

Verjù Advances Low Level Non-Thermal Laser Therapy for Body Contouring



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By Kevin A. Wilson, Contributing Editor

Taking low level non-thermal laser (LLNTL) therapy for body contouring to the next level, the Verjù Laser System from Erchonia Corporation (McKinney, Texas) utilizes green laser light to help reshape the body without pain or downtime of any kind. It is the first green laser to receive FDA 510(k) market clearance for circumference reductions, even in larger patients (BMI between 30 and 40). This revolutionary device was featured at *THE Aesthetic Show* (TAS) 2016, July 7–10 at the Wynn Resort in Las Vegas, Nev.

During a workshop titled *Low Level Light Therapy Revisited: Why This Innovative Therapy Should Be Part of Your Practice*, which took place on Friday, July 8, 2016 at TAS, four recognized experts shared their take on this novel modality, its mechanism of action, why green LLNTL has so much to offer, and a review of the current clinical evidence supporting Verjù. Previous iterations of LLNTL therapy harnessed the 635 nm red laser, which while backed by research proving its safety and efficacy for body contouring, had not been challenged. Thus, the question arose: Is it the best wavelength for the job?

Green lasers provide 25% more energy than red lasers, which may translate into a more efficient procedure. In other words, better results in less time per treatment. As explained by Michael Gold, M.D., director of the Tennessee Clinical Research Center and Gold Skin Care Center (Nashville, Tenn.) and moderator of the Verjù workshop, “The optical window of useful wavelengths in the spectrum rests more in the red, but does extend into green. The results of clinical trials support the validity of their use for fat reduction similar to what was done with red wavelengths.”

Verjù consists of six low level laser emitters which cast 532 nm green laser energy in a sweeping motion over the treatment zone automatically without operator intervention for 15 minutes per region, front and back (totaling 30 minutes). Afterward each region may be treated for approximately two minutes using the Erchonia Percussor, an easy-to-use handheld therapeutic massage device. Ideal targets include the thigh, flank, buttocks and abdominal areas.

“What we’re talking about here is photobiomodulation – the use of LLNTL energy to stimulate an effect in the body, rather than the usual mechanism of action in aesthetic medicine,” said Dr. Gold. Most often, lasers are harnessed to cause controlled thermal coagulative or ablative damage of target tissue, followed by the desired improvements that manifest during the healing process. This is not so with LLNTL therapy. “The photons penetrate the cells and are absorbed by chromophores within key cell structures to stimulate a biochemical effect, rather than cause damage inciting a wound healing response. So in a sense the photons act more like a drug entering a cell, rather than the photomechanical effect of directed energy.” The device may be used in conjunction with liposuction to smooth and otherwise improve overall outcomes, or as a stand-alone therapy.

Existing literature supporting the success of LLNTL therapy for circumference reduction spans more than a decade. "We have research going back to 2002 that explains the mechanism of action of this modality," Dr. Gold reported. "The laser energy causes the formation of transitory pores in adipocyte cell membranes, which allows the lipids to leak out and the cell to collapse following the extrusion of the fat. Improvements in the lipid profile of subjects has been demonstrated, which is interesting. There's evidence showing activation of the complement cascade and induction of apoptosis, again resulting in subsequent release of the fat. This process has been shown to begin within minutes of irradiation."

After originally becoming interested in LLNTL therapy because of the science and the results, Carl Thornfeldt, M.D., a dermatologist and CEO of Episciences, Inc. (Boise, Idaho) reviewed some of the current literature in more detail. "When I looked at the actual research behind Verjù I was intrigued by its focus on the mechanism of action, and how good it was despite not having the kind of Madison Avenue marketing other laser devices had at the time," he said. "I was also intrigued by the data, presented in inches lost, which is what patients really care about. So much of what we care about as clinicians doesn't matter to patients at all. Also, the basic technology has been in use in so many other medical specialties with new applications on the horizon, so we definitely have something here."

A 2014 double-blind sham-controlled study by Suarez and colleagues¹ examined the efficacy of the 532 nm green laser using the same protocol as had been shown effective with the red (635 nm) wavelength for LLNTL therapy. Subjects (n=67) were randomized into a treatment group (n=35) and a placebo group (n=32). "The active laser device and the light-emitting diode (LED) based sham device looked and treated exactly the same," Dr. Thornfeldt specified. "There were no dietary changes or supplements. Patients were treated every two or three days for two weeks. At the end of weeks one (three treatments) and two (six treatments) the subjects were measured, and then again at two weeks after treatment." There were no side effects, and no pain or downtime.

"The primary outcome was patient satisfaction and total circumference reduction was a secondary outcome. It was considered a positive result if they saw an overall (waist, hips, thighs) reduction of at least three inches total," Dr. Thornfeldt advised, "which is important because so often you see companies touting losses of 2.1 cm, and we're talking inches." Statistically significant reductions were demonstrated versus the control group, with 68.6% of subjects in the treatment group seeing reductions of at least three inches from baseline. Approximately 65% of subjects in this group were satisfied with the results. "The conclusion was that 532 nm LLNTL was safe and effective for reduction of the waist, hips and thighs."

