

# Dermaelectroporation and Botulinum Toxin Successfully Treats Hyperhidrosis

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Photos courtesy of Dept. of Anatomy, Histology and Forensic Medicine, University of Firenze, Italy



Epidermis before Tx (Stratum corneum, uniform and without breaks. Epidermis seems well preserved. Dermis is rich of collagen.)



Epidermis after Dermaelectroporation with Botulinum toxin Tx (The dermis is rich with follicles and oil glands. The ipodermis below the dermis is very colored due to the presence of Botulinum toxin in the muscle bands.)

Dermaelectroporation utilizes pulsed iontophoresis with waveforms similar to those of electroporation, but with a lower and controlled intensity.

Botulinum toxin has therapeutic and aesthetic actions given that it decreases the muscle activity by blocking the release of acetylcholine at the neuromuscular junction. Moreover, its secondary action is the inhibition of sweat glands, offering a new aspect in the treatment of palms and the axillary region.



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To decrease the problem of focal hyperhidrosis, or excessive sweating, especially in specific parts of the body, until now, has been accomplished with intradermal injections of botulinum toxin, but with associated pain for the patient, especially when injecting the palms and axillary regions. For this reason, in my personal clinical experience,

I began to use a non-invasive method for transdermal delivery, called Dermaelectroporation® (Ultrapeel® Transderm® Meso® System from Mattioli Engineering Italia, Firenze, Italy). Dermaelectroporation utilizes pulsed iontophoresis with waveforms similar to those of electroporation, but with a lower and controlled intensity.

Effects of Dermaelectroporation stimulate the opening of water based channels present in the skin in order to create a passage for the drugs into the dermis. Thanks to handpieces with different shapes and dimensions, particular electrical impulses given at a controlled and low intensity allow the opening of particular intercellular channels (hydroelectropores) for a few seconds, so that macromolecules can pass through. After considering the past experiences of transdermal delivery of active substances, such as amino acids, lidocaine, collagen, heparine and hyaluronic acid, from which various clinical and university studies have been published, I decided to

use this method for the correction of forehead wrinkles with botulinum protein type A, and later for the improvement of palm and axillary hyperhidrosis.

First, I performed a preventative microdermabrasion with sterile aluminium oxide corundum crystals to lower the skin impedance. Then with the use of two handpieces of 1.5 cm and 5 cm diameter, we delivered the botulinum toxin Vistabex, using a special precision liquid dispenser. This dispenser releases the drug at 0.5 ml per second, in order to have a slow and homogeneous diffusion and distribution.

After 15 days results were evaluated both subjectively and objectively with a system for determining the sweat quantity. The outcome was satisfying, allowing the possibility of new therapeutic and aesthetic correction with a non-invasive, effective and painless method, such as Dermaelectroporation (Ultrapeel Transderm Meso System).