

Use of a Unique Cooling Gel Applied Prior to Laser Hair Removal

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THE CONCEPT OF epidermal protection when a laser-targeted chromophore is part of or within the epidermis is not unique to laser hair removal.¹⁻⁴ In laser hair removal, the follicle is targeted either by virtue of the endogenous melanin within the follicular epithelium and hair shaft, or by placement of a carbon solution that can be targeted after it penetrates into the hair follicle. Since any melanin-containing structure besides the hair follicle (specifically, the surrounding skin) can sustain thermal damage when irradiated by red and infrared lasers, epidermal cooling serves to reduce the amount of superficial thermal damage sustained by the epidermis during laser irradiation. Virtually all of the laser hair removal systems currently approved recommend either the application of some type of cooling process, such as a gel or a cryogen spray, or come equipped with cooling handpieces to help "spare" the epidermis, with its competing melanin chromophore, and to enhance patient comfort. Methods of cooling the epidermis include a cryogen unit as part of the laser handpiece (active cooling), various types of cryogen sprays (spray cooling), and topically applied cooling substances such as a gel (passive cooling).¹ Probably the most common products applied topically include ice packs, chilled EKG conducting gel, and chilled aloe vera gel.

A cooling gel is available that is applied at room temperature and cools the epidermis within 3 minutes of application. This cooling gel, Humatrix Microclysmic Gel (Care-Tech Laboratories, St. Louis, MO), is composed of a proprietary blend of humectants and biological additives/protein originally used for treatment of burns. The word "microclysmic" is derived from the Greek, meaning "miniature moisturization"—the molecular size of this product is apparently so minute that it easily penetrates cells. The unique property of this product is that it lowers the surface temperature of the skin 8°–10°F within 3 minutes of appli-

cation. Not only does this product have the potential to cool traumatized tissue, but some of its other properties can potentiate wound healing. Following application, timed release of water molecules provides traumatized tissue with a moist wound healing environment. In addition, Humatrix provides a protein template to assist with the biological regeneration of fibroblast cells necessary for wound healing by the addition of a glycosaminoglycan matrix that is part of the product's formulation. The product also has bacteriostatic properties.

In addition to burn treatment, other indications for the product, suggested by the company, include use in autograft procedures, radiation irritation, mechanical injuries, chronic wound therapy, glycolic acid peel irritation, and for laser treatment. Further microbiological testing performed by the manufacturer has demonstrated that this product is not an irritant (Draize dermal irritation index 0.9), has no acute oral toxicity (LD₅₀ > 5.0 g/kg), and is not an ocular irritant (Primary Eye Irritation Study).⁵

The final characteristic of Humatrix gel is that it is clear, making it applicable to laser procedures. Application of this product prior to laser hair removal gives a uniform degree of cooling, which is not always achievable with ice or EKG conducting gel. If the EKG conducting gel or chilled aloe vera has been sitting on the counter or inadvertently allowed to warm between patient treatments, or is applied some time in advance of the treatment, allowing it to warm, the resulting degree of epithelial cooling can be variable. In addition, there is the potential for contact allergy with certain types of aloe vera products, and thus far we have not seen contact or irritant problems with Humatrix gel. Our patients have commented on the increased level of comfort and the decrease in postprocedure erythema following application of Humatrix gel both before and after laser hair removal compared with both chilled EKG conducting gel and chilled aloe vera, and we find it a more convenient product to use, as it is stored and used at room temperature.

The properties of Humatrix gel suggest applications for other laser systems as well. Some of the vascular laser systems are used with topically applied gels, ei-

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ther for additional cooling or to provide a smoother surface to facilitate the use of the coolant handpiece. We have started using Humatrix gel as a substitute for EKG conducting gel in these laser systems and have noticed increased patient comfort, less postprocedure epidermal tissue trauma, and no decrease in our ability to see the vessels during the procedure due to vasoconstriction (which can be a problem with some topically applied anesthetic agents). The cooling and wound healing potential of Humatrix gel suggest that it would be a useful adjunct for laser resurfacing procedures as well.

References

1. Zenie HH, Altshuler GB, Smirnov MZ, Anderson RR. Evaluation of cooling methods for laser dermatology. *Lasers Surg Med* 2000; 26:130-44.
2. Kelly KM, Nelson JS, Lask GP, Geronemus RG, Bernstein LJ. Cryogen spray cooling in combination with nonablative laser treatment of facial rhytides. *Arch Dermatol* 1999;153:691-4.
3. White JM, Siegfried E, Boulden M, Padda G. Possible hazards of cryogen use with pulsed dye laser. *J Dermatol Surg* 1999;25:250-53.
4. Nanni CA, Alster TS. Laser-assisted hair removal: side effects of Q-switched Nd:YAG, long-pulsed ruby, and alexandrite lasers. *J Am Acad Dermatol* 1999;41:165-71.
5. Humatrix™ microclysmic gel treatment of tissue trauma. St. Louis: Care-Tech™ Laboratories.