

# Nicomenthyl

PURE • HOT • FRESH • COOL • TAO



FEEL THE DETOX POWER

# Nicomenthyl Range

Nic<sup>●</sup>menthyl<sup>20</sup>

PURE  
MENTHYL  
NICOTINATE

MENTHYL  
NICOTINATE  
GAMUT

Nic<sup>●</sup>menthyl<sup>HOT</sup>

Nic<sup>●</sup>menthyl<sup>FRESH</sup>

Nic<sup>●</sup>menthyl<sup>COOL</sup>

Nic<sup>●</sup>menthyl<sup>TAO</sup>



# Multichem R&D

With its 30 years of experience and several international patents approved, **Multichem R&D pioneered the production of Menthyl nicotinate based ingredients under the trade name Nicomenthyl®.**

We are fully committed to the creation of unique, bio-ethical products, respectful of Nature and man's health.

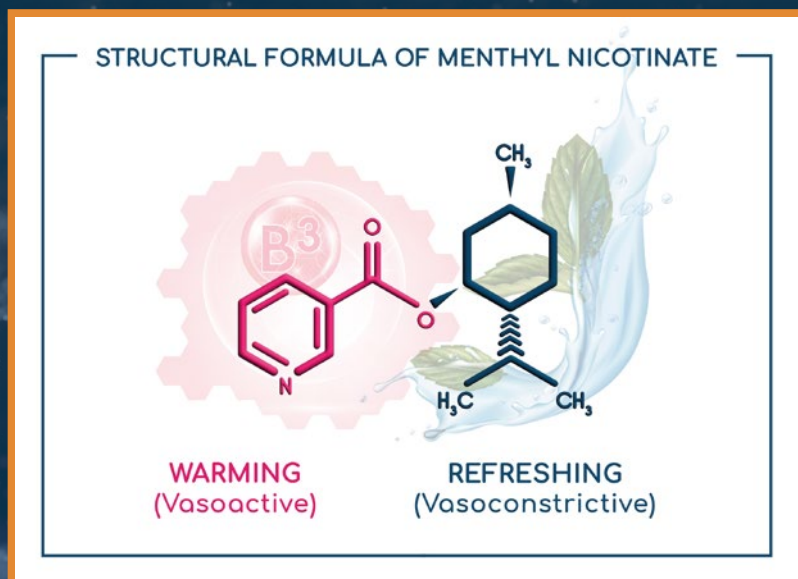
We provide our clients and partners with innovative and exclusive solutions, **supported by rigorous, scientific and indisputable documentation**, able to thoroughly back up their marketing claims and to favorably contribute to the credibility and success of their brands.

*Experience*

*Competence*

*Precision*

ABOUT US



## Lipophilic Vitamin B3 Derivative

Nicomenthyl® is a multifunctional sensorial cosmetic active, derived from vitamin B3 (niacin or nicotinic acid), composed of pure Menthyl nicotinate, and manufactured in Italy by Multichem R&D, through a patented synthesis process.

The molecule of Menthyl nicotinate is made of two moieties:

- the nicotinic moiety has a mild warming effect on skin (vasoactive);
- the menthol moiety has a sort of refreshing, soothing, anti-itching effect (vasoconstrictive).

