

# Basic Makeup of Cellulite Still Baffles Investigators

*Clinical trials to determine the content of fat found in cellulite to be launched.*

BY DOUG BRUNK  
San Diego Bureau

LAS VEGAS — While cellulite can be easily identified, the basic science of its makeup remains a mystery.

"We still don't know what the definitive pathologic cause of cellulite is," Dr. Neil Sadick said at the annual meeting of the International Society for Dermatologic Surgery. "There are many aggravating factors such as weight loss that are thought to play a role, but none of them [has] been proven over the past 30 years. We believe that this is a sexual dimorphic secondary trait."

One theory he subscribes to is that cellulite "involves changes in the structure of the adipocyte and the surrounding septa, so that the septa are more vertically oriented, allowing movement of the adipocyte up to the dermis."

Dr. Sadick and his associates in the department of dermatology at Cornell University, New York, plan to launch a series of clinical trials with the New Jersey Medical School, Newark, in an effort to determine the content of fat found in cellulite.

They also plan to study receptors that have been shown to be involved and upregulated in people with cellulite, including peroxisome proliferator-activated receptors, uncoupling protein 1, and androgen receptors  $\alpha$ -AR and  $\beta$ -

AR. "By understanding more about the basic science of this condition, we hope to be able to introduce better therapies in the future," he said.

The current trend in cellulite therapy is marked by multimodal devices that "attempt to heat adipocytes, remodel adipocytes, and cause dermal remodeling in the septa surrounding the



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adipocyte cells," Dr. Sadick said. He discussed the following technologies:

► **VelaShape (Syneron Medical Ltd.)**. This Food and Drug Administration-approved device combines bipolar radiofrequency power and infrared energy with vacuum and mechanical massage for circumferential reduction.

"There have been a number of publications in the scientific literature showing that there is some degree of efficacy in terms of remodeling the cellulite as well as circumferential fat reduction," he said.

In a study of 40 patients conducted at Dr. Sadick's clinic, 85% had a circumferential reduction of 1 cm or more after 12 treatments and 43% had a circumferential reduction of 2 cm or more.

"Up to 7.2-cm reduction in circumference was achieved" in some cases, he said.

► **TriActive (Cynosure)**. This FDA-approved device combines a low-energy diode laser with suction massage that has been shown to achieve a global cellulite improvement in 75% of patients (*Am. J. Cosmet. Surg.* 2005;224:233-5). "This is a very nice technology that can be used in this setting," Dr. Sadick commented.

► **Accent (Alma)**. This FDA-approved device uses dual radiofrequency technology for circumferential reduction.

The unipolar setting targets deep dermal and subdermal layers and is used to treat large volumes of tissue, while the bipolar setting delivers energy superficially and is used to treat areas with a thinner dermis such as the face.

One recent study of 30 patients with cellulite grade III-IV who were treated 6 times over a 2-week period found that 27 achieved clinical improvement with a mean decrease in thigh circumference of 2.45 cm as measured by MRI (*Dermatol. Surg.* 2008;34:204-9).

► **SmoothShapes (Elemé Medical)**. This FDA-approved device combines a laser and an LED light source with mechanical rollers and a vacuum to "mold the adipocytes and to try and improve the metabolic parameters associated with cellulite," Dr. Sadick said.

One randomized trial of 74 patients treated twice a week for 4 weeks found that 81% had a significant volumetric reduction in subcutaneous fat (*J. Lasers Surg.*



A patient is shown before (left) and after (right) undergoing four treatments with VelaShape for cellulite reduction.

*Med.* 2004; suppl. 16:32). At 13 months post treatment, five patients underwent MRI and four of the five maintained their result.

In the future, he predicted, more "inside-outside" approaches to treating cellulite are likely to evolve, such as combining external technologies with internal laser lipolysis to "heat adipocytes and eat up septa. That probably will give the most effective results."

