Illustrated Atlas of Esthetic Mesotherapy

Active Substances | Dosage | Administration
# Table of contents

Abbreviations and symbols .......... 4  
Important note ..................... 4  
Editor’s foreword ................... 5  
Introduction ....................... 8  

1 Definition of mesotherapy .......... 11  

2 The active substances ............ 13  
2.1 Individual active substances in esthetic mesotherapy ........... 14  
2.2 Ready-made cocktails in esthetic mesotherapy ............. 25  
2.3 Mixing rules in mesotherapy ........ 25  
2.4 Individual preparation or ready-made cocktails .......... 26  
2.5 Contraindications .............. 26  

3 Documentation and organization .. 27  
3.1 Photo documentation .......... 28  
3.2 Tips for photography and practice organization .......... 32  

4 Side effects ........................ 35  
4.1 Local side effects ............. 36  
4.2 Rare side effects .............. 37  
4.3 Specific side effects of lipolysis .......... 37  

5 Materials and techniques .......... 39  
5.1 Syringes and needles .......... 40  
5.2 Injectors ...................... 41  
5.3 Mesotherapy injection techniques .......... 44  

6 The consultation ................ 51  
6.1 History, inspection, palpation, marking the skin .......... 52  
6.2 Objectivization and documentation .......... 56  
6.3 Informing the patient and before-and-after rules .......... 58  
6.4 Treatment strategy and therapy plan .......... 60  

7 The treatment .................. 63  
7.1 Treatment intervals .......... 64  
7.2 Setting ...................... 64  
7.3 Pre- and post-treatment .......... 64  

8 Regional treatments ............. 69  
8.1 Mesolift, Mesoglow, Mesobotox .......... 72  
8.2 MesoHair .................... 85  
8.3 Treatment of cellulite and localized fat deposits .......... 90  

Three important stages in the treatment: marking the region to be treated and the injection technique. See Chapters 5, 6, 7.  
Top left: Marking the skin around the mouth  
Top right: Electronically guided injection technique  
Bottom: Injecting manually
The active substances

These days, an individual’s general appearance can be optimized without appearing artificial, by combining a variety of individually selected active substances and injecting them locally. European esthetic perception demands a relaxed, naturally youthful radiance. We like to receive compliments, but we do not want people to suspect us of having “work” done. Consequently, there is every reason for a gradual, long-term strategy, where it is preferable to start with a milder mixture, and then, if required, to follow it up with stronger active substances or concentrations later on in the treatment.

Note
Many years of positive experience and also some study results are available for many of the procedures, such as Mesolift, lipolysis or MesoHair. The choice of materials in this book, be it instruments or injectable agents, does not claim to be comprehensive. The treatment protocols are individually devised; ideally, they address not only the objective pathophysiology of each case, but also the wishes of the patients themselves.

2.1 Individual active substances in esthetic mesotherapy

2.1.1 Active substances in Mesolift

If the desired skin rejuvenation effect is to be achieved, we need the correct choice and combination of active substances matching the pathophysiology of each case. Knowledge of the pharmacological properties of many of the potential individual agents is therefore an essential prerequisite.

Description of selected active substances

Monomethyl trisilanol salicylate
(E.g. Conjonctyl® in F, Silicor Toskani)

Organic silicon is found here in a polymeric structure of silicic acid salts. Silicon is the most important natural semiconductor; in the body’s tissues, it acts as a nanospacer and catalyst in a variety of reactions. Uses include stimulation of collagen synthesis (not in salicylate allergy), tightening and regeneration of the skin, as a possible replacement for procaine and as a universal adjuvant for the improvement of connective tissue structures. It is also available linked to DMAE for skin tightening and firming (DM-silk), improving the latter’s local tolerability.

Sodium pyruvate
(E.g. in Cocktail anti-aging Toskani)

This α-keto-derivative of lactic acid encourages amino acid and dermal collagen synthesis. It is an antioxidant (ROS destruction) and stimulates cell metabolism.

Uses: Particularly for sun-damaged skin, smoker’s skin DMAE for skin tightening and firming (DM-silk), improving the latter’s local tolerability.