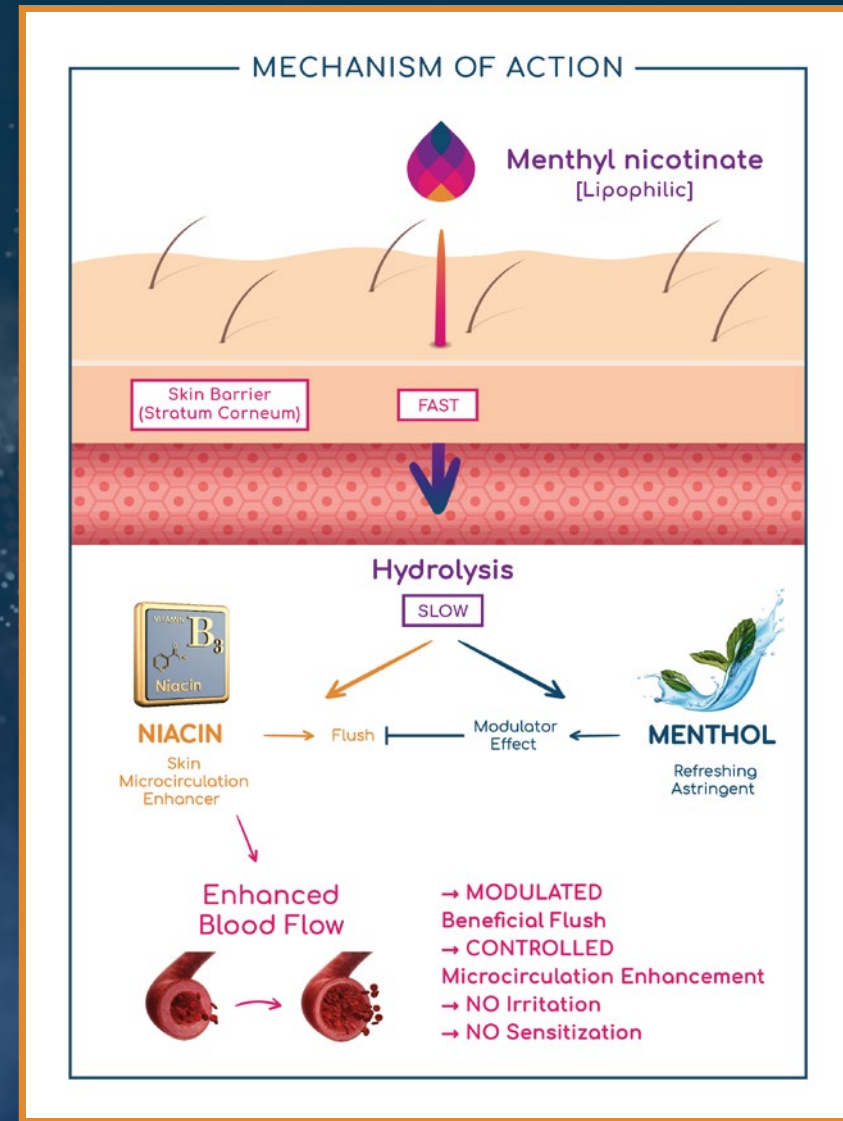
# Mechanism of Action

Once absorbed through the horny layer of the skin, **Nicomenthyl®** is **hydrolyzed** by the enzyme esterase and split **into its original components: niacin and menthol**.

Menthol is responsible of the **cooling sensory effect**, while niacin generates a kind of **warming sensation** and furthermore triggers the formation of prostaglandins which cause a mild vasodilation and thus a **beneficial enhancement of skin microcirculation**.

The **main benefits** of such enhanced blood flow are: **increased** transport of **oxygen, nutrients** and **glucose** as well as the **removal of cellular waste products**.

All these simultaneous biochemical effects can be perceived as a kind of **pleasant “fresh tingling” sensorial effect**, usually starting a few minutes (3 to 5) after application, and lasting up to one hour or more.



## Fast percutaneous delivery

It is rapidly absorbed through the skin barrier and slowly hydrolyzed by esterase into its two original components: niacin and menthol.

## Skin micro-circulation enhancer

It significantly activates skin microcirculation without causing any unpleasant hyperemia, irritation or sensitization.

## No bothersome "flush"

The beneficial, simultaneous and time-release delivery of niacin and menthol into the skin, controls, modulates and prevents any excessive niacin-flush effect.

## Carrier effect

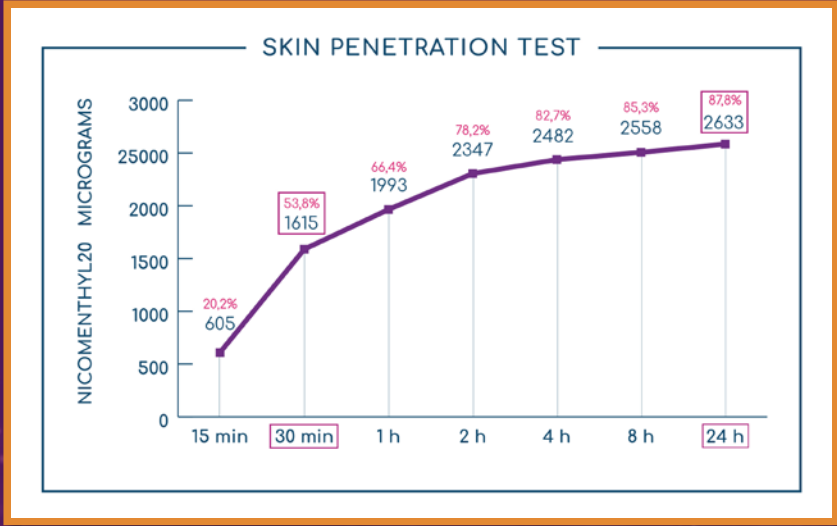
Nicomenthyl acts as a fixative, carrier and booster for other beneficial lipophilic actives. Furthermore, it modulates and/or enhances the sensorial strength and longevity of other sensates.

## NAD-Boosting effect

Full-scale in vitro tests have demonstrated that Nicomenthyl® is a very powerful NAD-boosting molecule, and thus instrumental to avoid harmful effects to the skin from several categories of external factors.

## Self-emulsifying properties

Being an amphiphilic molecule, Nicomenthyl®, supported by appropriate thickening agents, has self-emulsifying properties.