In this study it was also highlighted that the mitochondrial stimulation effect of LLNTL augments the production of ATP (adenosine triphosphate), which in

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Before Tx



After Verjù Tx

Photos courtesy of Glynis Ablon, M.D.



Before Tx



After Verjù Tx

Photos courtesy of Dore Gilbert, M.D.

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turn upregulates cAMP (cyclic adenosine monophosphate), thereby converting triglycerides into fatty acids and glycerol that can easily pass through the cell membrane. This may be why fat cells seem to deflate after treatment, as shown in clinical trials with the red 635 nm wavelength. Since similar results were noted when using the green laser in clinical trials, it is hypothesized that the mechanism of action is the same.

Dr. Thornfeldt also briefly presented results of his recent study using red LLNTL², which were remarkable for two reasons. The protocol was modified to be six, once-per-week, double-length treatment sessions, and the results were impressive. "The region in which I practice is primarily agribusiness rather than corporations, so we have a different set of patient needs to deal with. People who own large farms or ranches come into the area maybe once a week to run errands and order supplies and so on. More than one-third of my patients travel more than 75 miles one way to see me. I wanted to try this protocol because it would be more convenient for this population." Measurements taken two weeks after the final treatment showed an average reduction of 8.95 inches over three sites, with 3 of the 20 patients showing losses of more than 12 inches. "This was an open observational study so the question is whether or not these results are reproducible in a larger, controlled trial."

Another study by Jackson, *et al.*³ in 2013 examined green laser for cellulite in the thighs and buttocks using a sham treatment placebo control. Of 68 subjects 34 were placed in the Verjù group and 34 were placed into the control group. Treatment consisted of a series of six sessions over a two-week period spaced two to three days apart. Outcomes measured at weeks two and six post treatment included improvement in the appearance of cellulite as per the Nurnberger-Muller scale, decreases in combined circumference and body weight, and subject satisfaction with cellulite improvement. Statistically significant improvement in both the Nurnberger-Muller scale and circumference versus the sham group were noted, and the majority of patients (62.1%) were either somewhat satisfied or very satisfied with treatment.

According to dermatologist Glynis Ablon, M.D., who practices in Manhattan Beach, Calif., cellulite arises in about 90% of post-adolescent women, but rarely men, because the subcutaneous fat is organized differently within the body, in large vertical chambers rather than small, diagonal units, for women and men, respectively. Fibrous bands tether the tissue layers together, creating the bulging and undulating appearance when these vertical chambers are swollen with fat. Dr. Ablon explained the why and how of cellulite in the context of Verjù. "There really isn't a lot out there that effectively treats cellulite," she stated. "To see cellulite reduced by one or two grades you must shrink the fat cells, then you need separation between the cells to promote lymphatic drainage, which eliminates the extruded fat as well as water, toxins and lymphatic waste. Shrinking fat cells and improved drainage will lead to reductions in unwanted swelling in those areas. You also see improvement

when the connective tissue tethers become stretched and elongated, with concurrent enhancements in skin tone and elasticity.”

“This is the kind of result we see with LLNTL,” Dr. Ablon continued. “We have proven ability to shrink the fat cells, which creates that space needed for better lymphatic drainage. The Jackson study also hypothesized that improvements in skin quality via neocollagenesis, which have been shown in other literature, may also contribute to the overall result. So patients come in and say that not only can they fit into their skinny jeans, their skin looks better as well.”

Dore J. Gilbert, M.D., a dermatologist in private practice in Newport Beach, Calif., rounded out the presentation with information from his six week, informal in-house study using Verjù for two sessions per week for three weeks with a final, seventh treatment at the end of that cycle. “I went into it unsure as to what to expect and was very pleased with the results, as were the patients,” he highlighted. There were five patients. One man lost 3.5 inches total (chest, waist, flanks), and another male subject lost 2.0 inches total (chest, waist). One woman lost 3.75 inches total (waist, hips, thighs) and another, very happy woman lost 4.5 inches (waist, thighs, hips). “It is remarkable to patients to have this kind of result without any downtime or pain, not even anesthesia.” One very athletic woman lost only 0.25 inches total, but as Dr. Gilbert pointed out, “with her build, she may not have had much to lose and we don’t really know why she didn’t see much of a result. More importantly, we in the business know that every patient is not going to be a home run, so we felt it necessary to include this one in the interest of full disclosure.”

Overall, advancement of this technology for aesthetic applications is on the horizon. “LLTNL with green laser is a truly remarkable, scientifically proven technology with no associated pain or downtime,” said Dr. Gold. “Any therapy meeting those criteria tend to be highly sought by patients.”

“What’s so impressive about this modality is that we see reductions without changes in diet and exercise,” Dr. Ablon added. “That’s what the patients that we treat say to us when they see reductions measured in inches with no pain or downtime, only the hassle of coming into the office regularly for a few weeks. They come back and they are happy, and a happy patient makes for a happy physician.”

References:

1. Suarez DP, Roche GC, Jackson RF. A double-blind, sham-controlled randomized demonstrating the effectiveness of low-level laser therapy using a 532-nm green diode for contouring the waist, hips, and thighs. *Am J Cosmet Surg* 2014;31(1):34-41.
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