Unique&Easy Micro-Encapsulation Solutions

Product Overview - 8046

HydroSal® Skin Toning

Supports visible skin tone uniformity and radiance

HydroSal® Skin Toning is an advanced submicron encapsulation delivery system designed to support visible skin tone uniformity, clarity, and radiance with exceptional skin comfort. Built on Salvona's proven HydroSal® platform, this technology enables efficient, targeted delivery of skin-toning actives to enhance performance while maintaining a lightweight, elegant skin feel.

The HydroSal® submicron spheres improve bioavailability, allowing actives to reach where they are most effective while reducing surface irritation often associated with traditional brightening systems. This makes HydroSal® Skin Toning suitable for daily use and compatible with sensitive skin routines.

Formulated with naturally derived, skin-friendly components, this system supports gradual, homogeneous skin toning without dryness or rebound effects. It helps improve the appearance of uneven tone, dullness, and discoloration while maintaining hydration and barrier comfort.

HydroSal® Skin Toning delivers gentle, effective tone-evening with encapsulated multi-actives, improving brightness, reducing dark spots, and supporting daily use with high skin tolerance and proven clinical performance.

HydroSal® Skin Toning is easy to formulate into serums, lotions, creams, gels, and treatment products, offering excellent stability in both water-based and multifunctional formulations.



HydroSal® technology is a proprietary liquid polymeric encapsulation delivery system developed by Salvona Technologies to improve the performance of cosmetic and personal-care actives. Rather than being a single ingredient, it is a formulation platform that encapsulates several active molecules within a polymer shell, controlling when and how they are released on the skin.



Figure 1: Image of HydroSal technology. Multiple active ingredients (4) are encapsulated within the core.

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Background – Skin Toning

HydroSal® Skin Toning (HS Skin Toning) is a technology-based raw material designed to visibly reduce the appearance of skin discoloration associated with acne, melasma, post-inflammatory hyperpigmentation (PIH), and chronological aging. With continued use, it helps promote a brighter, more even, and radiant skin tone. Uneven pigmentation occurs when localized areas of the skin become darker than the surrounding tissue.

The skin darkening process is driven by melanocytes, specialized cells that produce melanin, the natural pigment responsible for skin color. Melanin synthesis occurs within intracellular organelles called melanosomes, where pigment is formed, packaged, and matured. These melanosomes are then transferred from melanocytes to neighboring keratinocytes, where they accumulate and become visible near the skin surface, leading to dark spots and uneven tone.

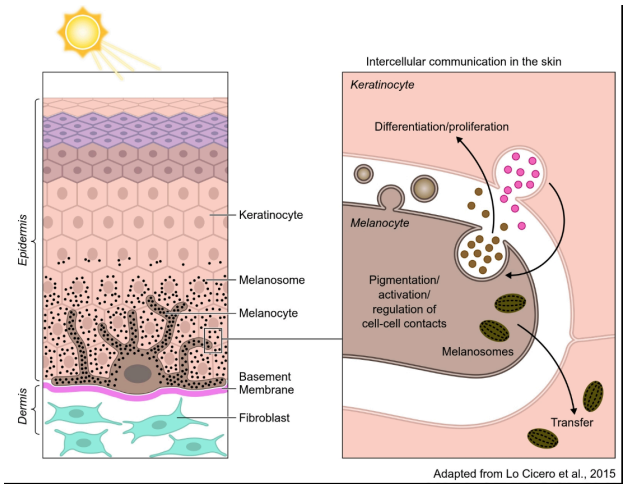


Figure 2: Melanin synthesis in melanocytes and transfer of melanosomes to keratinocytes

Targeting Hyperpigmentation at Its Source

HydroSal® Skin Toning was developed to address the root biological mechanisms of skin discoloration rather than masking surface symptoms. The strategy is built around a **Protect – Prevent – Correct** approach:

1. **Protect**
Protection focuses on minimizing external triggers that stimulate excess melanin production—most notably UV radiation. This includes reducing sun exposure and regularly using broad-spectrum SPF products to limit UV-induced melanocyte activation.

2. **Prevent**
Prevention aims to interrupt key steps in melanogenesis and melanosome transfer before visible discoloration develops. Encapsulated actives delivered via the HydroSal® system help maintain stability, enhance skin residence time, and support consistent performance with improved skin comfort.

3. **Correct**
Correction focuses on gradually reducing the appearance of existing hyperpigmentation by modulating melanin production, limiting melanosome transfer to keratinocytes, and supporting epidermal renewal for a more uniform tone over time.

