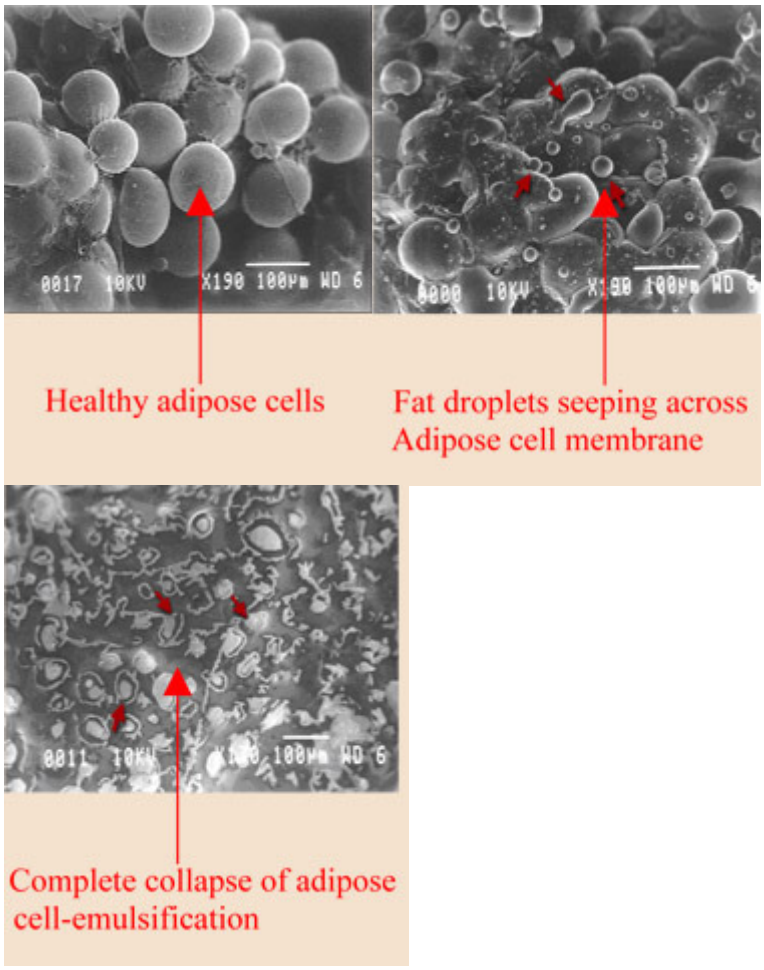
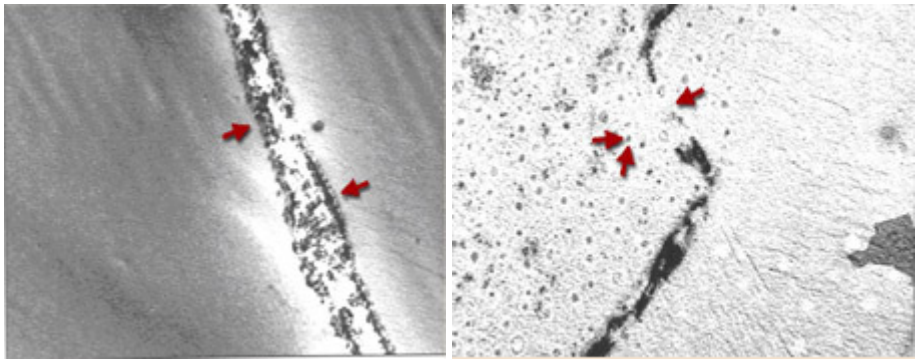
Process

Erchonia® Laser Scanner Biochemical Effects on Adipose Tissue



The stunning series of photographs above impressively demonstrates the low level laser's ability to emulsify adipose tissue. The pictures show the collapse of the rigid adipose cell and the secretion of triglycerides and fatty acids. These remarkable images immediately reveal why laser-assisted liposuction can serve as a great benefit for the physician and the patient.

Why do Triglycerides and Fatty Acids Seep Across the Membrane?



These images reveal the formation of a transitory pore forming in the bi-lipid membrane of an adipose cell. This pore formation is the direct result of laser stimulation, and the reason why the triglycerides and fatty acids move into interstitial space. The pore is not damaging to the cell, but simply serves as a means for the fatty contents of the cell to evacuate. The formation of the transitory pore is the product of a series of secondary reactions originating in the mitochondria.