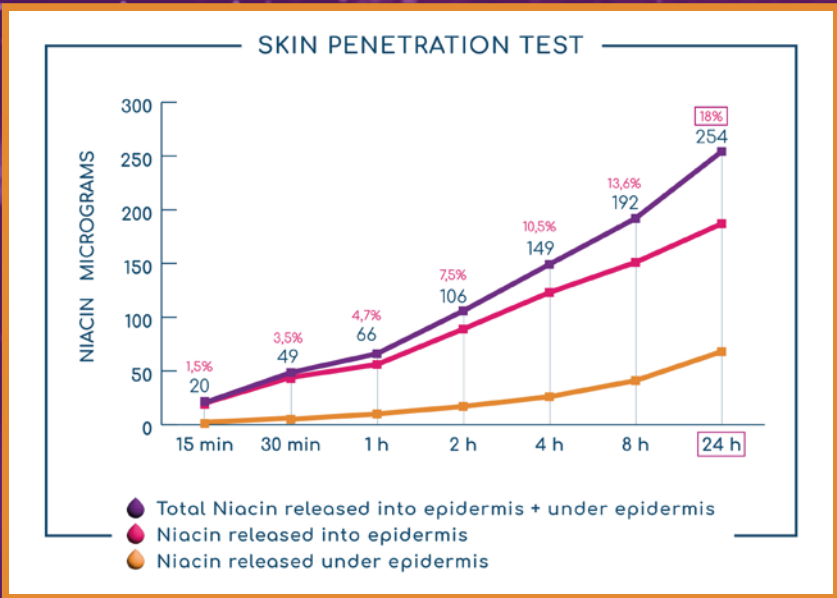
# Skin Penetration Tests

A quantity of 3000 µg of Nicomenthyl® was applied to a sample of RHE (in vitro Reconstructed Human Epidermis).

A **very high rate of penetration** through the stratum corneum was observed, reaching an amount of **53.8% of the applied dose in only 30 minutes**.

The whole process of absorption and hydrolysis into its two components, menthol and niacin, gets practically completed in a period of 24 hours after application.

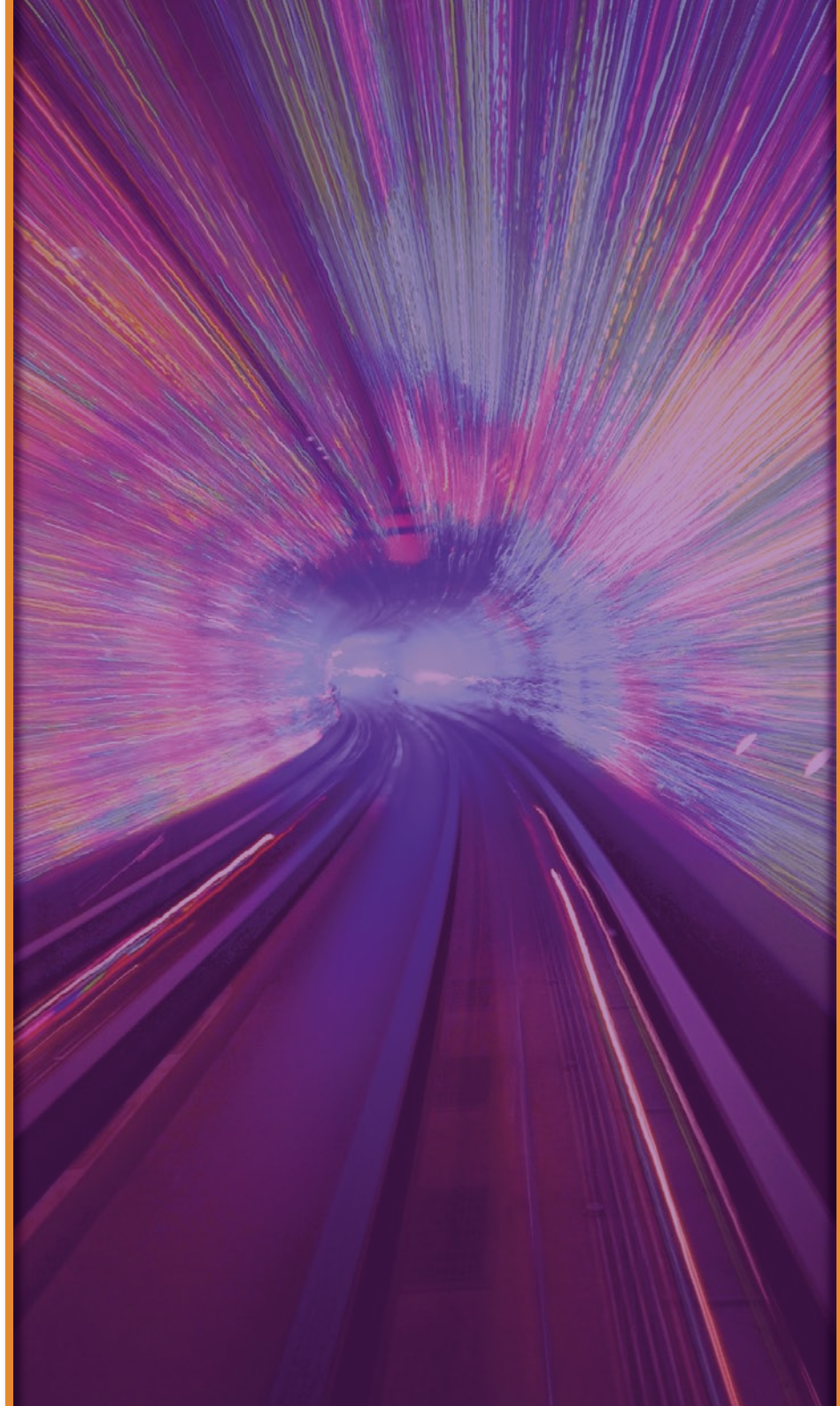
HPLC analysis revealed a total amount of 254 µg of released niacin having penetrated through the skin barrier (from the initial 1413 µg contained in the 3000 µg applied dose of Menthyl nicotinate), i.e. a **niacin absorption rate of approx. 18% of the applied dose in 24 hours**.



