

## MESOTHERAPY-A NON-SURGICAL COSMETIC MEDICINE TREATMENT: A REVIEW

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### ABSTRACT

Mesotherapy is a minimally invasive procedure that is widely used in Europe and elsewhere to treat various injuries and medical conditions. This medical specialty targets problem areas with microinjections of conventional or homeopathic medicines, vitamins, minerals and amino acids. Tiny "medicinal bullets" are delivered directly into the mesoderm (middle layer of skin) that is highly specific to the condition being treated. Mesotherapy is a medical specialty that involves injecting microscopic quantities of natural extracts, homeopathic agents, pharmaceuticals and vitamins into the skin. It can be used to eliminate cellulite, promote weight loss, treat aging skin and redundant (sagging) skin, and rejuvenate the hands and neck. Liposuction does not treat cellulite. In fact, liposuction often causes existing cellulite to appear more prominent. Mesotherapy treats cellulite directly, promoting smoother skin and reducing fat in selected areas. Fat deposits are flushed from the body, and do not reappear in other areas, which often occurs after liposuction. Mesotherapy does not require hospitalization, general anaesthesia or downtime. Although Mesotherapy is used to treat a broad spectrum of injuries, illnesses and medical conditions, it is also employed to treat cosmetic conditions, including acne, cellulite, stretch marks, scars and wrinkles. It can also be used to reduce contour fat. In the present article, we have concentrated on various aspects of technique so called mesotherapy. The aim of present article is to provide in depth knowledge about possible utility of this technique in current clinical scenario.

**Keywords:** Mesotherapy, lipolysis, liposuction, Lipodissolve, Lipothrapy, Mesoplasty.

### INTRODUCTION

Mesotherapy is a non-surgical cosmetic medicine treatment. Mesotherapy employs multiple injections of pharmaceutical and homeopathic medications, plant extracts, vitamins, and other ingredients into the subcutaneous fat.

Mesotherapy injections allegedly target adipose fat cells, apparently by inducing lipolysis, rupture and cell death among adipocytes<sup>1</sup>. Mesotherapy is a general term describing a technique that utilizes a series of injections to perfuse liquid preparations inclusive of medications and other substances into the subcutaneous tissue (the "mesoderm") to treat local medical and aesthetic conditions. It does not denote treatment of a specific medical or cosmetic condition, although it has widely been publicized as a method for anti-aging and as a means of "melting fat" for body contouring. Mesotherapy is a treatment for the ugly look of cellulite and body fat. It is not a surgical procedure, but rather uses injections of several substances, including vitamins, plant extracts, medications, and more, into the fat under the skin. This is supposed to killing the fat cells, which are then absorbed into the body, creating a more sculptured body. This is supposed to killing the fat cells, which are then absorbed into the body, creating a more sculptured body.

There are many different mesotherapy medications that make up the cocktails that are used in the treatment. There is no current research showing what concoctions are the best to use in the procedure. Doctors know that the procedure kills cells, but what is not certain is

whether or not the procedure specifically targets fat cells. The purpose of the mesotherapy is to reduce fat and cellulite deposits in the problem areas of the body. The most commonly targeted areas are the upper arms, thighs, abdomen, and rear end. Often the doctor will create a concoction specific for the patient. It is used to help lose weight, sculpt the body, and rejuvenate the skin. But does mesotherapy work, and how is it different than liposuction? Mesotherapy side effects are much lower than those associated with other types of fat reducing surgeries. The area that was treated will often bruise temporarily, but this fades with the fat within a week. The bruising is the only common side effect. The procedure can be a little uncomfortable, but this can be minimized with numbing cream.

Among its many applications, Mesotherapy can be used for the following:

- Mesotherapy to eliminate cellulite
- Mesotherapy to promote weight loss
- Mesotherapy to provide anti-aging benefits
- Mesotherapy to eliminate localized fat deposits

### General Concepts of Mesotherapy

Mesotherapy was recognized by the French National Academy of Medicine in 1986 as an integral part of traditional medicine. Each day, thousands of doctors worldwide use Mesotherapy to help tens of thousands of patients. Dr. Michael Pistor, the founding father of



Mesotherapy, referred to the treatment as "Surgical Medicine," meaning medications are injected directly into the skin at the site of the pathology or problem area(s). To treat cellulite, medications are injected into the skin and the fat. During a cellulite treatment of the legs, medications are injected from the buttocks to the knees, including the front, back and sides of the thighs. Mesotherapy introduces microscopic quantities of homeopathic medications, traditional pharmaceuticals, vitamins, mineral and amino acids into the skin to treat a variety of conditions. All medications are selected for the specific condition being treated.

The needles used in Mesotherapy are very short and thin. For white skin, a 4 mm needle is recommended, and for black skin, a 6 mm needle is used so the mesotherapist can deliver the medications to the right depth. By definition any medication injected into the skin, fat or tissues of Mesoderm (middle layer of skin) is considered Mesotherapy. The advantages of injecting medication into the skin/fat include the elimination of side effects and contra-indications. Intolerance to a medication is often triggered by factors such as dose and the body's ability to break down and excrete the product. In many cases, formerly intolerant patients can tolerate a medication in Mesotherapeutic form<sup>2</sup>. Mesotherapy can treat cellulite located anywhere on the body. The patient may feel a slight pinching or burning sensation when the injections are administered. However, mesotherapist provide a topical anaesthetic that makes treatment virtually painless<sup>3</sup>.

