



i-Lipo Effectively Employs Low-Level Laser Biostimulation to Remove Fat

By Kevin A. Wilson, Contributing Editor

i-Lipo from Chromogenex Technologies, Ltd. (South Wales, U.K.) uses proven low level laser technology to stimulate a fat releasing cascade within the treatment area, melting inches off the waistline immediately and measurably after only a single session. Although not a weight loss treatment, a month long course of bi-weekly sessions with the 658 nm laser device, followed by exercise, results in significant targeted reductions in circumference that can be maintained indefinitely with proper diet and by staying physically active.

“i-Lipo uses low level laser energy to stimulate the body into doing something it would already do naturally.”



Before Tx



After i-Lipo Tx

Marketed in North America by Chromogenex U.S., Inc. (Howell, Mich.), the i-Lipo device has been in use in Europe for nearly five years and just received FDA clearance for circumferential reduction and the temporary reduction of cellulite. Aesthetic physician and laser specialist Dennis M. Kotelko, M.D., national medical director of Rocky Mountain Laser College (Lakewood, Colo.), explained what sets



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i-Lipo apart from traditional laser-based therapies. “Normally we’re harnessing a principle known as selective photothermolysis, which involves the generation of heat via laser or light energy to disrupt target tissue and create an effect, such as erasing a tattoo or damaging wrinkled skin so that it

will be replaced by healthy, younger looking skin. This requires higher energies and more power,” he advised. “However, i-Lipo uses low level laser energy to stimulate the body into doing something it would already do naturally.”

Carrie Carda, M.D., medical director of Women’s Health Specialists in Poplar Bluff, Mo., agreed, “The beauty of i-Lipo is that since it is essentially tricking your body into performing a natural function – which works the same way for all of us regardless of gender, age or ethnic background – there



Carrie Carda, M.D.
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are few contraindications. As well, treatment protocols don’t need to be tailored to each patient; therefore, it isn’t operator dependent. It’s a simple treatment for any trained staff to perform, providing visible results consistently.”

Maxwell S. Murison, M.D., a plastic surgeon at Morriston Hospital (Swansea, Wales, U.K.), who is studying the i-Lipo in clinical trials, elaborated. “This device



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is unique in that it safely induces a biochemical change in the fat cell at depths up to 2 cm below the surface, encouraging adipocytes to eliminate fatty acids and glycerol as if responding to a natural need such as hunger or exercise. The resultant material is then readily available for use by the body.”

In theory, adipocyte mitochondria (the energy producing organelles in a cell) absorb the light energy,¹ which stimulates a cascade of reactions that change cell pH temporarily. In response, the cell creates pores in its membrane to restore pH balance as part of normal homeostatic function.² Secondary reactions include changes in the concentrations of iron and calcium, and triggering of the enzymes that break down triglycerides into component fatty acids and glycerol molecules. Triglycerides in their normal state cannot be released as they are too large to fit through these transitory pores. Rather, the smaller fatty acids are forced through the cell wall and transported by the lymphatic system to wherever the body requires energy. The overall effect is similar to natural management of

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body energy stores and normal cellular respiration.^{3,4} The 658 nm wavelength employed by i-Lipo is within the range of wavelengths shown to stimulate cells in this manner,⁵ and is considered to be specific to mitochondrial upregulation.

According to Dr. Murison, histological studies exposing living fat cells to these wavelengths at relatively low energies has shown that they will empty themselves within about ten minutes, hence the ten minute treatment time with i-Lipo. “There’s no cell destruction and no cellular debris for the body to deal with, just a theoretical stimulus on the chemical messengers within adipocytes to promote this effect.”

“What’s interesting about this entire process,” Dr. Murison continued, “is that by simply exercising within a few hours of treatment you can quickly expend the released fat, which will be processed by the liver for use by the body.” Free glucose is used first. Once this is consumed glucagon releases stored glucose, since muscles cannot work from fat directly. “These key energy stores are then replenished by the normal metabolism of the free fatty acids and glycerol that has been released by i-Lipo,” Dr. Murison explained. “Essentially this allows us to reduce specifically targeted areas, which normal diet and exercise cannot predictably do. People notice a difference after one treatment, which is quite amazing.”