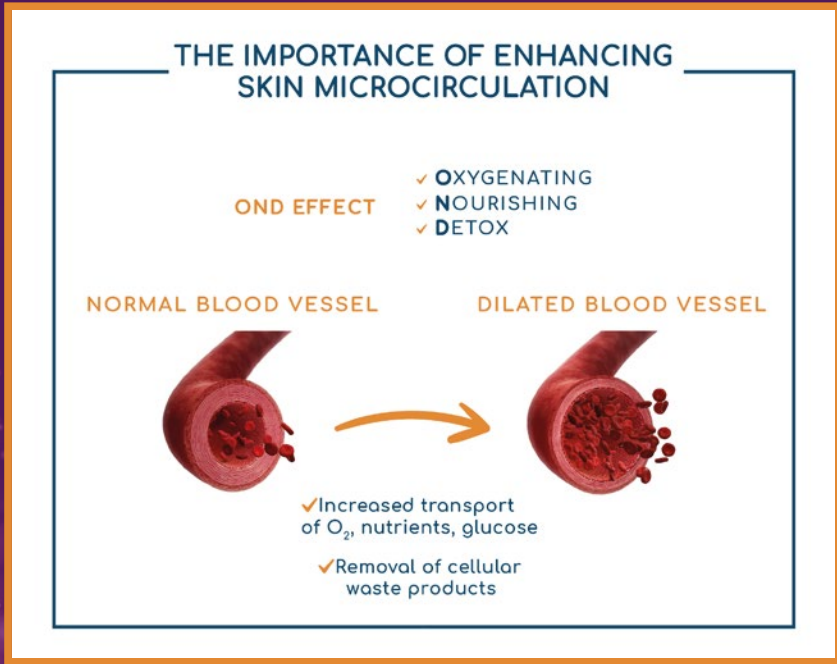
# Carrier Effect

Nicomenthyl® acts as a **fixative, carrier and booster for other beneficial lipophilic actives** such as vitamin E, vitamin F, vitamin A, omega 3, phosphatidylcholine, essential oils.

Furthermore, it **modulates and/or enhances the sensorial strength and longevity** of other sensates such as menthol, vanillyl butyl ether, menthyl lactate, etc.



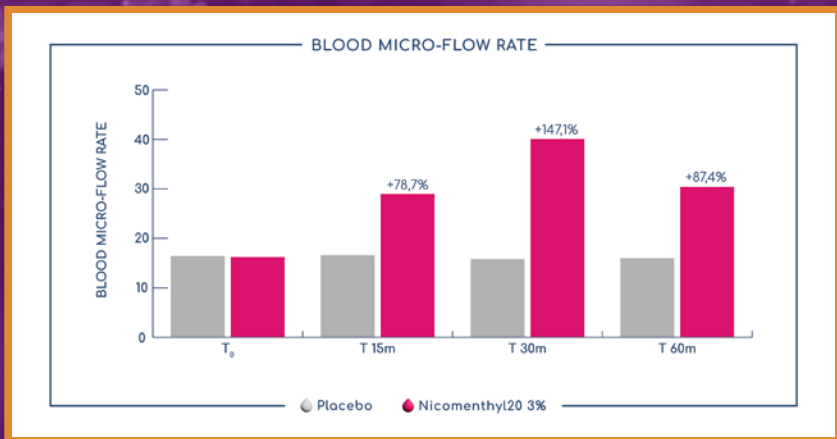
CARRIER EFFECT



# Skin Microcirculation Enhancement Test

A Doppler Laser Blood-flow Velocity Test has been carried out on twenty volunteers of both sexes, using a topical preparation containing 3% of Nicomenthyl<sup>®</sup>, compared to a negative control (placebo).