A common side effect of Mesotherapy is bruising, which generally resolves over one week. To speed up the healing process, Mesotherapist usually recommend that the homeopathic supplement arnica be taken either orally or applied topically on a daily basis. Patients may experience temporary soreness. This will subside within 24-48 hours. Not all Mesotherapists are alike. Mesotherapy should be performed by an MD or DO who has ACCME Approved Continuing Medical Education Credits (CME's). A nurse or physician assistant should not administer Mesotherapy without the MD or DO being present.

### History, Indications and Ingredients<sup>4-6</sup>

Dr. Michel Pistor (1924-2003) performed clinical research and founded the field of mesotherapy. Multi-national research in intradermal therapy culminated with Pistor's work from 1948 to 1952 in human mesotherapy treatments. The French press coined the term Mesotherapy in 1958. The French Academy of Medicine recognized Mesotherapy as a Specialty of Medicine in 1987. Popular throughout European countries and South America, mesotherapy is practiced by approximately 18,000 physicians worldwide. Dr. Michel Pistor published his first paper on mesotherapy in 1952. Since its introduction, it has gained widespread attention outside of the United States for the treatment of medical conditions and, more recently, for cosmetic purposes and

weight loss. The various uses for mesotherapy reported in the literature have included pain management for musculoskeletal disorders (arthritis, tendonitis, and neuralgia) and the treatment of vascular disease (venous stasis and lymph edema). However, the most notable indication seems to be for the reduction of adipose tissue including cellulite, lipomas and weight loss, for which it has been promoted as a "non-surgical alternative to liposuction." There is no standardized formulation for mesotherapy and ingredients vary depending on indications. Solutions have included prescription medications (vasodilators, antibiotics, the caffeine, aminophylline, hormones like calcitonin and thyroxin and the beta agonist, isoproterenol, enzymes (collagenase and hyaluronidase), herbal extracts, vitamins and minerals). One of the ingredients most consistently used for fat loss is a soybean lecithin extract phosphatidylcholine or "Lipostabil" (Aventis, Sanofi-Aventis Group; Strasbourg), of cell membranes-emulsification of fat cells (lipolysis) and the cause for fat reduction.

However, recent data suggests that the cell lysis may in fact be due to the action of deoxycholate, a natural detergent used in these formulations to keep the phosphatidylcholine soluble in water.

### Injection technique and complications<sup>7</sup>

Treatment sessions consist of a series of local subcutaneous injections of a fluid formula with a syringe or hand-held device (mechanical gun) attached to a 27-30 gauge needle directly into the area(s) of concern. There is no precise protocol, and the depth, amount of medication delivered per injection and treatment interval is determined by the condition being addressed. Localized adverse events have included edema, erythema, ecchymosis, irregular contours, and tender subcutaneous nodules. Urticarial and lichenoid reactions to the injected medications as well as mycobacterial infections have been reported in the literature. Systemic side effects of phosphatidylcholine include mild transient elevations in LFT's and rare cases of nausea and vomiting after injections of high volumes.

### Mesotherapy versus Liposuction

The main difference between mesotherapy and liposuction is that liposuction is an invasive, surgical procedure where fat is vacuumed out of the body. Mesotherapy is non invasive, and simply uses mesotherapy medication injections to help reduce the amount of fat cells in the body. There are fewer risks and a no recovery time with mesotherapy as compared to liposuction. Finally the mesotherapy cost is much lower than the cost of liposuction, since it is not surgical.

### Usage

There are published studies on the clinical treatments and effects of these medications and numerous cocktails of combined chemical compounds on the body have been reported in Europe and South America for several years.



There is no conclusive research proof that these chemical compounds work to target adipose (fat cells) specifically. Cell lysis, resulting from the detergent action of deoxycholic, may account for any clinical effect<sup>8</sup>.

Substances used include:

- T3-T4 thyroid,
- Isoproterenol
- Aminophylline
- Pentoxifylline
- L-carnitine
- L-arginine
- Hyaluronidase
- Collagenase
- Yohimbine
- Lymphomyosot
- Co-enzyme cofactors
- Dimethylethanolamine
- Gerovital
- Glutathione
- Tretinoin
- Alpha lipoic acid
- Vitamin C
- Procaine
- Lidocaine
- Ginkgo biloba
- Melilotus
- C-adenosine monophosphate
- Multiple vitamins
- Phosphatidylcholine
- Trace mineral elements
- Carbon dioxide

#### Criticisms against the procedures of Mesotherapy

Some American doctors are critical of the procedure because there is little to no scientific study saying that the procedure is safe. They say that there are potentially dangerous side effects that may not have been discovered. The procedure is not controlled by the FDA, making it dangerous in the minds of some doctors, since there is no way to know what the doctors are using on their patients.

That being said, many patients who have suffered for years with their weight are deciding that the cost for mesotherapy is worth it for the fat loss results without the risks of liposuction and other types of surgeries. The reason for the rise in popularity is that the mesotherapy costs and risks are so much lower, and the results are promising. Mesotherapy treatments have been performed throughout Europe, South America, and more recently the United States for over fifty years, however physicians have expressed concern over the efficacy of mesotherapy, arguing that the treatment hasn't been studied enough to make a determination. The primary

issue is that mesotherapy for the treatment of cosmetic conditions hasn't been the subject of gold standard clinical trials; however the procedure has been studied for the pain relief of other ailments, such as tendonitis, tendon calcification, dental procedures, cancer, cervicobrachialgia, arthritis, lymphedema, and venous stasis. Further, there have been case series and numerous medical papers on the mesotherapy as a cosmetic treatment, as well as studies that employ the ingredients used in mesotherapy.

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