

Combination Treatment with Laser & Mask

Yong Ho HWANG / M.D

A New Concept of Whitening Treatment to Solve as an Inconvenience.

One of the most common treatments for skin care in clinic is whitening. Although it has long been treating various pigment diseases, including Melasma, with various lasers and management equipment, it is true that it has felt a sense of regret and lack of results.

In particular, Melasma is not easy to treat, and the patient's satisfaction is not high. There is also a risk of recurrence at any time. Treatment of pigmentation in clinical trials is not enough with a single laser, and should be done using complex methods such as internal medicine and ointment.

However, he continued to wonder if the treatment results were not as good as expected, and if there was any way to compensate for it, even with a number of new equipment or techniques developed recently.

In addition, patients who visit to treat enlarged pores or scars sometimes experience severe pigmentation (PIH) and relapse after CO2 / Er:YAG Fractional Laser procedures.

These worries and vague anxieties have always plagued clinicians.

While I was thinking about many ways to solve this problem, I have devised a whitening procedure using the Lucent Whitening Mask. This product is an Intensive Whitening Mask made by Dr. Lucent and is being sold by SNJ, a South Korean laser manufacturing company.



[Figure 1] For whitening procedure, SNJ 1064 Q-switched Laser (Finebeam) and mask procedure are being combined to enhance the effect.

The latest outpouring of Skin Booster and whitening cosmetics has few products to use for treating freckles.

The mask packs on the market are really basic products to use, so the content of the effective ingredients is very low and difficult to expect better effect, making them unsuitable for treatment and sale in hospitals.

Product Development Story and Product Features of Lucent Mask

Since most cosmetics are not designed by doctors, manufacturers often do not know what products clinicians want. Some manufacturers even don't know that 'specific components have certain effect'.

Due to this regret, several doctors took the initiative in making Lucent masks to study whitening-effect ingredients, search traditional medical books for medicines to use, and search for papers on them. Over the years, several natural substances have been extracted and made into products.

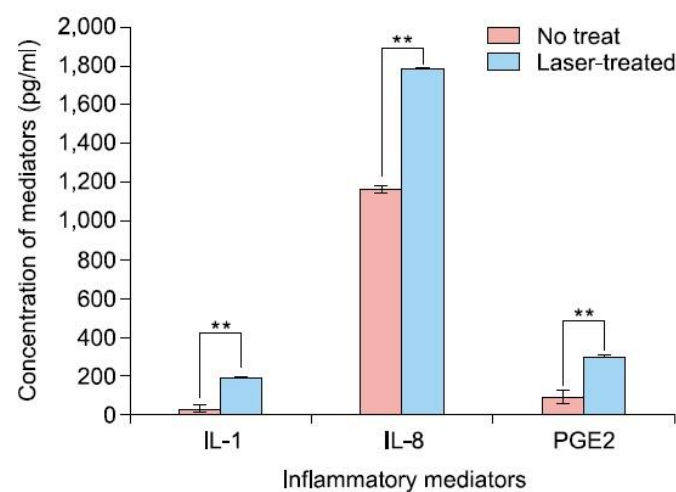
Patients were treated at various hospitals to observe effects and side effects for more than four years. It excluded components that did not work, and found components that had a definite effect and optimized the ratio. In addition, the mask was continuously improved by adjusting the volume to prevent irritation.

Lucent Mask mainly has 7 components that show whitening effect, which are as follows.

- 1. Tranexamic Acid**
- 2. Niacinamide**
- 3. Glutathione**
- 4. Hyaluronic Acid**
- 5. Sophora flavescens**
- 6. Astragalus membranaceus**
- 7. Morus Alba**

