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Equipment

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Skin Care

Education

News

Spa Locator

About

Contact

## About Microcurrent

Throughout the ages, people have experimented with treatments intended to enhance their appearance and slow the aging process. From the early Egyptian's use of kohl and mineral pigments to tightly drawn corsets of the Victorian era, women have endured much in the name of youth and beauty. In our modern world, we are fortunate to be able to turn to technology for our fountain of youth, and one of the most important innovations to have sprung from this well of technological advances is the use of microcurrent.

Microcurrent is truly the "diamond in the rough" when it comes to wellness and anti-aging. Its use in esthetics has existed since the late 70's, and like many good things, has come full circle and is now in full bloom in the eyes of today's estheticians.

Microcurrent is a low level of electrical current that mirrors the body's own natural current, subsensory in most cases. It's proven and accepted properties, and potential range of applications from wound healing, muscle re-habilitation, macular degeneration, to lymphodema continue to assist medical practitioners with amazing results. Although microcurrent is credited by hundreds of medical studies, we must stay focused on how these studies and this technology can benefit and support us as estheticians in pursuit of our mission of beautifying the skin.

The intended use for microcurrent in esthetics is to allow the esthetician a powerful and effective tool to aid in the battle of anti-aging by diminishing the appearance of fine lines and wrinkles, improve the texture and appearance of the skin, and reducing the overall visual appearance of aging.

Most microcurrent applications and results, whether they are medical or esthetic, rely on the same mechanisms of action. Even without defining each in detail, the list is very impressive, and the underlying principles logical.

Increased circulatory benefits: blood and lymph (1)

Muscle re-education (2)

Iontophoresis: product penetration (3)

Increased natural production of collagen and elastin (4)

Increase in protein synthesis, gluco neo-genesis and membranes transport (5)

Increase in mitochondria activity, ATP (adenosine tri phosphate (6))

Dispersion of hardened collagen (7)

## Microcurrent



## How does microcurrent in esthetics work?

The noted principal microcurrent mechanisms of action occur simultaneously and harmoniously during a typical 45-minute microcurrent facial treatment. One attribute is not more important than another, as they work as a team with the common purpose of creating a healthier more youthful appearance.

Muscle re-education is most related to the term "facial toning". There are 32 different muscles of the face that are manipulated during the average microcurrent facial treatment. True microcurrent uses less than 500 microamperes and because of its low intensity, is typically subsensory, and cannot cause a physical or visual manipulation of the muscle via the electrical current. Bearing this in mind, an accessory such as probes or electric gloves are used to physically move the muscle into the desired position to perform what is known as muscle re-education; the process of lengthening or shortening muscles. Muscle re-education conceptually can be done without electrical current, much like a massage therapist does. Working a muscle from the belly outward will have a lengthening effect that is necessary on muscles that have become increasingly contracted over years of facial expressions. Working a muscle from the origin and insertion point inward will have a shortening effect that is necessary for the majority of the muscles which have become elongated over many years of age and gravity. This concept was coined as GTO (golgi tendon origin) by Dr. Goodhart in the late 60's and is widely accepted and used today. (8)

ATP (adenosine triphosphate) molecules are the storage and distribution vehicles for energy in the body. Energy is made through an electrochemical process within the mitochondria when the nucleotide adenosine diphosphate (ADP) passes a strong phosphate high-energy bond to another nucleotide adenosine triphosphate (ATP). This energy conversion (electron transport) is made within the mitochondria. The mitochondria then send this energy electron to where ever it is needed within the cell. ATP is known as the "energy of life" and drives a number of biological processes such as photosynthesis, muscle contractions/re-education, protein synthesis, and membrane transport. (9)

The 1982 Cheng study proves that ATP (adenosine tri phosphate) levels were increased by 500% on tissue that was treated utilizing less than 500 Ua (microamperes). The study also indicated that ATP levels plummeted and depleted when treated with over 500 Ua. The idea that ATP can be stock piled or stored is the reason why microcurrent treatment results are cumulative and results become better as a series of treatments progresses. The dramatic increase of ATP levels allows the muscles to stay in the new re-educated position for longer periods of time. In the same study Cheng also observed that aminoisobutyric acid uptake increased dramatically which led to 30%-40% increase in protein synthesis and membrane transport.

