

## Neurocosmetic – The Cosmetic of Neurotransmitters

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### Abstract

Neurocosmetic follows current cosmetic trends. More and more, cosmetic manufacturers wish to treat the individual as a whole: the body and the mind. Neurocosmetic is a holistic approach which physiologically acts on the mind via the skin.

The concept is based on the knowledge of chemical vectors of nerve information, the neurotransmitters. These mediators are synthesized by every skin cell and interact between the nerve system and the skin. Therefore Neurocosmetic actives can play a significant role in skin balance by acting on these messengers, either by activating or inhibiting them.

We will show using two Neurocosmetic actives how this innovative concept can be used for cosmetic development: Ôcaline and Betaphroline

- Ôcaline inhibits the substance P, the most important neurogenic inflammation neurotransmitter, for a soothing activity on sensitive skin. This peptide is released by the sensitive nerve fibres that innervate the skin and induce itching, redness, swelling etc.
- Betaphroline activates beta-endorphin release for a feeling of well-being. These neuro-hormones neutralize noxious stimuli and are known for their analgesic properties as they are recognized by the  $\mu$ -opiate receptors of the nociceptors.

### The Cosmetic of Neurotransmitters

Traditional cosmetic actives help limit the consequences of everyday aggression to the skin. There is now a new approach through the modulation of neurotransmitters which we call Neurocosmetic. This new concept is based on the interactions between the nerve system and the skin through special mediators. Neurocosmetic actives can play a significant role in skin balance by acting on these messengers, either by activating or inhibiting them.

### The skin nerve system & neurotransmitters

The nervous system is mainly composed of nerve cells or neurons characterized by two types of specialized extensions:

- Numerous dendrites provide a large surface area for connecting with other neurones, and carry nerve impulses towards the cell body.
- A single long axon carries the nerve impulse away from the cell body.

These fibres come into contact with the skin and modulate certain main functions such as thermoregulation, sebaceous secretion, melanogenesis, etc.

Neurotransmitters are chemical messages which are known to be released by skin nerve fibres. What has been discovered over the last few years is that skin cells (keratinocytes, melanocytes, fibroblasts) present the same characteristics as nerve cells: they synthesize and secrete neurotransmitters and express receptors at their surface. Their release can be induced by a physical, chemical or even emotional stimulus. Today, about 200 neurotransmitters have been identified and it has recently been reported that 25 of them can be found in the skin. Most of them are neuropeptides (substance P, MSH, endorphins, etc) and the others are non peptidic neurotransmitters (catecholamines and acetylcholine).

The role of Neurocosmetic actives in cosmetic imbalance is becoming more and more evident. To treat these problems efficiently, Neurocosmetic active ingredients could be:

- agonist or antagonist molecules of the neuropeptide receptors
- modulators of neurotransmitter effects
- modulators of neurotransmitter skin synthesis

We have developed two Neurocosmetic actives using this innovative concept:

- Ôcaline: inhibition of substance P for a soothing activity
- Betaphroline: activation of beta endorphin release for a pleasurable sensation