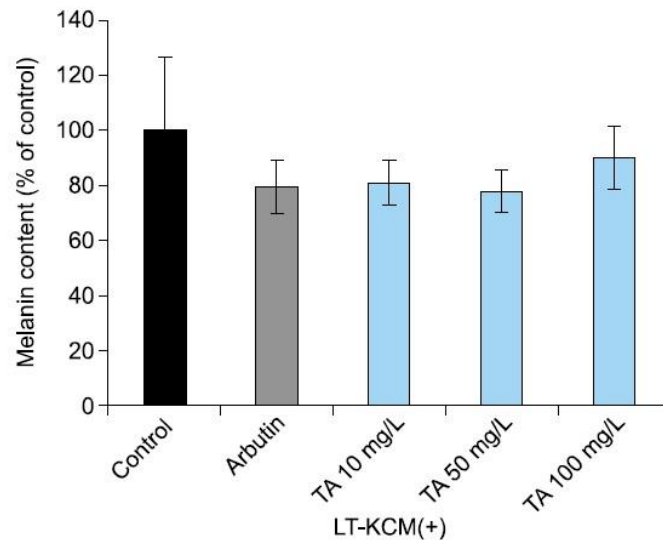
Main ingredients are 1)Tranexamic Acid, 2)Niacinamide, 3)Glutathione, 4)Hyaluronic Acid, 5)Sophora flavescens, 6)Astragalus membranaceus, 7)Morus Alba etc which proven containing clinically safe.

Tranxamic Acid (TA), already a widely known ingredient, is used in treating freckles as it has the effect of suppressing the tyrosinase of melanin cells, thus brightening the skin by inhibiting melanin pigmentation. And after the Ablative Fractional Laser procedure, a variety of Inflammatory Mediators are released, causing melanogenesis, which is effective in suppressing this and preventing PIH.



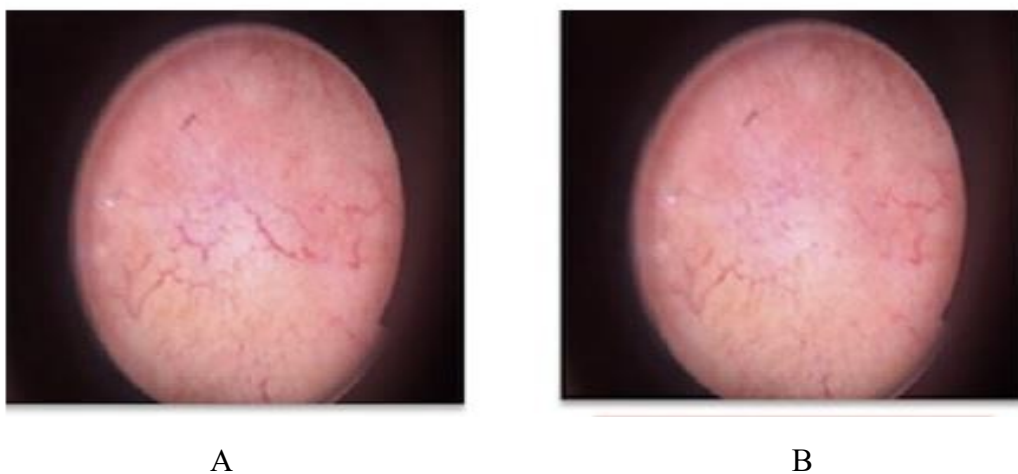
[Figure 2] CO₂ Fractional Laser-treated keratinocyte-conditioned medium induced significant increases of inflammatory mediators. Inflammatory mediators including

interleukin (IL)-1, IL-8, and prostaglandin E2 (PGE2) were significantly higher in laser-treated keratinocyte conditioned medium (blue) than non-treated keratinocyte conditioned medium (red).



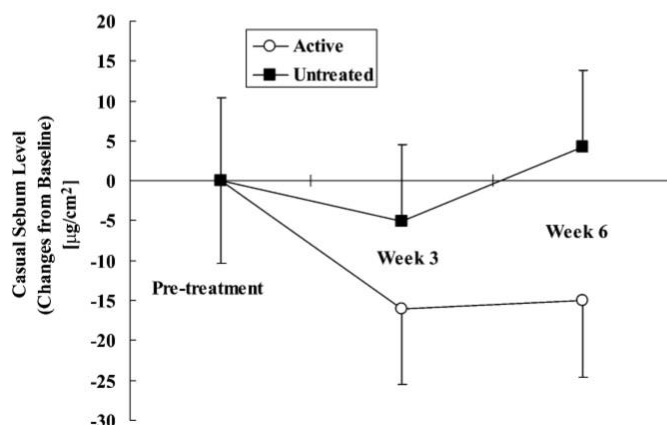
[Figure 3] Tranexamic acid (TA) decreased melanin content in human melanocytes. Human melanocytes were cultured in the presence of laser-treated keratinocyte-conditioned medium (LT-KCM).

