

# Laser-Based Cosmeceuticals

## Delivery System Accelerates Effective Skincare



**Nark-Kyoung Rho, M.D.**  
Dermatologist  
Leaders Dermatology  
Korea



**Boncheol Leo Goo, M.D.**  
Dermatologist  
Naeum Clinic  
Korea

By Kevin A. Wilson, Contributing Editor

For dermatologists, cosmeceuticals may seem like a double-edged sword, because while they're great for improving and maintaining skin health, they may cause unexpected side effects. Moreover, many contain a great variety of active and inactive ingredients, making it difficult to determine if the actives are being delivered effectively. Lasemd (Laser-Assisted Single Effective Molecule Delivery) from Lutronic Corporation (Gyeonggi, Korea) is a novel laser-based Cosmeceuticals Delivery System (CDS) designed to enable easier and more predictable delivery of powerful proprietary formulations. The device's fractional modality may also be employed on its own for therapeutic purposes.

"Lasemd is very gentle," said Nark-Kyoung Rho, M.D., a dermatologist at Leaders Dermatology in Korea. "Minimal damage is done to the epidermis, which heals rapidly, but the channels created by the device allow products to bypass the epidermal barrier for a period of time, promoting direct delivery into the dermis." As Dr. Rho explained, human skin functions as a physicochemical barrier and is able to resist the penetration of most molecules; only smaller molecules can enter the body transcutaneously. "It has been postulated that the molecular weight of a compound must be under 500 Daltons to allow skin absorption," he continued. "Larger molecules cannot pass the corneal layer or epidermis."

"Another important factor of cosmeceuticals is their lipophilicity," Dr. Rho continued. "Hydrophilic molecules cannot easily pass through our skin's epidermal lipid barrier. Unfortunately, many cosmeceutical ingredients are either too large or hydrophilic. Using the Lasemd laser system, we can easily introduce these ingredients directly into the dermis."

According to Boncheol Leo Goo, M.D., a dermatologist at Naeum Clinic in Korea, "Lutronic designed Lasemd with precise laser technology to deliver cosmeceuticals with the fewest ingredients possible, maximizing efficacy and predictability while minimizing patient discomfort in daily life. The cosmeceuticals are formulated with a minimalist philosophy in mind ensuring therapy and management of potential side effects are easier and more predictable. In the end, Lasemd makes skin healthier from the inside, out."

Since more powerful modalities are required for more severe conditions, Lasemd helps patients maintain healthy skin and slow the aging process, preventing the need for stronger options. "Having clear skin is something all women want, and is very important to them," said Dr. Rho. "Women feel prettier with clear skin, which can also positively effect their mood. As well, since it is very tolerable, they enjoy feeling pampered as they undergo a customized treatment. It makes for a very happy patient."

While the laser is used primarily for delivery of cosmeceuticals into the dermis, it can also be used alone for the prevention and early intervention of skin aging. As Dr. Rho pointed out, the device utilizes a 1927 nm non-invasive fractional thulium laser. This fiber-based laser promotes stable and accurate applications while creating a fractional pattern of microchannels with a magnetic tracking system, which further improves accuracy during handpiece movement and reduces session times. Zero Boot Technology allows for immediate usage upon activation, and the intuitive Transparent Touch User Interface (TUI) further contributes to ease of use and rapid treatment. Due to the miniscule beam diameter of 100  $\mu$ m, the procedure is comfortable enough that



Before treatment



After three Lasemd treatments

Photos courtesy of Nark-Kyoung Rho, M.D.

no anesthesia is needed. All skin types can be treated year-round with Lasemd and its Advanced Mode (also called Skin Resurfacing Mode) is capable of 30% coverage in a 15-20 minute facial procedure for pigment reduction, brightening and improvement in texture and pore size. Energy can be modulated from 1 mJ to 20 mJ (in 1 mJ increments). Easy Mode (also called Delivery Mode) provides 2% to 3% coverage of a larger area (such as the décolleté) in 15 minutes and enhances delivery of agents for photodynamic therapy, optimized for gentler energy application.

With a choice among six cosmeceutical formulations plus additional laser therapy options, physicians can use Lasemd for wrinkles and anti-aging, skin brightening and whitening, melasma, pigment reduction, epidermal laxity, hair loss and rejuvenation of the neck and décolleté, among other conditions. The cosmeceutical formulations include VC, VA, TA, CK, SC and RS Ampoules.

VC is a powerful serum featuring vitamin C, one of the strongest naturally occurring antioxidants known to promote collagen health and rejuvenate photo-aged skin. Retinoic acid (vitamin A) is the main ingredient in VA for aging skin, intended to stimulate keratinocyte maturation and enhance the body's natural rejuvenation process. Used for decades to improve wound healing after surgery, the tranexamic acid in TA has been revealed as a skin brightening compound ideal for treating melasma and post-inflammatory hyperpigmentation. Supporting the formation of collagen and elastin fibers, CK and SC are based on stem cell technology, which is designed for hair growth and skin rejuvenation. Top grade, 95% pure Resveratrol is the main ingredient in RS Ampoule, which deeply delivers a powerful polyphenol to combat UV-related photo-aging and carcinogenesis.

Five of the six formulations (not including RS) incorporate Multi-Nanosome Granulated (MNG) technology, which not only maintains freshness of cosmeceutical ingredients, it standardizes particle size for optimal delivery even after re-epithelialization of microchannels. "Actives in each ampoule formulation are manufactured as nanoliposomes in dried powder form," explained Dr. Rho. "Immediately before use, the powder is mixed with a low molecular weight hyaluronic acid gel carrier. This requires a special 'incubator' unit which rests within the Lasemd platform."

"Ampoules contain separated liquid and powder so they can be stored safely for two to three years without preservatives," said Dr. Goo. "Once mixed they should be used within two weeks." Full use of each ampoule includes initial introduction into the skin using Lasemd, with the remaining product taken home by the patient to be used for the next 14 days. "Patients also receive a Barrier Cream Pack, which helps absorption when using the product at home. After two weeks the procedure is repeated."

Dr. Rho is attentive to the way Lasemd may further alter the ever-changing landscape of aesthetic medicine. "Why should physicians adopt Lasemd in their practices? Will they be quick or resistant to adopt?" he postulated. "The world of cosmetic medicine and surgery is constantly and rapidly changing, and at one time cosmeceuticals were a separate entity entirely, but the line is blurring. Practitioners are very quick to adapt to this concept which is why Lasemd gets a lot of attention from dermatologists globally, including Korea."



Before treatment



After five Lasemd treatments

Photos courtesy of Boncheol Leo Goo, M.D.