Dr. Sadick went on to note that while injectable treatment of cellulitis remains popular in the United States, "there is not a lot of good science behind it. We need to distinguish between true mesotherapy and injectable lipolysis. In true mesotherapy, we are attempting to eliminate some fat [and] have an effect on the metabolism of the adipocytes."

Agents being used for treating cellulite in mesotherapy include aminophylline, isoproterenol,

ephedrine, calcium pyruvate, carnitine, and ma huang.

Another approach to cellulite treatment is detergent lipolysis, or mesotherapy, in which phosphatidylcholine and deoxycholate act as detergents, causing adipose cell walls to dissolve and break down.

"This is not FDA approved to date but there are FDA studies underway to determine the optimal solution," Dr. Sadick said.

Future treatment approaches may include topical approaches such as Retinol Anti-Cellulite, a cosmeceutical from RoC, as well as electrolipolysis, carboxytherapy, and cryolipolysis.

But for now, "the technology has moved far in advance of what we know about cellulite," he said.

Dr. Sadick disclosed that he has received research funding from Syneron Medical Ltd., DEKA Corp., and Cynosure Inc. ■

## Supersonic Technology Powers New Skin Rejuvenation Device

BY DOUG BRUNK  
San Diego Bureau

LAS VEGAS — A device that delivers supersonic pressure to the skin for rejuvenation is showing efficacy for several conditions, including facial wrinkles, solar keratoses, and acne scars.

The device, which was developed by a Russian rocket scientist, is called the JetPeel-3 and is manufactured by TavTech Ltd. It uses pressurized gas to deliver saline or other liquid nutrients through special handpieces into the superficial layers of the skin at supersonic velocities.

The device was cleared by the Food and Drug Administration in 2006 for delivery of saline into the skin.

"It removes microscopic particles that are usually inaccessible, such as those between cells, in epidermal cracks, in sweat secretions, and in the depression of the hair follicle," Dr. Michael Gold said at the an-

nual meeting of the International Society for Dermatologic Surgery. "Supplements are penetrated through pressurized zones, which stretch skin-widening micro-canals inherent in the skin layers and create new ones. It's a simple, safe, painless, and effective device for skin rejuvenation."

He added that the JetPeel-3 restores a youthful-looking appearance by reducing cellular buildup, strengthening capillary respiration, removing metabolic waste from tissues, hydrating and oxygenating tissues, and energizing cell renewal and the wound-healing process.

The technology "is something I find fascinating," said Dr. Gold, who is a paid consultant of TavTech and uses the JetPeel-3

in his Nashville, Tenn., dermatology practice. At the meeting he showed several before and after pictures of cases that were successfully treated with the device for wrinkles above the lips, crow's feet, solar keratoses, and acne scars.

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exfoliation with saline, current research is exploring its role in enhancing laser, intense pulsed light, and other treatments, and in the needleless delivery of mesotherapy products and vitamins. "You can personalize these things," he said.

"Many times you see good results after just one treatment," he said. In his experience, most patients require two to four treatments for optimal correction.

While most studies of the device to date have focused on exfoliation with saline, current research is exploring its role in enhancing laser, intense pulsed light, and other treatments, and in the needleless delivery of mesotherapy products and vitamins. "You can personalize these things," he said.

Nutritional elements currently being used include hyaluronic acid, which enriches the skin's natural connective tissue; vitamin C, which improves the ability of skin cells to even out pigment; and vitamins A, B, and E, "which are important ingredients for the proper functioning of cells," he said.

In an interview at the meeting, Oren Gan, TavTech's vice president of sales and marketing, said that many patients achieve immediate results and their skin typically returns to its natural coloration within 30 minutes after treatment is completed.

"It's a true lunchtime procedure," he said, noting that the price of the JetPeel-3 is \$22,900.

Dr. Gold disclosed that he is a consultant to, speaks on behalf of, and has performed research for many pharmaceutical and medical device companies, including TavTech. ■

