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TOPICAL FAT-BUSTER: LOSE 7 INCHES OF FAT IN 20 MINUTES— No BULL!?!

There are dozens of biochemical pathways that cause fat loss, suppress appetite, burn extra calories, destroy fat cells, and prevent fat cell regeneration from the stem cell pool. Yet, the obesity rate tripled over the last 30 years, and normal-weight people are the minority in the United States.¹ The failing economy doesn't help, as Americans have a paradoxical relationship between household income and bodyweight.² The poor are at higher risk of becoming obese due to the high cost of healthy foods (lean meats, fruits and vegetables) compared to energy-dense foods (bread, pasta, sugary drinks and pastries).

America has also become a society of immediate gratification and effortless results. People expect a pill, not lifestyle advice, to cure any ailment. Fat loss often fails because it is slow and challenging.

Is this really too much to ask— an effort-free way to lose fat and unsightly inches while enjoying a quick nap, or maybe chatting on the phone? Apparently, it *is* too much to ask— because God, Mother Nature and evolution say so. Yet, fret not— the power of science and the free enterprise market has risen to champion Ms. Muffintop and Mr. Beerbelly.

Drugs are the most publicized (and profitable) method of cutting fat, whether it is pounds of blubber or the few grams that drop

the calipers another millimeter on a bodybuilder or fitness model. Certainly, people are aware of the fact that the combination of exercise and diet is the foundation for weight management. However, most of the general public is sedentary by choice, and view dietary restrictions as sacrifices that decrease the quality of life. Athletes and bodybuilders are already following strict exercise and diet guidelines, but often seek out the additional advantage.³ Unfortunately, most effective fat-loss drugs have been pulled from the market due to serious, adverse health effects.⁴

Surgical methods are immediate, and capable of removing several pounds of fat and fluid. However, there are several downsides including cost, discomfort, healing, risk of infection, risk of death, and variable outcome.⁵ Liposuction remains one of the most popular cosmetic procedures, and advancements have improved the ease and effectiveness. Among these advances, which include cannulas, tumescence, etc., is the application of external energy modalities to break up the fat cells prior to attempting to suction out the contents/tissue— among the methods used to do so are heat, cold, ultrasound and lasers.⁶ Despite these improvements, liposuction still carries the disadvantages noted above.

The Holy Grail for fat-loss pro-

cedures would be to find a non-invasive method that would have no downtime, procedural or healing complications (ideally, it would be cheap and guaranteed as well). One company is making the claim that its method does just that. Erchonia Medical, Inc. is a privately-held company that has developed several FDA-approved devices that use low-level laser therapy to aid in diverse conditions (some indications are awaiting FDA approval) such as acute and chronic neck and shoulder pain, acne, burn and wound healing, bone healing, reducing pain and swelling during breast augmentation, affecting capsular contracture associated with breast implants, and laser-assisted liposuction.⁷

The Zerona Effect On Fat Cells

- The absorption of light and consequential secondary reaction cause an opening or pore to form within the cell's protective barrier.

- Weakening the structural support of the cell



The blue arrow identifies the pore formed within the cell.
The red arrow reveals the deterioration of the protective barrier of the cell.
This image was taken 6 minutes after laser stimulation at x60,000 magnification.

Histological Conclusion

- The absorption of red light emitted by the **Zerona™** causing the problematic cell saturated by fat to drain and collapse to healthy size.



FAT ATTACK

An impressive feature of Erchonia is its commitment to supporting research; numerous clinical trials and basic research articles support its claims of efficacy and safety. It now offers the Zerona laser, a non-invasive laser treatment awaiting FDA approval— but employed throughout the United States in clinics as an off-label use of an existing FDA-approved technology.

The application of low-level laser assists in traditional liposuction by disrupting the membrane of fat cells in the target area, making it easier to vacuum out cell contents (stored fat) and cell fragments. It is like eating applesauce, rather than biting off the apple with your teeth and swallowing without chewing.⁸ Whereas Zerona directs a laser held above the treatment site several minutes prior to surgery, other procedures (e.g., SmartLipo) use lasers of different wavelength and power contained within the cannula itself (the cannula is the suction tube that is inserted under the skin during liposuction).⁶

ZERONA: THE LASER THAT BLASTS FAT

Proponents of the cannula-contained laser believe it is more precise to have the laser lead the cannula under the skin; additionally, there is a skin-tightening benefit reported.⁹ However, the technique is still dependent upon a skilled hand, guiding the cannula to avoid passing the tip too quickly past the just-lasered fat cells— or angling too sharply toward the surface. Zerona is automated and covers a broad area, with no guidance or intervention required during treatment once the beam is targeted.

