

Leuphasyl®

Leuphasylⁱ is a pentapeptideⁱⁱ (= amino acid containing five peptides) that mimics the natural path of enkephalins. As already discussed acetylcholine is released from vesicles during neuronal exocytosisⁱⁱⁱ. This is achieved through vesicle fusion. That is the merging of vesicles with the cell membrane. Vesicle fusion mainly depends on SNARE proteins in the presence of increased intracellular calcium (Ca^{2+}) concentration. Leuphasyl is a modified enkephalin that couples to the enkephalin receptor outside the nerve cells. This association releases G protein subunits (α, β, γ) which close calcium channels avoiding vesicle fusion and consequently inhibiting acetylcholine release across the synapse. This process maintains the neuron in its resting state, attenuating muscle contraction and preventing the formation of lines and wrinkles. Otherwise, in layman's terms, Leuphasyl helps moderate the release of acetylcholine during the SNARE complex by lowering the skin's electrical charge in the applied area, making it more difficult for neurons to fire.

Leuphasyl can be incorporated in cosmetic formulations usually at a concentration of 5%. Recommended maximum concentration is 10%. Lipotec (manufacturer of both Leuphasyl and Argireline) produces 2ml ampoules containing a combination of 5% Leuphasyl and 5% Argireline as in vitro studies it has been suggested that the independent mechanisms of Leuphasyl and Argireline produce a higher inhibitory potential of glutamate release due to their synergistic effects when used in the same formulation. The glutamate is the most abundant neurotransmitter in the nervous system and its release is used as a validated assay to determine the release of acetylcholine. According to Lipotec the in vivo efficacy of the complementary use of Leuphasyl and Argireline has also been tested showing a reduction in the depth of wrinkles by 25%. The efficacy of the anti-wrinkle peptides was evaluated by taking silicon imprints of the wrinkles around the eyes. Silicon imprints were measured by confocal profilometry.

Please note that due to my limited experience with Leuphasyl most of the above information is based on its manufacturer's website and advertising material and therefore the author of this book assumes no responsibility regarding use of this product.

References

www.lipotec.com

ⁱ Leuphasyl® is a registered trademark of Lipotec S.A.

ⁱⁱ [Penta-/ 'pentə/(Greek)=six

ⁱⁱⁱ [Exocytosis/ ek-soh-sy-toh-sis/(Greek)=Eξω - external and κύτος - cell)