**Increases in microcirculatory flow** values reached remarkable levels, **up to nearly 150% at 30 minutes and 90% at 60 minutes after application**, without any irritating or sensitizing effects.

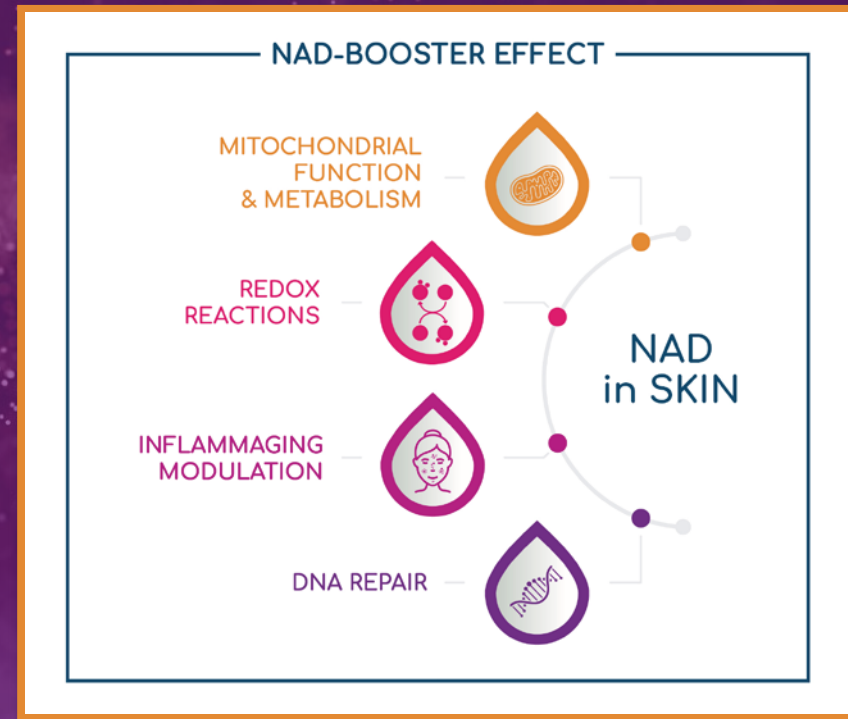


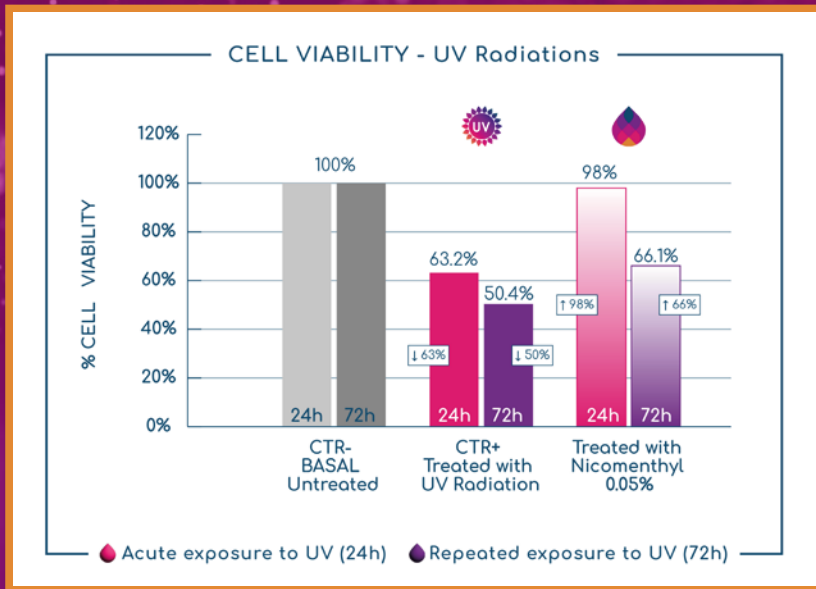
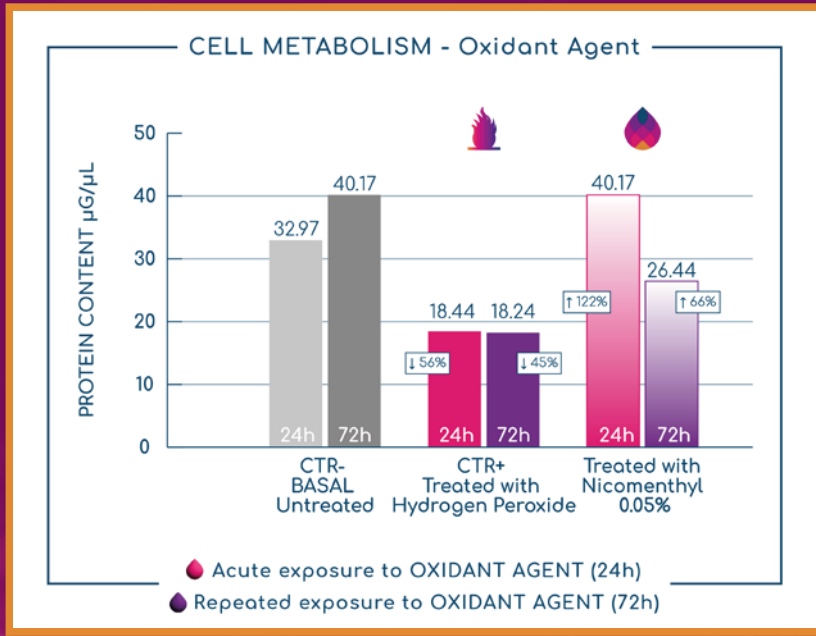
# NAD-Boosting Effect

