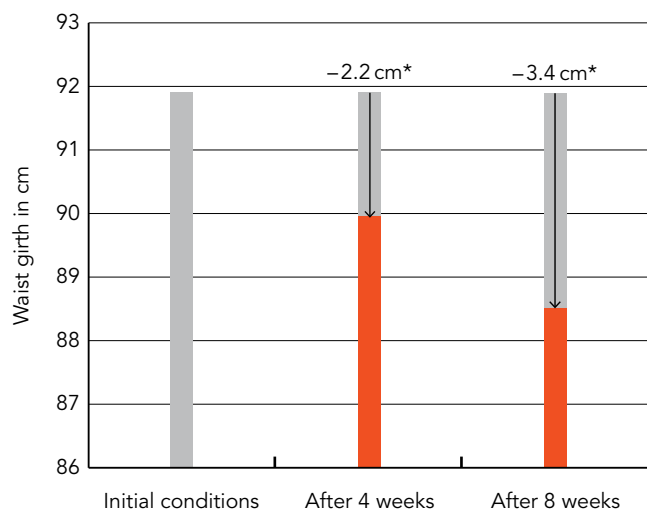
Results showed that ShapePerfection can strongly and significantly reduce both the abdomen and waist girths after just 4 weeks of treatment:

- waist: -2.2 cm after 4 weeks and -3.4 cm after 8 weeks
- abdomen: -3.2 cm after 4 weeks and -4.1 cm after 8 weeks.

The reduction of the waist and abdomen girth was detected on 89% and 100% of the volunteers respectively.

Reduction of the Waist Girth

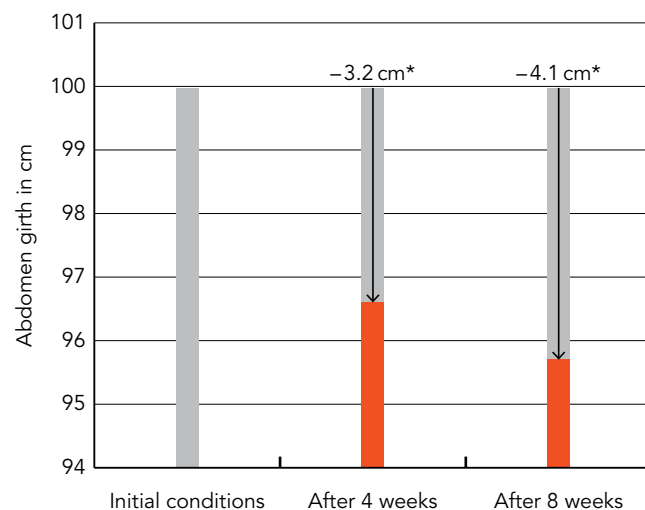
■ 2% ShapePerfection



*p<0.0001 versus initial conditions

Reduction of the Abdomen Girth

■ 2% ShapePerfection



*p<0.0001 versus initial conditions

Photographs taken before and after the treatment with a 2% ShapePerfection emulsion confirmed that the reduction of the waistline was even visible to the naked eye.

Visible Reduction of the Waistline



Before



After 8 weeks

Results for this volunteer after 8 weeks:
Waist: -4.7 cm
Abdomen: -3 cm

ShapePerfection

Study results



Reduction of the Upper Arm Girth

The slimming effect of ShapePerfection was evaluated in a study performed with 18 women aged from 21 to 54 (mean age: 42.3 years) and presenting cellulite on the upper arms.

Volunteers applied a 2% ShapePerfection emulsion on one of their upper arms and the corresponding placebo on the other one. The test products were applied twice a day for eight weeks.