In addition, the simple application of Tranexamic Acid to Rosacea (Erythematotelangiatic Type) patients for 20 minutes and the application after MTS procedure showed a positive improvement in symptoms. It is a very safe ingredient for application, but after high concentration application, skin irritation can sometimes occur.



[Figure 4] A: Before / B: 30 days After MTS + Tranexamic Acid / 2 times

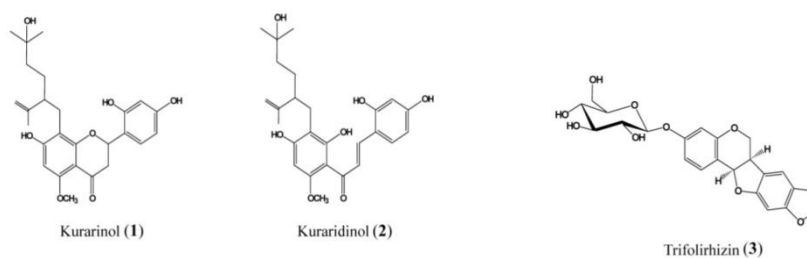
Niacinamide mainly has the effect of anti-inflammatory effect, anti-oxidant effect, whitening effects and sebum secretion reduction. The most important Skin Whitening mechanism inhibits the mechanism of moving to the keratinous cells of the skin of melanosome produced from melanin cells, thus presenting the effect of melanocyte transport inhibitor. It also has the effect of inhibiting sebum secretion, which is used to treat acne.



[Figure 5] Sebum secretion change level in active group with 2 % Niacinamide AND untreated group with non Niacinamide

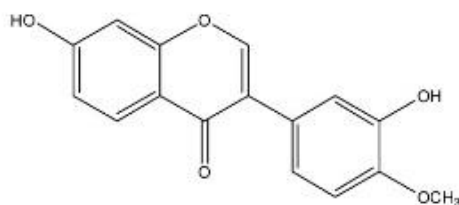
Glutathione has a powerful anti-oxidant effect and also prevents eumelanin from being produced pheomelanin from dopaquinone, ultimately helping Melasma's treatment.

Sophora flavescens (Gosam, principal ingredients kurarinol, kurardinol, trifol) extract suppresses tyrosinase, an important enzyme in melanin production, to show whitening effect. It also has the effect of calming the mast cell-derived allergenic inflammation.



[Figure 6] Chemical Structure of Active Constituents Isolated from *Sophora flavescens*

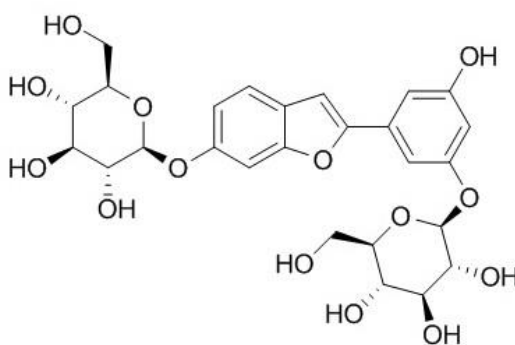
Astragalus membranaceus (Hwang-gi) is a medicinal ingredient that has long been used. The main ingredient of the extract is Calycosin. This ingredient does not have cytotoxicity, so it does not have harmful effects on melanocyte, and has the inhibitory effect of tyrosinase, which forms melanin pigments.