The **vitamin B3** (niacin), released by Nicomenthyl into the skin, **increases the levels of the coenzyme NAD** (Nicotinamide Adenine Dinucleotide), one of the most important and interesting molecules in human energetic metabolism.

Defined by some researchers as “**the molecule of life**”, NAD is required for over 500 enzymatic reactions. It plays key roles in the regulation of almost all major biological processes, including those concerning immune response and DNA repair against damages caused by aggressive chemicals or radiations.

The **percutaneous delivery of vitamin B3 by Nicomenthyl®** is from **3 to 8 times higher** than the one by the common niacinamide.





# Evaluation of the Antioxidant Efficacy and Protective Activity against UV Radiations

This study was aimed to investigate the protective and antioxidant efficacy of the cosmetic active ingredient of Nicomenthyl<sup>®</sup>, in a biological experimental model (in vitro culture of human keratinocytes), against two damaging agents: UV radiation and oxidant chemicals.

The efficacy was evaluated both for acute (24 hours) and repeated exposure (72 hours).

## CONCLUSIONS:

**Nicomenthyl<sup>®</sup> completely preserves cell viability** in human epidermal keratinocytes exposed to **UV radiation**.

**Fully protects** and significantly **increases metabolism of skin cells** exposed to **oxidant agents**.

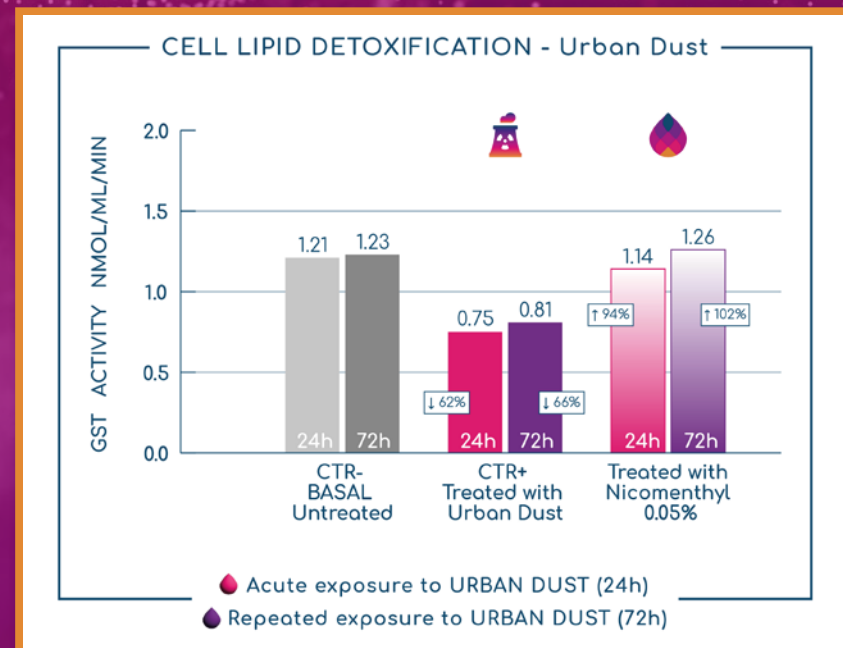
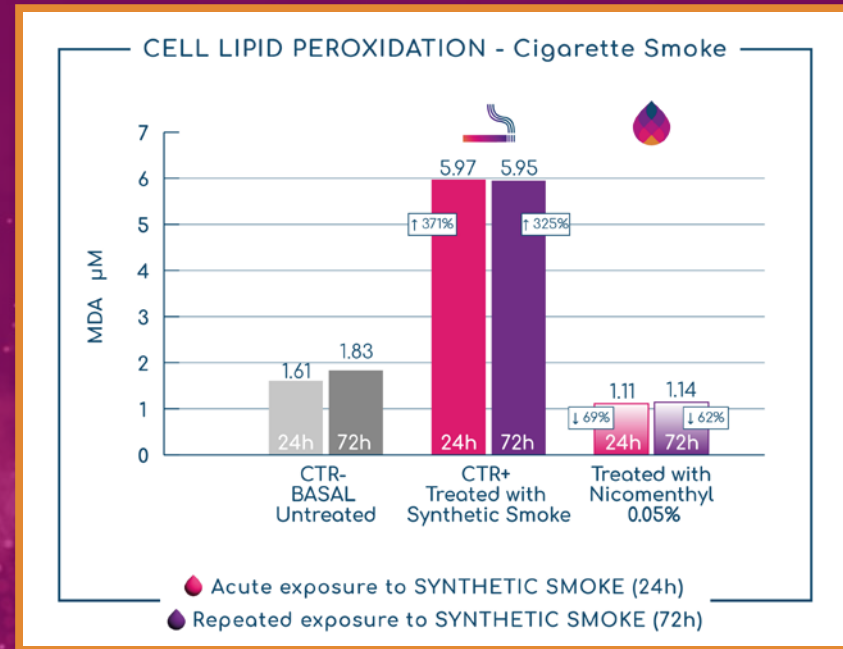
# Evaluation of the Protective Efficacy against Cigarette Smoke and Urban Dust