Overview – active substances in Mesolift

<table>
<thead>
<tr>
<th>Carrier solutions</th>
<th>PROCAINE 1–2 % or lidocaine 1–2 %, NaCl 0.9% Conjonctyl® (monomethyl trisilanol salicylate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biostimulants</td>
<td>Non-cross-linked hyaluronic acid, Na-DNA Collagen, elastin, retinol, glycolic acid</td>
</tr>
<tr>
<td>Stem cell activators of plant origin</td>
<td>Proliferation of epidermal stem cells ↑, growth factors (IGF-1, bFGF, VEGF, TGF-β1)</td>
</tr>
<tr>
<td>Herbal remedies</td>
<td>Ginkgo biloba, Centella asiatica</td>
</tr>
<tr>
<td>Vitamins</td>
<td>A, B, C, E, dexamethasone</td>
</tr>
<tr>
<td>Building blocks for protein synthesis</td>
<td>Amino acids for collagen and elastin production ↑, e.g. taurine Ubiquinone (coenzyme Q 10), glutathione, pyruvate</td>
</tr>
<tr>
<td>Regulation of muscle tone</td>
<td>Muscle tone ↓ (relaxation): botulinum toxin (POM), argireline Muscle tone ↑ (stretching): DMAE (anti-sagging)</td>
</tr>
</tbody>
</table>
Mesolift is most frequently used on the face, neck and cleavage/neckline area.

Once the individual components of the treatment have been selected, they are mixed in the correct way immediately before use on the patient.
The active substances

**Non-cross-linked hyaluronic acid**  
*E.g. Teosyal Meso, Redensity I, TKN HA MW 2%*

The glucosaminoglycan polysaccharide HA, also known simply as Hyaluron, is a universal and essential component of skin and connective tissue, possesses a high water-binding capacity and improves the viscoelastic properties of the dermis and epidermis. It counteracts skin thinning (by c. 6% every 10 years) and age-related skin atrophy. Produced in the fibroblasts, it has a significant role in the proliferation, migration and differentiation of the keratinocytes. Only HA produced by biotechnological methods, rather than the substance of animal origin, may be used in esthetics. There are many products on the market, but they differ with respect to quality, purity and HA concentration.

*Uses:* Universal. The nature-identical gel is an essential component of the Mesolift cocktail. It is water-soluble and can be homogenized. In non-cross-linked form, its long-term effect sets in only on epidermal or superficial intradermal administration; following deep injection, it is rapidly transported away from the skin and metabolized. Its half-life in perfused tissue is only 15 days.

**Glycolic acid**  
*E.g. Glycomax 1 % Toskani*

This alpha-hydroxy acid, obtained from sugar cane, is a well-known peeling agent, but can also be added to the Mesolift cocktail. It enables the effective treatment of acne or shallow acne scars, blemished and large-pored skin, age-related pigment spots and lines, as well as dull, lifeless and coarse skin. It causes superficial, fine reddening of the skin with subsequent peeling, dissolving and removing the layers of skin cells lying on the surface. After the treatment, the skin’s sensitivity to light is heightened. Serious side-effects or risks have not been observed when the substance is used correctly.

**Taurine**  
*E.g. Tauricol Toskani*

2-aminoethane-sulfonic acid is a semi-essential amino acid containing sulfur. It has an antioxidant, anti-inflammatory effect and vasoprotective effect. Stimulates keratinocytes, collagen synthesis and the storage of moisture in the skin.

*Uses:* Anti-aging, smoker’s skin, skin regeneration, energy carrier.

**DMAE**  
*E.g. in DM-Silk Toskani, Cocktail skin tightening Toskani*

Dimethylaminoethanol is a specific substance with a lifting effect on the face and body (anti-sagging). It increases skin muscle tone due to increased acetylcholine secretion and counteracts skin ptosis. Potential side-effects: toxic dermatitis and fibroblast damage at excessive concentrations. Its tolerability is considerably better when used in the form of DM-Silk (complex containing organic silicon).

*Uses:* Mesolift, skin tightening, stretch marks.

**Polidocanol**  
*(POM) (Aethoxysklerol®)*

Its sclerosing effect may also be used for extravascular applications (*Note:* this is an off-label use), connective tissue firming, potent skin tightening, treatment of fresh stretch marks; concentration and dose depend on the depth of injection and the target structure. Potential side-effects: inflammation or even necrosis at excessive concentrations.

*Uses:* Tightening and firming of the skin, stretch marks, microsclerotherapy with DHE (dihydroergotamine, F), e.g. treatment of spider burst veins, couperose, small hemangiomas.

**Vitamin C**  
*Ascorbic acid 200 mg/ml*

Stimulates collagen synthesis, promotes wound healing and skin regeneration, protects from light, regulates melanogenesis.

*Uses:* Prevention of sun aging, Mesoglow, melasma.

**Vitamin B5**  
*Pantothenic acid, dexamethasone*

Involved in the acetylation of proteins and peptides, promotes glutathione synthesis, is essential for the hair roots and skin (nutrition, moisture binding), protects from oxidative stress and UV-radiation, has an antiviral and anti-inflammatory effect. Fibroblast proliferation ↑. Activates wound healing genes.

