

Novel neuroactive for skin and emotional wellbeing

In recent years, the world has faced many environmental, political and economical challenges, that cause stress and anxiety, affecting people's mental wellbeing and, in turn, their skin. Stress can cause and exacerbate skin imperfections such as rashes, acne, and eczema, which can lead to personal discomfort and further impair emotional wellbeing.

To address these concerns, Mibelle Biochemistry has developed TiMOOD™, a new active ingredient, which has been clinically proven to improve skin complexion and positively affect emotional wellbeing.

TiMOOD™ is derived from timut pepper, a plant that grows in the high altitudes of the Himalayas and is used as a spice in local cuisine. It has a characteristic citrus flavour and a tingling sensation on the tongue, similar to Sichuan pepper.

Timut pepper has a long history of medicinal use, including the treatment of depression, gastrointestinal and digestive disorders, as well as toothaches, skin irritation, and wounds. Previous research has shown that oral intake of timut pepper can improve cognitive functions such as learning and memory.

Protection of skin innervation

To investigate whether timut pepper could impact aged skin innervation, a co-culture model with human sensory neurons and keratinocytes was performed. The co-culture was incubated in the absence and presence of timut pepper extract for nine days to simulate the aging process. The number of neurons and neurite length were evaluated.

Treatment with timut pepper extract led to a significantly higher number of sensory neurons (+62%) and enhanced neurite length (+18%). In addition, keratinocyte proliferation was significantly increased by 108%. After eight days of treatment, the release of dopamine, a 'feel good' neurotransmitter, was measured.

Treatment with timut pepper extract revealed an increase of 17% dopamine release. Consequently, timut pepper could positively affect aged skin innervation by protecting



neurons from the natural aging process and could counteract aging-induced epidermal thinning by enhancing keratinocyte proliferation. Increased epidermal stratification may in turn influence neurite endings and support skin innervation.

Homogenized and fresher skin complexion

To further investigate the efficacy of TiMOOD™ on the skin, a placebo-controlled clinical study was performed on a panel of volunteers who felt stressed and/or uncomfortable in their skin. Skin complexion was assessed by measuring skin tone evenness on the jaw and forehead.

Application of TiMOOD™ significantly improved skin tone evenness by 26.4% on the forehead and by 15.5% on the jaw region compared to initial conditions and placebo. The positive effect of TiMOOD™ on homogenized skin complexion was confirmed by expert grading and self-evaluation.

Moreover, the expert grading and self-

evaluation revealed improved skin luminosity as well as a fresher and healthier complexion with TiMOOD™.

Enhancing emotional wellbeing

As timut pepper has been shown to protect sensory neurons and TiMOOD™ has been found to improve skin complexion, we wanted to determine whether TiMOOD™ also has a positive impact on emotional wellbeing. Therefore, the same panel of volunteers performed in addition a neuropsychological test (EmoCompass®) that is based on neuromarketing principles to evaluate their emotions.

For the first time, this type of test, previously established for emotional positioning of fast moving consumer goods, was applied for a clinical active ingredient study. The volunteers completed the EmoCompass test before and after the first application of TiMOOD™ and at the end of the study.

To ensure unbiased results, the volunteers were asked to nonverbally create an abstract image of coloured patterns on a computer screen in response to the question, "How do you feel?".

Unlike other emotional assessments based on photographs or known symbols, the pattern is not influenced by associations or personal memories and not distorted by translation into language, representing an unbiased personal emotional image.

The EmoCompass test showed that the application of TiMOOD™ significantly improved the emotional dimension, covering feelings of calmness, balance, safety, and relaxation. This effect was not observed in the placebo group or immediately after product application, suggesting that it is independent of the texture and fragrance of the product.

Furthermore, self-evaluation of the stressed volunteers confirmed the increase in emotional wellbeing.

The increased focus on improving emotional wellbeing and mental health due to global concerns makes TiMOOD™ a promising new development for the neurocosmetic industry. TiMOOD™ not only protects skin neurons, but also promotes a more homogeneous and healthier skin complexion and a feeling of comfort that has a positive impact on emotional wellbeing. **PC**



Mibelle Biochemistry
Bolimattstrasse 1
CH-5033 Buchs, Switzerland
Tel: +41 62 836 17 31
Email: info@mibellebiochemistry.com
<https://mibellebiochemistry.com/>