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Supporting Skin Toning Actives – Mechanisms of Action

Niacinamide (Vitamin B3) – Prevent
Niacinamide improves skin tone uniformity by limiting the transfer of melanosomes from melanocytes to keratinocytes. While it does not inhibit melanin synthesis, it reduces visible pigment accumulation in the upper epidermis, helping fade dark spots over time. Its barrier-supporting properties also enhance skin tolerance for daily-use toning products.

Alpha Arbutin & Kojic Acid – Prevent / Correct
Alpha arbutin and kojic acid inhibit tyrosinase, the key enzyme responsible for melanin production. By reducing new melanin synthesis, they help prevent hyperpigmentation and gradually improve skin tone evenness, particularly in sun-induced discoloration, melasma, and Post-Inflammatory Hyperpigmentation.

L-Ascorbic Acid (Vitamin C) – Protect / Correct
L-ascorbic acid brightens skin by providing antioxidant protection and modulating melanin production. It neutralizes UV- and pollution-induced oxidative stress, stimulates melanocytes, and helps reduce oxidized melanin intermediates, resulting in a brighter, more radiant complexion.

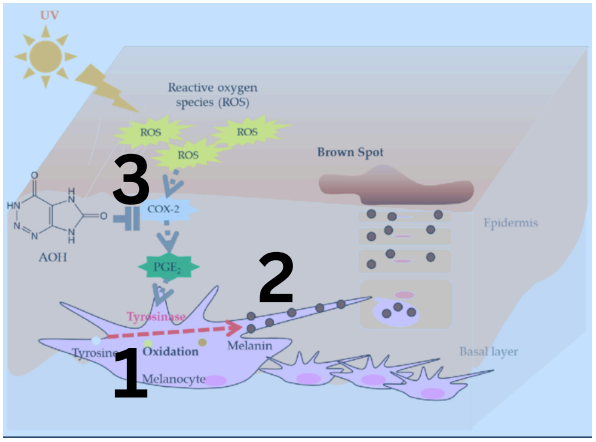


Figure 3: Mechanism of Action – HydroSal® Skin Toning. Numbers correspond to the action sites in the pathway.

Schematic illustration of the Protect–Prevent–Correct approach used in HydroSal® Skin Toning to address uneven pigmentation at its source.

Melanin is synthesized within melanocytes via the tyrosinase-mediated melanogenesis pathway and packaged into melanosomes, which are transferred to neighboring keratinocytes, where pigmentation becomes visible at the skin surface.

1. Alpha arbutin and kojic acid inhibit tyrosinase activity, reducing new melanin production.

2. Niacinamide inhibits melanosome transfer from melanocytes to keratinocytes, thereby reducing visible pigment accumulation.

3. L-ascorbic acid (vitamin C) provides antioxidant protection against UV- and pollution-induced oxidative stress while modulating oxidized melanin intermediates.

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HydroSal® encapsulation
Uneven skin tone appears when excess pigment rises to the skin's surface, forming dark spots and discoloration caused by acne marks, sun exposure, and aging.

HydroSal® Skin Toning is designed to help restore clarity and brightness by targeting pigmentation at its source. This advanced technology works in three ways.

First, it helps limit pigment from reaching the skin surface, reducing the appearance of dark spots.

Second, it helps control excess pigment production, preventing new discoloration.

Third, it provides antioxidant protection, shielding skin from environmental stress that can trigger uneven tone.

HydroSal® encapsulation is designed to optimize how cosmetic actives perform on skin, not just what actives are used. By embedding ingredients within a polymeric delivery system, HydroSal® delivers measurable formulation, performance, and consumer benefits.

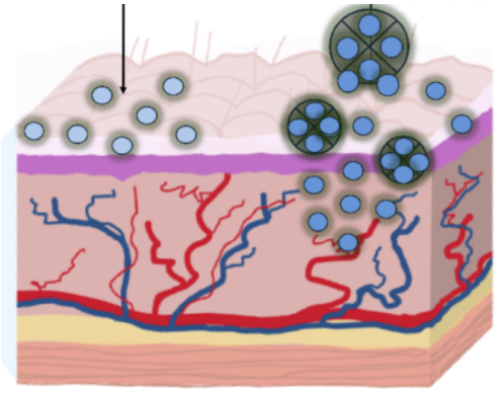


Figure 4: Encapsulating actives within HydroSal® technology fundamentally changes how they perform on skin compared to using the same ingredients in free (non-encapsulated) form.