According to findings presented in conferences and published in the medical literature, up to 90 percent of fat is emulsified within 12 minutes of the superficial (outside the skin) laser treatment.¹⁰ This contrasts with a study showing no effect— this study may not be a relevant comparative, as it used a laser with different properties and the model (300-pound Yucatan pigs) may have confounded the issue due to having skin thickness greater than humans.¹¹

Yes, at this point, many readers may be thinking this is a scam. Many

health care providers felt the same way. The upside to this healthy skepticism is that the onus was placed on Erchonia to prove the concept under the microscope, and more importantly, on the procedure table.

Let's backtrack a bit. An Erchonia laser similar to the Zerona was first used as a pre-treatment adjunct to liposuction; the FDA granted approval for this use in 2004.¹² In order for the laser to have any effect (otherwise, why go to the time and expense?), it must penetrate the skin and have sufficient energy to create a hole in the membrane of the fat cell. Of course, it must also be controlled so the experience doesn't resemble James Bond's in "Goldfinger" (1964), where he was nearly bisected by a laser beam. The first step in proving Zerona's claim is to demonstrate that the laser can in fact "burn" a hole in a fat cell.

ACCORDING TO FINDINGS PRESENTED IN CONFERENCES AND PUBLISHED IN THE MEDICAL LITERATURE, UP TO 90 PERCENT OF FAT IS EMULSIFIED WITHIN 12 MINUTES OF THE SUPERFICIAL (OUTSIDE THE SKIN) LASER TREATMENT.

The "defining" experiments were performed by Dr. Rodrigo Neira, a plastic surgeon in Cali, Colombia. As reported at the Congreso Bolivariano de Cirugía Plástica Reconstructiva (2001), when exposed to the 635 nm laser, cultured adipocytes (fat cells grown in a lab) were emulsified, or in simpler terms, liquefied.¹³ The experiment was repeated, looking at tissue removed during surgical lipectomy (cutting fat from the body with a scalpel). After just six minutes of exposure to the laser, the fat tissue was similarly affected.

To confirm what was happening visually, the treated fat tissue from Dr. Neira's research was submitted for two types of electron microscopy (a microscope so powerful— 60,000x magnification— it can see the smallest

parts of the insides of a cell; way detailed than the most powerful microscope). The electron microscope confirmed that 99 percent of the contents of the fat cells were released. The extrusion of the fat was caused by the formation of a "transitory pore" or a temporary hole, which allowed the fat globule to be squeezed out like a popped zit. No other tissue was affected, such as the capillaries or small cells— which allows the stored fat in the area to be released without destroying the structure, function, or health of any tissue in the treated area.^{13,14} This is a fairly unique feature as most other techniques rely on adipocyte necrosis (immediate death of the fat cell), apoptosis (programmed or reactive death of the cell), or mechanical destruction.

After confirming the effect of the laser in the laboratory setting, Dr. Neira performed the procedure on test subjects who were "lasered" for six minutes; he obtained MRI images of the areas immediately before and shortly after the treatment.¹⁵ The MRI revealed that the fat in the area was not as organized, as would be expected if the cells remained intact. Instead, the area developed a homogenous appearance in the MRI scans, suggestive of the fat being extruded into the intercellular space, which is referred to, anatomically, as the interstitial space. Interestingly, the change was even seen in the deep subcutaneous fat, beyond the reach of the laser, which only penetrates a few centimeters. This suggests that the laser-induced evacuation of the treated fat cells triggered similar fat-releasing through biochemical messengers in fat cells beyond the laser's reach.

It is important to clarify that the Zerona does not "burn a hole" into the fat cells. It is not like holding a magnifying lens over a leaf, and watching it burst into flames when sunlight is focused into a tiny area. Without clarifying the cellular process, readers may be imagining smoke curling from the belly button as the nurse stands by with a fire extinguisher. In fact, what is happening in the fat cell is, well... being by comparison.