Bearing the Cheng study in mind, it is understandable why individuals who use EMS type devices, like some hand held devices seen on TV infomercials that use as much as 5,000 Ua, do receive some instant tonification, however, when used cumulatively create flaccid and lifeless muscles that are completely void of ATP.

Aside from muscle re-education and massive increases in ATP levels, microcurrent has other proven benefits for esthetic applications. Dr. Chi, Director of the University of Washington Department of Pathology, performed clinical studies using the Bio-Ultimate Gold manufactured by Bio-Therapeutic. He notes, "The fact that this technology works in harmony with the body is evident. Examination of skin tissue treated with microcurrent showed a 45% increase in the number of elastin fibers in the dermis, and the length of the fibers on average doubled. The collagen thickness in the connective tissue increased 10%, and the number of blood vessels increased by 35%. The application of microcurrent to skin and tissue produced a firmer and tighter feeling on the skin surface."

Many of the studies detailing the massive increase in speed regarding wound healing refer to ATP as one of the attributing factors. The other attributing factor is an increase in blood circulation. Blood circulation has everything to do with the function, condition, color and over all health of our skin, as well as underlying tissue. **Dr. Chi's 2003 study**

performed at the University of Washington further notes a 35% increases in blood circulation in tissue treated with microcurrent.

In terms of product penetration, microcurrent offers specific iontophoresis which allows superior penetration of water base products into the skin. The idea that the electrical current emits from one probe and returns to the other allows specific focus of product penetration, verses traditional methods that send incredibly high electrical currents unnecessarily throughout the body to achieve a simple task. Profound results can be achieved by products through iontophoreses.

Lymphatic drainage is a very overlooked treatment in esthetics, although gaining momentum in recent years. Clinical studies performed using microcurrent at the Tuen Muen Hospital in 1988 indicated that lymphatic drainage was increased by 28% on post cancer patients suffering from lymphodema.

Dr. Chi's 1999 study also proved that redness, irritation, and inflammation of surgically traumatized tissue could be significantly decreased when treated with microcurrent. Related to this, the build up of hardened collagen that makes up scar tissue was noted to be 3 to 5 times less in tissue treated with microcurrent. Further studies also indicated an amazing dispersion of existing scar tissue when treated with microcurrent. Saying that, in the realm of plastic surgery we can see the obvious place for microcurrent technology. By administering a series of treatments prior to surgery, muscle and tissue condition is maximized, inclusive of an excessive storage of ATP. Microcurrent treatment of sutures and trauma post op decreases the down time by reducing inflammation, redness and irritation, while enhancing the healing ability and minimizing scar tissue. Post surgery treatments are also vital to maintain the results of the surgical work.

## Microcurrent treatments

Although the level of current used in microcurrent devices is very minute, there are some contra-indications to consider. This includes pace makers, epilepsy, pregnancy, phlebitis, thrombosis, and of course any client who is currently "under the care of a physician".

Although a remarkable difference is seen after the first treatment, the benefits of microcurrent are cumulative, and as such, microcurrent treatments are typically performed in a series to gain maximum anti-aging results. The average treatment series consists of twelve to fifteen treatments, generally administered two times per week. The average treatment can be performed in 45 minutes. It is important that preparation for a microcurrent treatment consists of cleansing and exfoliating using only water-based products, as oil will inhibit current.

The financial rewards of microcurrent treatments meet the criterion of today's business savvy esthetician. Microcurrent treatments nationally average nearly \$100 per treatment. It typically requires in the range of only five customers for an esthetician to recover the initial investment. Furthermore, estheticians who realize this profit potential succeed in evolving into specialized anti-aging clinics truly focusing and attracting the "baby boomer" clientele who now represent the single largest, and single wealthiest, segment of the population. (10)

## Not all equipment is created the same

I am often asked the difference between a modality that can be purchased on television for \$99 and a \$5000 device that is sold exclusively to the professional. The old adage "you get what you pay for" definitely applies here. The way that electrical current affects the tissue, and the results that are achieved are completely dependent on the sophistication of the engineering that takes place between the power source and the output accessory. Progressive manufactures of microcurrent devices offer completely computerized, automated devices. Most systems virtually walk the operator through each phase of the treatment step by step, and even visually indicate on the lcd screen what accessory and product to use during each phase of the treatment.