Benefits of Encapsulation in HydroSal® Technology

1. Keeps Powerful Ingredients Fresh
Encapsulation protects delicate ingredients from breaking down, keeping them effective, stable, and fresh from the first use to the last.

2. Works Longer on Your Skin
Instead of releasing everything at once, HydroSal® delivers ingredients slowly and continuously, helping results last longer throughout the day.

3. Targets Where Skin Needs It Most
Encapsulated ingredients stay on the skin surface longer, allowing them to work exactly where dark spots and uneven tone appear.

4. Gentle Yet Effective
By releasing actives gradually, HydroSal® helps reduce irritation and sensitivity, making advanced skincare suitable for daily use—even on sensitive skin.

5. Better Results Without Harshness
Because ingredients are delivered more efficiently, you get visible brightening and smoothing with lower active levels, supporting a comfortable, lightweight skin feel.

What This Means for Your Skin
✓ Brighter, more even-looking tone
✓ Improved comfort and tolerance
✓ Consistent results with daily use
✓ Advanced performance without compromise

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Potential Skin Toning & Brightening Claims

Tone & Pigmentation

- Helps reduce the appearance of pigment patches and uneven skin tone
- Visibly improves skin clarity and tone uniformity
- Helps fade the appearance of dark spots and discoloration over time
- Promotes a brighter, more even-looking complexion

Natural Lightning Approach

- Powered by four naturally derived skin-toning agents with proven cosmetic efficacy
- Helps support natural skin brightening without harsh bleaching
- Offers a gentler alternative to traditional aggressive lightning approaches
- Free from hydroquinone and corticosteroids*

*Cosmetic positioning only; not a drug claim.

Safety & Tolerance

- Dermatologically suitable for daily use
- Designed for high skin tolerance, including sensitive skin
- Suitable for use on the entire body, including:
- Face
- Underarms
- Hands
- Knees and elbows
- Delicate skin areas*

*Avoid direct eye contact; cosmetic standard language.

Consumer-Forward Summary Claim

Helps visibly brighten and even skin tone using a gentle, naturally inspired approach—delivering effective results with enhanced skin comfort, suitable for daily use on face and body.

Regional Wording Notes

EU (CPR / CPNP)

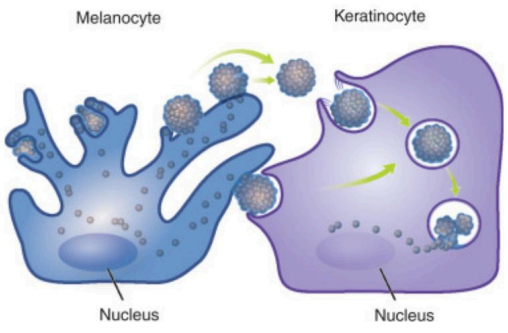
- Avoid: “treats melasma,” “inhibits melanin production” (replace with “helps reduce appearance”)
- “Lightning” is acceptable only as “brightening” or “tone-evening.”
- “Alternative to hydroquinone” → keep ingredient-based, not performance-based

US (FDA – Cosmetic)

- Avoid drug triggers: “prevents hyperpigmentation,” “medical-grade.”
- Use appearance-based claims only
- Body-area claims are acceptable if phrased as cosmetic use

Asia-Pacific (ASEAN / Korea / Japan)

- “Brightening” and “tone-evening” are preferred over “whitening.”
- “Naturally inspired”is safer than “natural” unless fully substantiated
- Avoid claims implying permanent pigment change



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Technical Data

INCI:
Aqua (Water), Niacinamide, Ascorbic Acid, Alpha-Arbutin, Kojic Acid, HydroSal® Encapsulation Matrix*, Preservative
Astragalus Gummifer Gum, Caprylyl Glycol, Dimethyl Isosorbide, Ethylhexylglycerin, Glycerin. Hydroxypropyl Methylcellulose, Hydroxypropyl Cellulose, Pentylene Glycol, Propanediol, Sodium Gluconate

Specifications:

Appearance	Transparent viscous liquid
Odor	Odorless
Color	Colorless to pale yellow
Density	1.0450-1.0460 g/cm
pH	4.5-5.5

Recommended Use Level:
3.0 – 10.0% (leave-on applications)
Typical serum use: 5.0 – 8.0%

pH & Stability
Supplied pH: ~4.5 – 5.5
Recommended formulation pH: 4.8 – 5.5
Stable in typical cosmetic systems within the recommended pH range
Compatible with aqueous gels, emulsions, lotions, and serums

Storage & Handling
Store at 15–25°C
Protect from excessive heat and freezing
Close the container tightly after use.