The Structure of Calycosin

[Figure 7] 'Calycosin' as astragalus membranaceus extracts

Morus Alba, known as the mulberry root, has long been used as a medicinal ingredient. An important component of this mulberry extract is Mulberroside-F. This ingredient suppresses the activity of Tyrosinase, and suppresses the mechanism by which melanosome produced in melanin cells moves, indicating whitening effects of skin. Morus Alba (Paper Mulberry) extract 0.4% is known for excellence to have a whitening effect of 5.5% of hydroquinone or 10% of Kojic Acid.



[Figure 8] 'Mulberroside-F' main ingredient of Morus Alba

If you look at the ingredients in this product as a whole, it contains a large amount of whitening, sebum secretion reduction, acne treatment, flushing, and sensitive skin improvements due to inhibitory for Tyrosinase, which does not have cytotoxicity to melanocyte.

Adaption of Lucent Mask Procedure and Precautions for Consultation

This product can be applied in a variety of ways, including pigment diseases such as Melasma and PIH, Acne, Erythema, Rosacea, and cases requiring post-laser sedation.

In my case, I explain that the effect of using a mask after laser treatment when consulting patients is increased and I use a strategy to enhance the treatment. I use for almost all basic procedures, including whitening. It is also used for care after invasive professional laser (SNJ CO2 fractional laser) treatment or scar treatment.

Lucent Mask's Adaptation

1. Helps treat pigmented diseases such as freckles and PIH
2. Apply ALA and MAL to acne PDT
3. Controlling sebum secretion in acne
4. Relief erythema, papule, and pustulosis of Rosacea
5. Calming and preventing PIH after Fractional Laser

How to Use Lucent Mask and Practical Clinical Cases

The basic method of using masks is to use the mask with ionzyme(Iontophoresis) during laser treatment at the hospital, allowing it to penetrate the patient's skin for about 10 to 30 minutes. Because using ionzyme treatment is less of a therapist's hands, it has the advantage of increasing the effectiveness of the procedure while increasing the patient's satisfaction.



[Figure 9] Lucent Mask + Ionzyme Procedure - It penetrates the active ingredient into the skin through ionzyme for 10 to 20 minutes.

The mask has ample capacity of 28 ml, so the remaining ampoule can be used for high frequency and ultrasonic management.

In fact, I have been treating patients for freckles and pigmentation with various laser treatments applying Tranexamic Acid, and Hydroquinone, but I was unsatisfied with the results. However, the combination of laser treatment - SNJ 1064 Q-switched Laser (Finebeam) and mask use has increased satisfaction and improved treatment results.

And this product contains Tea Tree ingredients, which is good for acne treatment. I do a lot of Photodynamic Therapy when treating acne. In the case of acne treatment, using high concentrations of ALA and MAL for long periods of time, many patients have a hot and red face within two to three days, and in severe cases, their skin is often blackened.

However, with 10 to 13% of ALA and MAL, the combination of these masks has significantly reduced the incidence of various side effects (tickling, erythema and excessive pigmentation) of PDT treatment.



[Figure 10] SNJ CO2 Fractional Laser to treat acne scars and wide pores: Use a mask together if PIH is feared to occur after Finixel laser treatment.

It also contains high concentrations of Hyaluronic Acid, so it is recommended to be used for several days after treatment, even if post-CO2 or Er:Yag Fractional Laser (SNJ Finexel) RF Needle treatment is necessary for scar treatment or enhancement of elasticity.

The mask using Ionzyme procedure with RF needle in patients with injection (Rosacea) significantly reduced the occurrence of hotness, erythema, papule, and pustulosis before and after use.

Generally, it is recommended to use it for 3 to 7 days after laser treatment at home. It is recommended to attach once in the evening for 20 minutes. If you're worried about a situation where patients with laser treatment need a lot of sunlight, we're giving them a prescription.



[Figure 10] SNJ Finebeam & Lucent Dual Treatment – 1064-Q-switch 10mm/1.0J + Lucent Mask 20min with ionzyme (10 times)



[Figure 11] RF Needle & Lucent before and after (3 times) of Rosacea

Side Effects, Post-treatment Methods, Patient's Follow-up Measures, etc.

It is recommended to remind patients that masks are professional masks used in clinics for procedures, and explain in advance that high concentrations can cause hypersensitivity.