During the average five step 45 minute facial, a pre-programmed device may automatically change its power output combination (output combination = microamperage+hertz+waveshape) over 500 times. This patented technology is called microcurrent sequencing. The output combination controls the depth, purpose, and effect that the electrical current will have on the tissue being treated. Low levels of output combinations are usually associated with deep tissue muscle re-education work, whereas high levels of output combinations are usually associated with circulatory benefits and iontophoresis.

Leading microcurrent manufacturers equip their devices with diagnostic monitoring and metering systems that confirm via LCD screen the exact percentage of conductivity that is flowing from probe to probe through the tissue, as well as the level of resistance that may be present (rather than simple bleeping lights). This information is processed through an internal computer and the output combination has the potential to adjust itself 1024 times per second if necessary to accommodate the lack of conductivity or over abundance of resistance. This information also allows the esthetician to make appropriate adjustments to the treatment protocol.

Responsible manufacturers require every device purchaser to attend an education and certification class where the esthetician learns, in depth, the operation and theory of the equipment as well as appropriate esthetic applications.

## Synergetic Cross Marketing

Microdermabrasion may be performed as an outstanding exfoliation service prior to a microcurrent treatment, and serves as the most synergetic ally to microcurrent in its battle against aging skin. Many spas and salons who have been successful with microdermabrasion are turning to microcurrent to extend yet another non-invasive anti-aging treatment to their established customer base. Larisa Miron of Spa 5 in Fort Lee, New Jersey notes "90% of my clientele who try microdermabrasion opt to try microcurrent, and visa versa. The treatments are natural partners for each other as microdermabrasion works from the outside in, and microcurrent from the inside out, both working to achieve the same anti-aging goal!"

## Shopping for the right technology

The success of any device must contain the following attributes:

- It must be marketable
- It must be proven • It must be psychologically satisfying
- It must show quick results and at the same time lasting, cumulative results
- It must be attainable and make financial sense when considering the cost of the investment in contrast with the cost that can be charged per treatment

David Gerard of Born of Earth Day Spa in Westport, CT notes, "Gaining clientele for anti-aging is never a problem, repeat return business is. If a customer does not see and feel results, they never achieve the psychological satisfaction necessary for repeat business. Bottom line, no results, no return. Microcurrent results are noticeable after the first treatment; once they see the potential they can never seem to get enough!"

Marketing a service because you found a "good deal" or because a sales rep left equipment free of charge with the agreement that you would split the profits, is a formula for disaster. "As estheticians we have worked hard to establish a well-respected, educated, professional image. This perception should never be jeopardized by introducing devices that do not meet all of the appropriate criteria for success," states Lori Nestore of Eva's Esthetics, San Jose, CA.

## Qualifying the manufacturer

Aside from the marketability of a device you must also consider the safety and liability of a device. Bio-Therapeutic, a leading microcurrent manufacturer located in Seattle, Washington, recently proposed to the Washington State Board of Cosmetology to require every manufacture to supply the following information to estheticians and business owners that are purchasing their equipment.

- FDA Medical Device Manufacturer Registry number: Every manufacture of any device used in esthetics or medicine is required to be registered with the FDA and follow the good manufacturing practices of the FDA.
- FDA 510K# if applicable: Most devices in esthetics will be classified as Class 1 and therefore exempt from 510K submission. Class 2 and 3 devices in almost all cases are required to submit for 510K. You should obtain their 510K summary that confirms their clearance as well as the “intended use”. You should insure that the intended use coincides with the states definition of esthetics.
- IEC 60:601 Safety Certification: A minimum safety standard that all medical devices (regardless of classification) are required to be tested to.
- ISO 9000:2000 Certification: Certifies that a business and manufacturing is operating in a safe and effective manner, as set forth by ISO.
- Certificate of product liability insurance: Insures that the manufacturer is properly insured for the product or device they are selling. This insurance is completely different than business liability or property liability insurance.

If your equipment provider can not supply you with the requested documentation, I would look for another supplier. It is estimated that less than 15% of manufacturers that supply equipment to the esthetic market can meet the criterion listed above.

History has shown that beauty and anti-aging techniques fade with the changing times, however, technologies such as micro-current evolve with these changes. This constant evolution and efficacy of treatments is what will maintain micro current's status at the forefront of anti-aging skincare, never to become considered a trend. This efficacious technology has only revealed the tip of its iceberg, and promises longevity beyond our expectations.

#### References:

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#### Equipment

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