Shelf Life
24 months from the date of manufacture
(when stored as recommended, unopened)

Encapsulating all four skin-toning actives in a single HydroSal® system delivers performance advantages not achievable with free-ingredient blends.

1. Synergistic Skin Delivery
Co-encapsulation delivers all actives to the same skin site, allowing complementary mechanisms to act in parallel: niacinamide limits melanosome transfer, arbutin and kojic acid reduce melanin formation, and vitamin C enhances brightness and antioxidant protection. This synchronized delivery improves tone-evening versus uneven release from free blends.

2. Enhanced Stability
Vitamin C and kojic acid are prone to oxidation in free form. Encapsulation protects actives from environmental stress, prevents cross-reactivity, and preserves potency throughout shelf life for consistent efficacy.

3. Controlled Release & Comfort
HydroSal® enables gradual, sustained release, maintaining effective skin levels while minimizing irritation—supporting daily use and sensitive-skin compatibility.

4. Efficient, Reliable Performance
Improved delivery allows visible results at lower active levels while maintaining elegant formulations. Consistent active ratios reduce variability and support reliable clinical substantiation.

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Experimental results

Measurement of Skin Brightness (Y Value)
Skin color was evaluated using instrumental colorimetry based on the CIELAB color space, where Y represents luminance (brightness). The Y value quantifies the amount of light reflected from the skin surface and is commonly used to objectively assess skin brightness and tone uniformity.

Instrumental Method

- Measurements were performed using a calibrated skin colorimeter/spectrophotometer
- The device illuminates the skin with a standardized light source and measures reflected light
- The reflected signal is converted into Y (luminance) values

Measurement Procedure

1. The instrument was calibrated prior to use according to the manufacturer's guidelines
2. Baseline Y values were recorded on the defined 14 cm² test area before product application
3. After 4 weeks of daily application, Y values were measured again at the same site
4. All measurements were taken under controlled conditions (consistent pressure, angle, and ambient lighting)

Data Interpretation

- Higher Y values indicate brighter skin
- An increase in Y reflects improved skin brightness and reduced appearance of pigmentation
- Results were expressed as percentage change from baseline

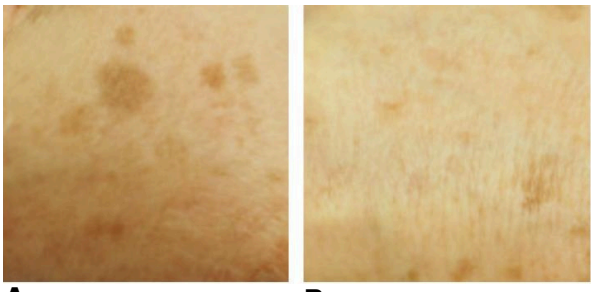


Figure 5: The technology was evaluated in a serum at 10% HydroSal® Skin Toning. Volunteers applied the solution to the skin once daily for 4 weeks. A, control; B, after 4 weeks.

Efficacy Outcome

Following 4 weeks of application, HS Skin Toning produced an average of ~10% increase in Y value, demonstrating a measurable improvement in skin brightness and tone uniformity.

Claims-Ready Statement

“Skin brightness was evaluated using instrumental colorimetry (Y luminance parameter). After 4 weeks of use, HS Skin Toning demonstrated a ~10% increase in Y value, indicating visibly brighter, more even-looking skin.”

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Formulation tips

Brightening Cleansing Wash (Rinse-Off)

Concept: Gentle daily cleansing + tone support (contact benefit, no irritation)

Phase A – Water
- Deionized Water ..... q.s. to 100
- Glycerin 3.00
- Disodium EDTA 0.10

Phase B – Surfactants
- Sodium Cocoyl Isethionate (liquid) 8.00
- Cocamidopropyl Betaine 6.00
- Decyl Glucoside 4.00

Phase C – Actives (cool-down)
- **HS Skin Toning 3.00**
- Panthenol 0.50
- Preservative ..... q.s.

pH: 5.2–5.6

Positioning:

"Gently cleanses while helping maintain brighter, more even-looking skin."