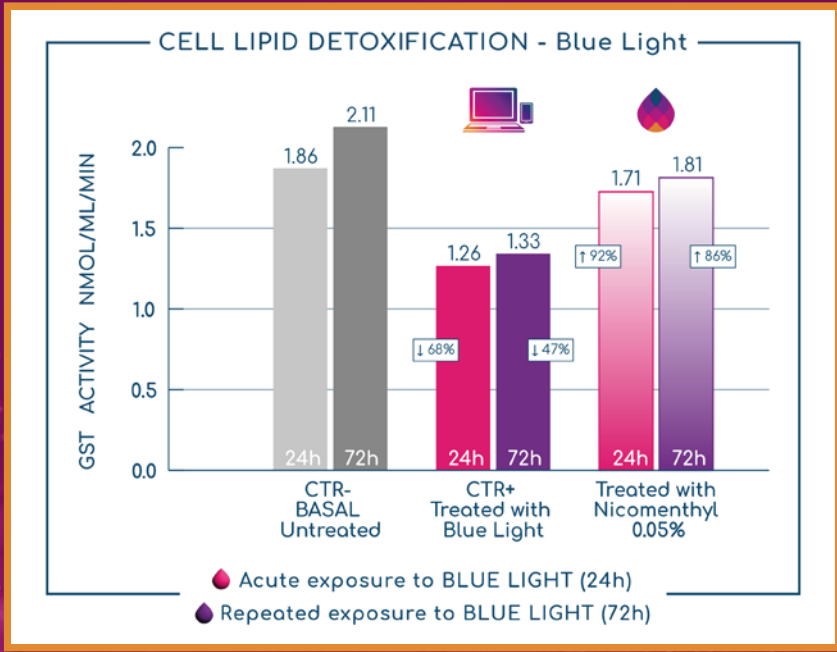
This study was aimed to investigate the efficacy of Nicomenthyl<sup>®</sup>, in a biological experimental model (in vitro culture of human keratinocytes), against damages caused by cigarette smoke and urban dust. The efficacy was evaluated both for acute (24 hours) and repeated exposure (72 hours).

## CONCLUSIONS:

**Nicomenthyl<sup>®</sup> fully protects and reduces lipoperoxide content** in cells exposed to **cigarette smoke**.

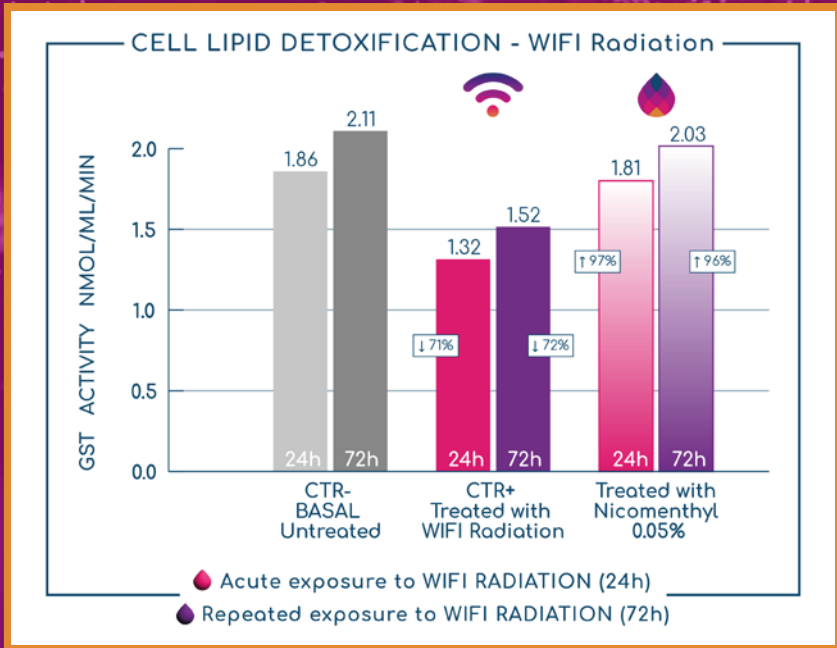
Significantly increases the activity of GST (Glutathione S-transferase, an enzyme which plays a pivotal role in the **detoxification and elimination of xenobiotic toxicants**) in skin cells exposed to particulate pollutants (**urban dust**).