*Uses:* Stretch marks (striae), melasma.

**L-glutathionen**  
*E.g. Glutamax Toskani*

Tripeptide, antioxidant, involved in the detoxification of free radicals and peroxides, causes depigmentation through tyrosinase block, reduces melanin formation.

*Uses:* Melasma, anti-aging, prevention and treatment of age spots.
Assessing the anatomy of the face

Inspection and assessment of the anatomy of the face and of the individual structure of the skin and connective tissue allow the therapist to select the correct active substance combination for mesotherapy, or a combination of methods for a more complex “face composition”.

[Image of a face]
Materials and techniques

5.1 Syringes and needles

Even though mesotherapy only involves microinjections, these should still be administered as non-traumatically and as painlessly as possible. Decisive factors in this respect, apart from the active substances, are the injection technique and the quality of the syringes and needles. All the materials should be silicon- and latex-free. Available syringe formats include the 1 ml, 2.5 ml, 5 ml and 10 ml sizes; it is important to ensure that they consist of three component parts (i.e. that the plunger is topped with a rubber seal which ensures easier, smoother delivery). If an electronic Mesogun is used, the correct syringe formats are important to ensure complete evacuation of the contents (suppliers listed in the Appendix, Chapter 11).

Short 4-mm and 6-mm needles are available especially for mesotherapy (Mesoram, Mesorelle, Mesojet). The Mesojet needles are distinguished by their special 5-sided bevel, which considerably reduces bleeding from the skin. However, they should only be used with an electronic injector, as the 5-sided bevel makes skin penetration slightly more difficult compared with the 3-sided (triangular) bevel. Although the needles listed here are high-quality, high-performance products, they still need to be changed several times when administering multiple injections. The needle can bend or become blunted, particularly when using the nappage (also known as gust or salvo) technique. In addition, the patency of the needle needs to be checked before every treatment. Each needle must be disposed of immediately after use, using a dedicated, securely sealed sharps container (Quick-box), which is disposed of via normal waste. Needles must never be recapped due to the risk of injury.
5.1.1 Mesotherapy needles and their uses

1. **Microlance BD 0.3 x 13 mm**: cellulite, lipolysis, hair loss, point-by-point technique, linear tunnel technique, manual epidermal technique, one-by-one injection technique, infiltration.

2. **Mesoram 0.3 x 4 mm**: Mesolift, hair loss, cellulite, Mesobotox, nappage and epidermal technique, one-by-one injection technique, for universal manual use or with the Pistor 4 or 5.

3. **Mesojet 0.29 x 4 (also 6) mm, 5-sided bevel + polish**: special needle for cellulite with venous and/or connective tissue weakness, in patients with increased susceptibility to hematomas or bleeding.

4. **Mesorelle 0.26 x 4 mm**: finest needle with a low flow rate, for the point-by-point and epidermal technique in sensitive patients or on sensitive areas, e.g. hands, feet, perioral or periorbital region, causes significantly less pain.

5. **Sterican or Terumo No. 20 0.3 x 20 mm or BD Hypopoint 0.4 x 13 mm**: lipolysis for bigger fat pads and larger syringe volumes, for subcutaneous infiltration.

5.2 Injectors

The mesotherapy injector, also known as the mesogun or meso-pistol, is an indispensable tool for a practice specializing in esthetics. Firstly, it enables injections to be delivered...
Materials and techniques

in a standardized and reproducible way; secondly, it prevents unwanted effects caused by a manual injection technique which may be rather short of perfect. However, the key advantage to the patient is that the injections are less painful. The reason for this lies in the speed of the electronically guided injections and in the skin tension maintained by the skin stabilizer. This is particularly important in delicate areas, e.g. in cellulite treatment, on the face (Mesolift) or in patients who are highly sensitive to pain. Furthermore, it is essential to avoid scratches on the face in particular. However, working manually is better for treatments within the brow ridges, on the hands and feet or inside the mouth (periodontosis treatment), because this ensures a better feel in these delicate regions. Apart from that, the general rule is that the luxury of an injector gun should always be offered to private payers. The cocktails used in esthetics are often expensive, and wastage of material should be kept as low as possible. Injectors are also superior to the manual technique in this respect.

The French-made injector Pistor 4 and its successor Pistor 5 have become established over a number of years, due to their reliability and versatility. Dr. Pistor was closely involved in their development, and the innovative modifications of the Pistor 5 offer even greater ease of use. The only consumable material required for each treatment is a single sterile, disposable skin stabilizer. Any maintenance or troubleshooting is provided promptly by the French manufacturer. Several compressor-driven devices (e.g. Dermatic 1, U 225 or Mesalyse) are available for large-scale use; these are capable of injecting even undiluted, non-cross-linked HA or large quantities at high pressure, especially in lipolysis.