If patient complains of itching or abnormal sensation within a few minutes of use, you should immediately remove the mask. In such cases, discontinue the use of the product and use anti-Histamine or steroids ointment and injection.

It is also a good idea to prescribe steroid ointment (Hydrocortisone 1% ointment) to patients in advance with masks, stop using it in case of side effects, and train them to use steroid ointment.

Implications and Prospects of Mask Treatment

Treatment with Lucent mask and ionzyme can be combined with laser to enhance treatment effectiveness.

Mask-ionzyme procedures are simple, do not require more personnel management, and slightly increase treatment time to enable advanced strategies.

It contains rich whitening, antioxidant and moisturizing ingredients, so it can be used in various procedures in combination to reduce side effects and increase patient satisfaction.

Compared to the low-cost masks on the market, this product complements the component's shortage and is designed for professionals in clinical treatment. And I think it is a great product that can be recommended to patients who want home-care.

Reference

1. N-Nicotinoyldopamin einhibits skin pigmentation by suppressing of melanosome transfer. Bora Kim a, JaeSung Hwang b, Hyun-Soo Kim
2. Evaluation of a hydroquinone-free skin brightening product using in vitro inhibition of melanogenesis and clinical reduction of ultraviolet-induced hyperpigmentation. Makino ET1, Mehta RC, Banga A, Jain P, Sigler ML, Sonti S.
3. The effect of 2% niacinamide on facial sebum production. Draelos ZD, Matsubara A, Smiles K.
4. Inhibitory effects of kurarinol, kuraridinol, and trifolirhizin from *Sophora flavescens* on tyrosinase and melanin synthesis. 2008 Hyun S.K., Lee W.-H., Jeong D.M., Kim Y., Choi J.S.
5. Inhibitory effects of plant extracts on tyrosinase, L-DOPA oxidation, and melanin synthesis Hwang J.-H., Lee B.M.
6. Anti-inflammatory and anti-oxidant effects of *Sophora flavescens* root extraction in lipopolysaccharide-activated raw 264.7 cells. 2010 Dong H.L., Dong S.S., Dai Y.C., Beom J.K., Yun Y.L., Young H.K. "
7. The Extracts of *Astragalus membranaceus* Inhibit Melanogenesis through the ERK Signaling Pathway. Yu-Tzu Tsao, Chun-Yu Kuo, Yu-Diao Kuan, Han-Chen Lin, Li-Hsien Wu, and Che-Hsin Lee
8. Inhibitory Effects of Calycosin Isolated from the Root of *Astragalus membranaceus* on Melanin Biosynthesis Jin Hee KIM, Mee Ree KIM, Eun Sook LEE and Choong Hwan LEE
9. Bioassay-guided screening and isolation of α -glucosidase and tyrosinase inhibitors from leaves of *Morus alba*. 2012 Zhen Zhong Yang Ying chao Wang Yi Wang Yufeng Zhang.
10. Biotransformation of mulberroside A from *Morus alba* results in enhancement of tyrosinase inhibition, Jeong-Keun Kim, Mijin Kim, Sang-Goo Cho, Myung-Kyoo Kim, Suhng Wook Kim, Young-Hee Lim
11. Mulberroside F Isolated from the Leaves of *Morus alba* Inhibits Melanin Biosynthesis. Sang Hee Lee, Sang Yoon Choi, Hocheol Kim, Jae Sung Hwang, Byeong Gon Lee, Jian Jun Gao, Sun Yeou Kim
12. The new therapeutic choice of tranexamic acid solution in treatment of erythemato- telangiectatic rosacea. Bageorgou F, Vasalou V, Tzanetakou V, Kontochristopoulos G
13. Tranexamic Acid Diminishes Laser-Induced Melanogenesis. Myoung Shin Kim, Seung Hyun Bang, Jeong-Hwan Kim, Hong-Ju Shin, Jee-Ho Choi, Sung Eun Chang
14. Melasma: Treatment strategy. VIRENDRA N. SEHGAL, PRASHANT VERMA , GOVIND SRIVASTAVA , ASHOK K. AGGARWAL & SANGEETA VERMA