## Efficacy against Damages Caused by Blue Light and Wi-Fi

A recent in vitro study on cultures of human keratinocytes has shown Nicomenthyl®'s protective and detoxifying efficacy against both, Blue Light and Wi-Fi.



### CONCLUSIONS:

Stressed keratinocytes, treated with Nicomenthyl®, showed a **significant recovery** of GST activity, practically **restoring baseline levels, for 24 hours as well as 72 hours exposures**, for both damaging agents.

# Self-Emulsifying

Being an **amphiphilic substance** (i.e possessing both hydrophilic, water-loving, and lipophilic, fat-loving) properties, it has **self-emulsifying properties**, which may result in the formation of stable micro-emulsions. Nicomenthyl® is an **ideal ingredient for “LESS IS MORE” type of formulations.**



SELF EMULSIFYING



## Nicomenthyl® in your formulations

- Anti-age products
- Anti free-radicals and anti-pollutant, skin detox formulations
- Skin protecting and repairing treatments against Blue light and WIFI damages
- Sun care products (pre, during and after-sun exposure)
- Hair loss prevention treatments
- Anticellulite treatments
- Sport products
- Spa treatment products
- Refreshing/reactivating products for feet and legs
- Intimate hygiene products
- Lip plumping treatments
- Deodorant/antiperspirants
- Pre/after shave products
- Oral care products and treatments (cosmetics or medical devices)
- Nasal protective sprays and treatments (medical devices)
- Non irritating hand sanitizers preventing and repairing skin irritation and dryness caused by alcohol-based handrubs

# The Nicomenthyl® Range

🔥 **NICOMENTHYL® 20:** pure Menthyl nicotinate (**purity grade > 99.0 %**). All the power and benefits of vitamin B3 for an exceptional detox, protective, energizing and NAD-boosting effect with a long lasting, gentle, pleasant, tingling sensation.

To fully explore the sensorial gamut of Menthyl nicotinate Multichem R&D has developed 3 perfectly balanced compositions:

💧 **NICOMENTHYL® HOT:** is a particularly balanced mixture that combines the protective, antioxidant and vasoactive properties of Menthyl nicotinate with the tonic and warming cosmetic effect of Vanillyl Butyl Ether. The result is a moderate tingling cutaneous micro-massage, accompanied by a gentle, exotic and long-lasting warming sensation. This makes it the **ideal ingredient in personal lubricants and intimate hygiene compositions and in trichological products**, such as anti-hair loss lotions.

💧 **NICOMENTHYL® COOL:** is a balanced synergistic mixture that combines the protective, antioxidant and vasoactive properties of Menthyl nicotinate with those of refreshing natural menthol. It exerts a beneficial, soothing and cooling cutaneous micro-massage, accompanied by a pleasant, stimulating feeling of wellness and turgidity, which makes it the **ideal ingredient in trichological products**, such as anti-hair loss lotions, **in anti-cellulite products** and in **oral hygiene products**, such as toothpastes and mouthwashes to treat bad breath.

💧 **NICOMENTHYL® FRESH:** is a balanced synergistic mixture that combines the protective, antioxidant and vasoactive properties of Menthyl nicotinate with those of a mild refreshing menthol derivative. It exerts a beneficial, fresh and soothing cutaneous micro-massage, accompanied by a pleasant, stimulating feeling of wellness and turgidity, which makes it the **ideal ingredient in shaving and after shave products, refreshing body lotions, sun care products, oral hygiene products, intimate hygiene products, spa treatments**, etc.

💧 **NICOMENTHYL® TAO:** (Turmeric Anti-Oxidant) is a particularly balanced mixture that harmonizes the proven protective and detoxifying properties of Menthyl nicotinate (lipophilic derivative of Niacin or Vitamin B3) with the anti-oxidant, anti-inflammatory and immunostimulant properties of the active ingredients (curcuminoids) of Curcuma longa (Turmeric). This makes it the **ideal ingredient in sport products, massage body lotions, spa treatments, in anti-cellulite products** and in **oral hygiene products**.

# Nicomenthyl

PURE ♦ HOT ♦ FRESH ♦ COOL ♦ TAO



☰ Multichem R&D s.r.l.

📍 Via G. Marconi, 37 | 20089 | Rozzano [MI] Italy

☎ +39 28262192

@ info@multichem.it

🌐 www.nicomenthyl.com

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MAKE YOUR SKIN HAPPY