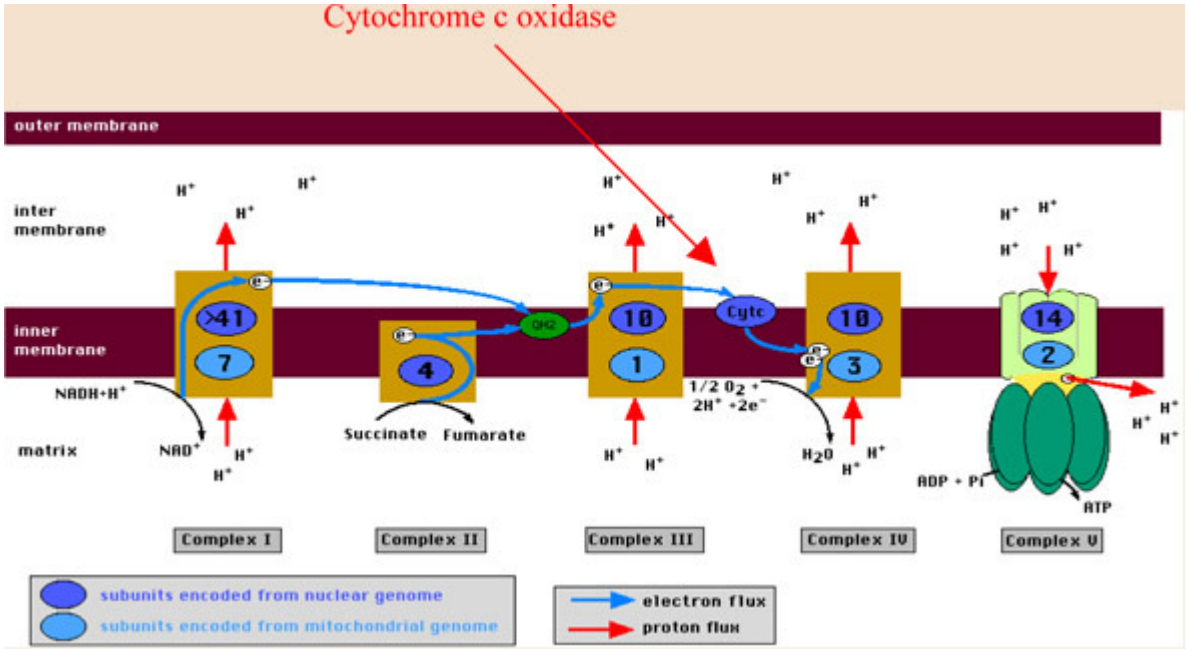
How does low level laser treatment affect cells?

I will begin to walk you through a series of primary and secondary reactions that originate in the mitochondria of a single cell and can migrate throughout the whole body!

The mitochondrion is an energy station for all eukaryotic cells, and that energy produced in the mitochondrion is what provides life to the entire organism. The mitochondrion is where adenosine tri-phosphate (ATP) is produced, an essential molecule driving many reactions.

The mitochondrion is the specific target for Erchonia® low level laser devices. Specifically, cytochrome c oxidase, a terminal enzyme, is targeted by the low level laser. Cytochrome c oxidase is a photoacceptor, absorbing light at a peak spectrum of 630-670 nm (red spectrum). This particular molecule is responsible for ensuring that the Respiratory Chain goes to completion. The Respiratory Chain harvests electrons from O2 and NADH passing them along through a series of redox reactions, ultimately producing ATP and H2O. Cytochrome c oxidase promotes the electron flow along the Respiratory Chain between Complexes III and IV.

Low level laser is proposed, based on a study performed in 2005, to stimulate photoexcitation of certain reaction centers in the cytochrome c oxidase molecule (like CuA and CuB) influencing the redox state of these molecules, and consequently, the rate of the electron flow in the molecule; meaning, photoexcitation of cytochrome c oxidase may lead to redox changes and modulations of biochemical reactions through a cascade of reactions called photosignal transduction (stimulation of other reactions).



The Biochemical Chain of Reactions!

Light stimulation at 632nm for mitochondrion (cytochrome c oxidase) photoexcitation.

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Photexcitation induces change in photoacceptor (cytochrome c oxidase).

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ATP levels are significantly elevated altering cellular metabolism.

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Redox homeostasis occurs.

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Redox transcription factors are activated and cellular signaling homeostatic cascades from the cytoplasm via the plasma membrane to the nucleus.

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Genes are activated - perhaps stimulating the formation of the transitory pore allowing for the evacuation of the triglycerides and fatty acids.