He added that, “the fat cell is still there, so without exercise some of the fat will be taken up again, which will negatively affect the potential result. Also, the fat cell is still available to be filled with new fat in the future.” This is considered an advantage as the retention of intact adipose cells, where future fat storage can be directed, may prevent some of the long-term issues noted with other tissue destroying fat reduction mechanisms, such as liposuction, cryolipolysis and ultrasound cavitation. With these methods, future fat storage is directed to remaining adipose cells, causing unwanted fat deposit build-up in anatomical areas that may subsequently be difficult to manage.⁶

In Dr. Kotelko’s opinion, another benefit of i-Lipo is that it uses diode laser technology, which in the spectrum of medical lasers is relatively simple in operation. “This is a very stable method of producing laser light and doesn’t require a lot of power,” he noted. “Fluid or gas lasers, such as CO₂, or other solid state lasers that use larger crystals and depend on a relatively large laser cavity, may be more complicated, more power hungry and less cost-effective. Conversely, i-Lipo and its components are smaller, more portable and easier to maneuver. Additionally, energy of the same frequency from a light-emitting diode (LED), for example, is divergent versus collimated, the photons of which have different properties.” This difference in light photon properties causes a significant difference in the actual biological effect on the target cells, making treatment efficacy with laser diodes such as i-Lipo much greater than with LED.

Although he hasn’t had the i-Lipo device for very long, practicing aesthetic, craniofacial and reconstructive plastic surgeon Rian A. Maercks, M.D. (Miami Beach, Fla.), has years of experience with the gamut of



Rian A. Maercks, M.D.
Plastic Surgeon
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Before Tx



After i-Lipo Tx

"We've observed circumference reductions in the treatment area of about 7% to 10% after a full one month course with i-Lipo, without changes in body weight."



Outer thighs before Tx



Outer thighs after i-Lipo Tx

aesthetic procedures to the face and body. "The diode laser is an old, rugged and simple technology that doesn't require complex generation and monitoring systems. They are used in many industries for a variety of applications."

Additionally, the 658 nm diode lasers used in i-Lipo are at a low enough level to be completely safe. "The treatment is quite pleasant and has been described as gentle and warm," said Dr. Murison.

Treatment with i-Lipo is a simple process, according to Richard T. Ethridge, M.D., Ph.D., director of Ethridge Plastic Surgery (Fort Worth, Texas). "Patients come in, are measured and then treated after a brief wait. Total time under the laser is about twenty minutes, ten minutes per side."



Richard T. Ethridge, M.D., Ph.D.
Director
Ethridge Plastic Surgery
Fort Worth, TX

Each of four i-Lipo paddles are placed directly on the target area and emits nine laser beams for a total of 36 beams in each ten minute treatment. This direct laser delivery is a key difference from previous low level light energy approaches to body shaping. "It sounds like a lot, but in reality i-Lipo is probably the easiest device for physicians who have no laser experience," advised Steven D. Shapiro, M.D., dermatologist and co-director of Gardens Dermatology & Cosmetic Surgery Center (Palm Beach Gardens, Fla.). "It's practically impossible to hurt someone using this technology as it is intended, and it provides immediate, visible results. I call that a home run."



Steven D. Shapiro, M.D.
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"We've observed circumference reductions in the treatment area of about 7% to 10% after a full one month course with i-Lipo, without changes in body weight," Dr. Shapiro reported. "I feel successful when patients return saying their clothes fit better. To empirically prove success with measurements may not be as exciting to the patient as before and after photos, or the results they see themselves, but it's a key aspect of the process."

Dr. Shapiro uses specific measurements to guarantee reproducible accuracy. "We want to ensure both the accuracy of our measuring and the consistent placement of the i-Lipo paddles at each visit. Also, numbers can guide us. If we don't see the numbers changing as expected we ask the patient about compliance issues, if they've noticed weight gain, or if they've recently been diagnosed with a medical condition such as diabetes."

According to dermatologist Lori F. Honeycutt, M.D., director of Absolute Dermatology & Medi-Spa in Cedar Park, Texas, the total evaluation of lost inches is an amalgamation of circumferential measurements of the upper,



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Dermatologist
Director
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middle and lower abdomen. “In my experience people lose from .5 to 1.5 total inches per session, which adds up over a one month treatment regimen.”

“After treatment patients go home and return to their daily routine, as long as they exercise somewhat vigorously for 20 to 30 minutes to burn off the released fat,” Dr. Ethridge advised. “The result is permanent if the patient adheres to a healthier lifestyle.” He noted that patients should wait a few hours before exercising, but no longer than six hours post treatment. Early data from investigations of blood serum free fatty acids (FFA) after administering i-Lipo reveal an increase of FFA levels within 60 to 120 minutes after treatment has finished. This would theoretically be the optimum time to exercise.

It is also important to limit the patient to a bi-weekly treatment course, Dr. Carda explained. Controlled scheduling supports patient expectations and allows for a sustainable outcome rather than a quick fix result that can be just as rapidly regained. “This interim prevents us from artificially overloading the patient’s system. There is no evidence that this would be harmful. We simply wish to achieve optimal outcomes; results that are noticeable and significant.”