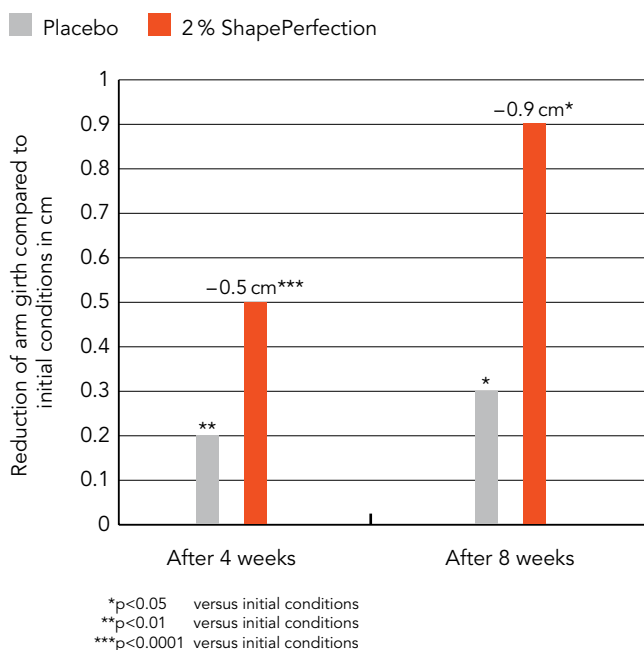
Upper arm girth was determined on the skin surface by centimetric measurements.

Results showed that ShapePerfection can both strongly and significantly reduce the upper arm girth after 8 weeks of treatment:

- -0.5 cm after 4 weeks
- -0.9 cm after 8 weeks.

The reduction of the upper arm girth was detected on 83% of the volunteers.

Reduction of the Upper Arm Girth





Anti-Cellulite Effect on Thighs

At the cellular level, cellulite is characterized by a sagging of the connective tissue that separates the dermis from the hypodermis. This slackening is caused by the protrusion of the enlarged adipocytes into the dermis.

Therefore, the area of the interface between the dermis and the hypodermis (dermis-hypodermis junction distance) increases with the severity of cellulite.

The anti-cellulite effect of ShapePerfection was evaluated in a study with 18 women aged from 21 to 54 (mean age: 42.3 years) and presenting cellulite on the thighs (Curri grades II and III).

Volunteers applied a 2% ShapePerfection emulsion on one of their thighs and the corresponding placebo on the other one. The test products were applied twice a day for eight weeks. The dermis-hypodermis junction in the thighs was visualized by ultrasonographic assessment and the distance of the junction was measured.

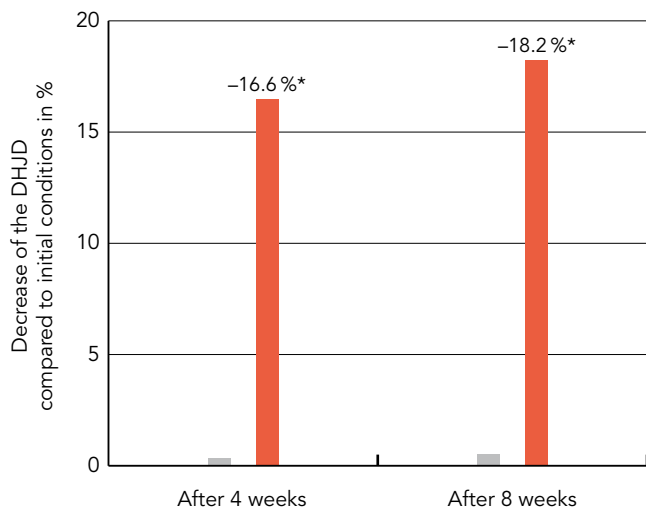
Results showed that the treatment with ShapePerfection led to a rapid and strong reduction of the dermis-hypodermis junction distance:

- -16.6% after 4 weeks
- -18.2% after 8 weeks.

Photographs taken before and after the treatment with the 2% ShapePerfection emulsion confirmed that the reduction of the cellulite was even visible to the naked eye.

Reduction of the Dermis-Hypodermis Junction

■ Placebo ■ 2% ShapePerfection



*p<0.0055 versus initial conditions

Visible Reduction of the Cellulite



Before

After 8 weeks

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- Effectively shapes body contours
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Applications

- Anti-aging body care
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Marketing benefits

- Dual action: activates brown-like fat cells as well as microcirculation
- Burns fat without exercising
- Measurable and visible effects
- Oil-soluble slimming active ingredient
- Alcohol- and preservative-free

Innovating for your success

Mibelle Biochemistry designs and develops innovative, high-quality actives based on naturally derived compounds and profound scientific know-how. Inspired by nature – Realized by science.

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