All these devices must hold a CE certificate in Medical Device Class 2a.

5.2.1 Differences between Pistor 4 and Pistor 5

The Pistor 4 has been developed and refined to produce the Pistor 5, with its new electronic display that can be used to program the individual injection parameters. Syringes of 2 or 5 ml and needles 4 mm in length have been programmed

<table>
<thead>
<tr>
<th>Pistor 4 information in brief</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 The injection is always directed downwards, so that no fluid can get into the injector. Regularly remove and clean the skin stabilizer mount.</td>
</tr>
<tr>
<td>2 Never allow the injector to fall.</td>
</tr>
<tr>
<td>3 When inserting the syringe (flaps point outwards), the lever needs to engage gently; it may be moved slightly to help lock it, but it must never be forced.</td>
</tr>
<tr>
<td>4 Work only with aqueous or slightly viscous solutions; exactly one drop per “shot” (trigger actuation) must be ejected in nappage mode.</td>
</tr>
<tr>
<td>5 When carrying out Mesolift using the epidermal technique (nappage mode), the potentiometer regulates the injection rate. In continuous mode (C), it regulates the dose injected. Starting the gun in C mode at the beginning of the treatment builds up pressure in the syringe, allowing the patency of the needle to be tested at the same time. In rare cases, the needle may be occluded due to a manufacturing fault.</td>
</tr>
<tr>
<td>6 To avoid scratch marks when using the epidermal technique and to ensure the correct surface absorption of the active substance, hold the gun at an angle and use the skin stabilizer (without a scale) for adjustment. In this mode, the skin is touched more than penetrated. The resultant liquid droplets must on no account be wiped off. The skin behaves like a sponge, actively absorbing the active substance. Use the Mesoram needle (0.3 x 4 mm) for this purpose. When applying the gun to the skin vertically (with a scale), ensure that your hand moves in step with the gun (i.e. rapid up and down movements).</td>
</tr>
<tr>
<td>7 For the lipolysis of smaller fat pads or when treating cellulite with the 4 or 6 mm Mesojet needle or the Microlance needle (0.3 x 13 mm), inject vertically without the skin stabilizer, using the point-by-point technique in C (continuous) mode, setting the potentiometer to maximum.</td>
</tr>
<tr>
<td>8 Do not leave the battery in the device for longer periods, e.g. overnight or over the weekend, as it will lose its charge. To ensure slow (complete) charging, remove the battery and plug into the wall power supply. Only use the plug for connecting and disconnecting, i.e. do not pull on the cable.</td>
</tr>
<tr>
<td>9 For quick on-the-job charging, plug the injector into the wall power supply with the battery inserted (the green light on the gun and the battery comes on).</td>
</tr>
<tr>
<td>10 Release mode: if a syringe jams, the slide bar can be pushed back by simultaneously pressing the On and Release buttons.</td>
</tr>
</tbody>
</table>
Mesotherapy injectors

The Pistor injectors are light, allowing smooth, strain-free operation.

To build up pressure in the syringe, always start in continuous (C) mode, until the first few drops emerge.

The electronic display of the Pistor 5 in nappage (gust) mode.

The electronic display of the Pistor 5 in continuous mode.

How to position the hands when inserting the syringe.

Fitting the skin stabilizer.
5.3 Mesotherapy injection techniques

In the epidermal “dragging” or point-by-point technique, doses of only 0.01 ml (single drops) are applied per injection, i.e. no welts appear.

The ultrafine Mesorelle needle makes it possible to administer almost painless injections and it is used particularly on fine, sensitive skin areas, e.g. lips, skin around the eyes, fingers and feet. In sensitive individuals, it is also the preferred needle for Mesolift of the face and neck/cleavage region.

In the epidermal dragging technique, the needle (a BD Micro lance 13 mm in length is best) is only dragged across the skin with a quivering, “Parkinsonian”, linear movement. The elastic oscillations of the needle are exploited when doing so. This filigree-like technique allows quick coverage of larger areas.

The network-like distribution of injections is another option. This results in a long-term effect of the active substances, e.g. in cellulite treatment or Mesolift.

5.3.1 Intracutaneous injection (depth of injection ≤ 1 mm)

Doses of ≥ 0.1 ml produce a welt (see Figure). Welts cause pain due to overstretching of the epidermal skin layers. They take several hours to several days to subside fully.