The speed with which these results reveal themselves has physicians believing that i-Lipo will motivate patients. “Immediate gratification is rare in non-invasive technologies; it’s a very reinforcing stimulus with strong psychological benefits,” Dr. Maercks said. “In my experience it encourages people who might not otherwise be motivated to stick to a healthy regimen of diet and exercise. After all, they’ve made a financial investment so it improves their chances of making a personal one too. It helps to go home and see a visibly different body.”

With a master’s degree in metabolic medicine and nutrition, Dr. Carda also believes in i-Lipo’s ability to motivate patients to take a more active role in maintaining a healthy lifestyle. “It’s amazing what ten minutes a side does for patients because it seems to do what a month or more of dieting might not, although it isn’t a weight loss device. You can put the fat right back on if you’re not careful. We tell our patients: ‘It’s not fat cell destruction, it’s fat cell reduction.’ If you don’t exercise like you’re supposed to, you can reabsorb some of the fat.”

Dr. Carda explained that i-Lipo does not truly cause weight loss because by itself, fat is not all that heavy and is only a single component of excess weight. “This is not to say people won’t lose weight,” she added. “If you lose fat and keep it off you lose weight. It’s just that real weight loss comes from long-term changes in diet and exercise, which i-Lipo is a great adjunct to, but not the main factor. This is why we strongly encourage lifestyle changes that improve health, keep weight off and promote a working metabolism.”

Dr. Kotelko also uses i-Lipo in conjunction with a holistic lifestyle approach for improved overall health via weight reduction and exercise. “Obesity is a problem in this country. I happen to work in what’s considered the fittest state: Colorado. We have the lowest percentage of overweight and obese people, but



Abdomen before Tx



Abdomen after i-Lipo Tx

“The device not only reduces inches, it allows us to sculpt specific areas and help the patient achieve their own personal aesthetic goals as well.”



Before Tx



After i-Lipo Tx

Photos courtesy of Steven D. Shapiro, M.D.

that's still 25%, which translates into more than one million obese people in my state alone," he explained.

His patients may wholly, or in part, practice a regimen of detoxification, healthy diet, exercise, vitamin supplementation and supportive therapies like i-Lipo, which itself plays a key role. "The overall effect relies on patient compliance and adherence to the regimen, which is understandable," Dr. Kotelko added. "i-Lipo is given in the beginning, helping patients lose inches quickly as they begin to reshape their overall health. The device not only reduces inches, it allows us to sculpt specific areas and help the patient achieve their own personal aesthetic goals as well."

In Dr. Kotelko's experience, visible results encourage patients to go deeper into the program. "We recommend training and nutritional counseling to help them better achieve and maintain these outcomes, which in my experience have been more than remarkable, even in patients who only follow us halfway," he reported. "Each aspect complements the others in a synergistic way, with the whole greater than the sum of its parts. i-Lipo is proving to be very effective."

Dr. Ethridge, who was among the first few physicians to obtain and use the device in the U.S., has found i-Lipo to be, "an excellent entry-level body shaping modality for many new patients because of the low relative cost and lack of pain or downtime. This is a non-surgical treatment, which some patients want, especially those new to aesthetic medicine." Dr. Ethridge is also careful to select patients with limited localized fat deposits, "because in my experience these achieve the best results, but I've also used it for someone with a little extra on the abdomen who was trying to fit into their wedding dress. After four weeks of treatments they were extremely happy. It's always good to generally avoid situations that could potentially result in suboptimal outcomes, but that doesn't mean i-Lipo won't work for those patients, or should never be used in those cases."

Treatment is not recommended for patients with a body mass index (BMI) greater than 30. Treatment is safe, but normally the overall effect is not as profound on extremely overweight individuals who would benefit more from a strong program of diet and exercise to reduce weight and achieve a healthier lifestyle.

This is not to say that i-Lipo is ineffective on larger individuals, in fact some physicians report having treated this patient population successfully. "We treated a morbidly obese woman and her husband," said Dr. Honeycutt. "Despite her size, the woman was extremely satisfied because she was able to lose about 11 inches overall. This isn't a weight loss treatment and I don't push it as such, but I've treated numerous heavier patients with high satisfaction as long as they were educated as to what to expect. It is completely safe."

In fact, i-Lipo is so safe and easy to use that it can be delegated to a nurse or aesthetician. Furthermore, the practitioner can multi-task while performing treatment, according to Dr. Honeycutt. "It's user-friendly, and doesn't require much training. My aestheticians can begin and monitor the procedure, then go and

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perform other tasks due to the safe and relatively simple nature of i-Lipo. The treatment pads are placed on the targeted area and ten minutes later they come back and switch the pads to the other side for another ten minutes. Also, i-Lipo doesn’t require the adjustment of parameters the way other therapies do, because it treats the same way for everyone.”