Day Lotion – Tone Protection & Comfort

Concept: Daily hydration + preventive tone support (face & body)

Phase A – Water
- Deionized Water ..... q.s. to 100
- Glycerin 3.00
- Carbomer 0.20

Phase B – Oil
- C12-15 Alkyl Benzoate 4.00
- Caprylic/Capric Triglyceride 3.00
- Glyceryl Stearate Citrate 2.50
- Tocopherol 0.20

Phase C – Actives (cool-down)
- **HS Skin Toning 5.00**
- Panthenol 0.50
- Preservative ..... q.s.

Neutralize / pH: 5.0–5.5

Positioning:

"Daily brightening lotion that helps prevent uneven tone while keeping skin comfortable."

Day Serum – Advanced Tone + Youth Boost

Concept: Lightweight serum combining HS Skin Toning + HS Youth

Phase A – Water Gel

Deionized Water ..... q.s. to 100
Glycerin 3.00
Propanediol 5.00
Hydroxyethylcellulose 0.60

Phase B – Actives

HS Skin Toning 6.00
HS Youth 4.00
Panthenol 0.50
Preservative ..... q.s.

pH: 5.0–5.4

Positioning:

"Targets uneven tone while supporting youthful-looking, energized skin."

Night Cream – Repair, Brighten & Renew

Concept: Overnight correction with HS Skin Toning + MS Vit C+E

Phase A – Water

Deionized Water ..... q.s. to 100
Glycerin 3.00
Carbomer 0.25

Phase B – Oil

Shea Butter 4.00
Squalane 4.00
Cetearyl Alcohol 2.50
Glyceryl Stearate 2.50
Tocopherol 0.20

Phase C – Actives (cool-down)

HS Skin Toning 5.00
MS Vit C+E 3.00
Preservative ..... q.s.

pH: 5.0–5.5

Positioning:

"Overnight brightening cream that helps reduce the appearance of dark spots and restore skin radiance."

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citation of clinical / human studies

Niacinamide (Vitamin B3)

1. Hakozaki et al., 2002 – clinical lightening + reduced hyperpigmentation. “Niacinamide significantly decreased hyperpigmentation and increased skin lightness vs vehicle after 4 weeks.”
2. Navarrete-Solís et al., 2011 – randomized double-blind trial in melasma. Double-blind randomized clinical trial evaluating 4% niacinamide for melasma (clinical outcomes and tolerability reported).
3. Barbosa et al., 2024 – randomized, double-blind controlled trial including nicotinamide + vitamin C derivative. Facial melasma treated with topical nicotinamide + magnesium ascorbyl phosphate (instrumental/clinical follow-up shown).

Alpha-Arbutin / Arbutin Family

1. Tantanasrigul et al., 2024/2025 – split-face randomized study in melasma (alpha-arbutin ± kojic acid context). Split-face randomized study measuring melanin index / mMASI, reporting efficacy and safety for an alpha-arbutin-containing topical.
2. Boo, 2021 – comprehensive review of arbutin-class depigmenting agents (includes human trial references). Includes discussion of human clinical trial data (e.g., deoxyarbutin improving solar lentigines over 12 weeks) and mechanism.
3. Santoso et al., 2018 – clinical comparison including alpha-arbutin + niacinamide combination vs hydroquinone. 30 participants; compares a combination (includes alpha arbutin + niacinamide) against hydroquinone 4%.

Kojic Acid

1. Lim et al., 1999 – clinical trial in melasma (kojic acid as add-on improves outcomes). Classic clinical trial showing additional improvement when kojic acid is included in a depigmenting gel regimen.
2. dos Santos et al., 2025 – randomized clinical trial with 2% kojic acid serum (melasma). Open-label randomized clinical trial reporting promising outcomes with 2% kojic acid serum (including “whitening of spots” language in paper).
3. Laser-assisted/serum clinical evaluation including kojic acid + niacinamide (melasma adjunct). A topical serum containing tranexamic acid + kojic acid + niacinamide reported as safe and effective in a clinical evaluation context.

Vitamin C (L-Ascorbic Acid)

1. Espinal-Perez et al., 2004 – randomized double-blind trial: 5% ascorbic acid in melasma. Well-cited trial comparing topical vitamin C approaches; includes controlled clinical outcomes.
2. Correia et al., 2023 – systematic review on topical vitamin C in melasma/photoaging. Concludes vitamin C has depigmenting properties; notes longer use may be needed for noticeable changes.
3. de Dormael, 2019 – review of randomized controlled trials on vitamin C preventing UV-induced pigmentation. Assesses multiple RCTs on vitamin C’s ability to limit daylight/UV-induced pigmentation

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