5.3.2 Epidermal injection (depth of injection ≤ 1 mm)

Epidermal mesotherapy injection technique using an injector gun: the fine droplets are actively absorbed by the skin and disappear within minutes.
Manual injection techniques

Manual epidermal technique: the needle is stroked across the skin with very little downward pressure. An even pressure on the plunger applies the liquid uniformly, drop by drop.

The welt represents a superficial skin depot. Active substance transport away from the welt takes place slowly by diffusion.
Regional treatments

1 Hairline: MesoHair

2 Lines around the mouth: Mesolift, Mesobotox, HA filler (contouring)

3 Chin: Mesolift, Lipolysis

4 Eye region: Mesolift, Mesobotox, Lipolysis (fat pads)

5 Nasolabial lines: HA filler, Mesolift, Lipolysis

6 Neck: Mesolift, Mesobotox (Lipolysis)

Overview: Treatment areas on the face and the possible therapy combinations.
Overview: Treatment areas on the body and the possible therapy combinations.

1. Axillae and upper arms:
   - Mesolift
   - Lipolysis

2. Abdomen:
   - MesoCellulite
   - Lipolysis
   - MesoStretch
     (stretch marks)

3. Thighs:
   - Mesodrain (legs)
   - MesoCellulite
   - Lipolysis, MesoStretch

4. Hands:
   - Mesolift HA filler

5. Cleavage:
   - Mesolift

6. Love handles:
   - MesoCellulite
   - Lipolysis

7. Hips:
   - MesoCellulite
   - Lipolysis
   - MesoStretch

8. Overview: Treatment areas on the body and the possible therapy combinations.
Regional treatments

8.1.4 Mesobotox

Mesobotox refers to the addition of small doses of Botulinum toxin to a regenerative isotonic mesotherapy mixture. This is injected not into a target muscle, but intradermally. On the one hand, this leads to direct relaxation of the small skin muscles and, on the other, to mild relaxation of the deeper muscles (as a result of diffusion). Examples of how these individually tailored cocktails are used in specific areas include, e.g., to widen the mouth and eye region (6 IU in 0.5 ml Anti-Aging cocktail per eye and lip, respectively), at the neck and cleavage (10 IU in 1 ml Anti-Aging cocktail each). However, it is also possible to use 20 IU in 2 ml Anti-Aging cocktail to achieve global relaxation of the face. When working around the eye, do not inject past the boundary represented by the eyebrow ridges. Side-effects are not likely. In practice, considering the low Botox doses involved, a product strength of 50 IU (Bocouture® or Vista-bel®) tends to be used instead of 100 IU. The effect persists for at least six months, and initially skeptical Botox “refusers” often find that this starts them on classical Botox treatment.

Anatomical studies demonstrate the considerable complexity of the anatomical relationships of the highly differentiated facial musculature, with its frequent overlaps and asymmetries, making precise intramuscular injection difficult. There are thus many factors which favor this gentler variant of Botulinum treatment. Former concerns that Botox could not be mixed with other ingredients without losing its effect have long since been thrown out by the clinical evidence of its efficacy. It is important for the mixture to be isotonic and for it to be used immediately after it is prepared.

8.1.5 The “tension column” technique

A new technique from Spain potentiates the effect of Mesolift by producing traction vectors. It is used to give greater firmness and padding to zones of more severe tissue sagging. Using a targeted infiltration technique, 0.5–1 ml each of the Mesolift mixture is injected intradermally into defined points and then massaged in with a circular motion against the underlying bone. This forced tissue expansion then leads to a mild, local fill-and-lift effect. The “tension columns” are constructed at strategic points, such as the temples to firm and lift the lateral part of the eye and the mid-face region, periorally to firm and lift the area around the mouth, or in the angle between lower jaw and neck to firm and lift and neck.
Mesobotox

Injection technique for Mesobotox: intradermal nappage and serial injections to smooth fine lines and widen the eye openings.

Injection technique for Mesobotox: intradermal nappage and serial injections to smooth stubborn lines around the mouth and to open up the mouth region.
Case histories

9.1 Mesolift

Case 1: 45-year-old woman (untreated, does not want Botox).

Before

After

Case 1: Findings directly after the second Mesolift: marked improvement in skin structure and tone, a brightening glow effect.

Cases 2 and 3: The results of injecting pure (non-cross-linked) hyaluronic acid was to smooth the fine structural lines (crow's feet) around the eyes. Less than 0.1 ml was injected per point, producing a small welt. Even if the substance is massaged in afterward, it can still take time for it to be integrated into the skin.
Case 4: Sagging of the cheeks, chin and neck.

Case 4: Change immediately after the first Mesolift. Repeat treatments can enhance this improvement further.

Cases 5–8: Cheek areas with large skin pores and/or creased skin.