“I also love that i-Lipo has no consumables, making it a very low maintenance machine,” Dr. Honeycutt continued. “Unlike many lasers you don’t need gel, anesthetic or disposable treatment tips; and it is very portable.”

For Dr. Honeycutt i-Lipo serves a vital function in terms of broadening her aesthetic patient base. “i-Lipo appeals to people in the community who would otherwise avoid an invasive and costly procedure such as liposuction,” she said. “It is safe, non-invasive, cost effective, and doesn’t disrupt their daily routine, but gives them the visible results they want. This works for a lot of young moms in the community, for example, who aren’t interested in or can’t afford a more extensive mommy make-over and just want to get back some of what changed during pregnancy.”

Dr. Murison shared another common complaint that i-Lipo counteracts: “A problem we frequently encounter is that women seem to have the tendency to gain weight around the middle and in the hips and thighs, but when they begin losing weight it first comes off of the face or breasts. Women want to maintain what they consider to be feminine proportions that are aesthetically pleasing. With diet and exercise, plus i-Lipo to steer the results, we have a remarkable ability to influence this process in a way we didn’t have before. Again, this result will last as long as the patient does not simply put the weight back on. So the best overall result with i-Lipo includes a program of improved diet and regular exercise.”

Dr. Murison is engaged in a clinical trial to further define the effects i-Lipo may have, independent of diet and exercise. This study is controlled via sham device treatment, which in the case of i-Lipo is easy to replicate convincingly. “We’re still assembling the data but so far we’re observing what appear to be significant differences between the treatment groups in favor of i-Lipo, but it’s still too early to be definitive,” he said.

“A safe, tolerable and effective device like i-Lipo serves as a great passive income stream for the aesthetic physician, without a doubt,” Dr. Ethridge said, “but more importantly it’s great for those who are afraid of or simply don’t want invasive or surgical intervention, yet still desire treatment. The cost is relatively low, especially when compared with liposuction, and it achieves results.”

i-Lipo facilitates good patient relations according to Dr. Maercks. “It provides a pleasant longitudinal platform for continuous interaction with a variety of patients who understand what to expect and are excited. Since it’s non-invasive and relies on upregulating natural body processes, it will always serve as a platform from which the patient can move into different, more aggressive interventions. It keeps



Before Tx



After i-Lipo Tx

Photos courtesy of Steven D. Shapiro, M.D.

"I think this modality is going to gain in popularity because it's one of those rare treatments that's effective, and yet has little to no chance of harming the patient."



Before Tx



After i-Lipo Tx

Photos courtesy of Steven D. Shapiro, M.D.

them coming back, and they remain open to other opportunities we offer. i-Lipo is a best-in-class device that expands my options as a non-invasive alternative."

For most patients Dr. Maercks recommends surgery as the gold standard for significant fat removal. "I think it's the best intervention," he began, "but for those who don't want to go that route i-Lipo is very popular. It gives patients a sense of control to have that decision making power. Patients love it, and they love the realistic and visibly striking promise it can deliver on."

Dr. Carda is also having that experience. "i-Lipo has not only increased my patient base, it has brought a specific kind of patient to my doorstep, healthy people who care about their appearance," she said. "Since these patients have a healthy lifestyle they can easily maintain the instant results. Often they are compelled to go further and may try other procedures we offer. I'm an OB/GYN and I haven't spent a dime on advertising because I built my i-Lipo practice from the waiting room by word-of-mouth. Our i-Lipo is busy all day long, five days a week. This is a paradigm shift in aesthetic medicine and if you don't believe it, all I can say is that it has changed my practice. It's painless, effective, affordable, sustainable, and promotes personal responsibility and compliance among my patients as well. If that's not revolutionary I don't know what is."

To get comfortable with i-Lipo Dr. Shapiro started by treating his staff after he first obtained the device. "It's always good to have your staff be frontline advertising, and it was brainless with i-Lipo because it's safe and everybody loves it. We were happy to see for ourselves that i-Lipo is all it claims to be. Also, the staff is able to share their excitement and experience with patients who are curious."

"I think this modality is going to gain in popularity because it's one of those rare treatments that's effective, and yet has little to no chance of harming the patient. In other words," Dr. Maercks elaborated, "it gives people what they want without giving them what they don't want. Patients love the instant, consistently attainable results. Combine it with skin tightening and the overall outcome can be quite dramatic." ■

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