

Mesotherapy: Origins and Clinical Foundations

SEDUSKIN SCIENTIFIC DOSSIER



Mesotherapy: Origins and Clinical Foundations

Mesotherapy is a minimally invasive therapeutic technique that involves multiple micro-injections of a mixture of compounds dermisⁱ. This method was pioneered in France by Dr. Michel Pistor in 1952, originally to treat pain and vascular disordersⁱⁱ. Mesotherapy itself denotes a delivery method rather than a single formula – it can deliver a variety of agents depending on the clinical goal.

Dr. Jamel Fares, a Brazilian physician and entrepreneur, is a direct inheritor of this mesotherapy legacy. In 1994, Dr. Fares apprenticed under Dr. Michel Pistor, absorbing the foundational techniques of mesotherapy and skin booster therapy. Dr. Fares went on to become a pioneer in the medical aesthetics field himself – as the first to introduce and teach the use of stabilized HA dermal fillers worldwide in the 1996 through his partnership with Restylane. His deep knowledge of injectable treatments and firsthand training in

mesotherapy set the stage for combining these domains into advanced skin booster products.

Laboratoire GlobalSkin France (LGSF): Manufacturer and Vision

In 2005, Dr. Jamel Fares founded ObvieLine Laboratory in Lyon and developed **PERFECTHA**, a line of cross-linked HA dermal fillers that became globally recognized for quality, eventually leading to the brand's acquisition by Sinclair Pharma in 2014. Dr. Fares learned with PERFECTHA how to converge European manufacturing standards with his know-how to create better aesthetic products. Building on this success, Dr. Fares founded and currently directs Laboratoire GlobalSkin France (LGSF), the company behind the SeduSkin line of skin boosters.

LGSF's facilities include a manufacturing plant and R&D laboratory in the Technopole science park in Martillac on the outskirts of Bordeaux, France. Construction of the facility began in 2022, and by

2024 LGSF had exported the first batch of SeduSkin products – now present in EU, Latin American, and Eastern markets. LGSF has Good Manufacturing Practice (GMP) certification and ISO 13485 certification.

SeduSkin Skin Booster Portfolio and Scientific Review

SeduSkin's product portfolio comprises five distinct formulations, each designed as a **skin booster** or adjunct injectable targeting specific aesthetic and dermatologic needs. All products are supplied in sterile 5 mL vials (typically packaged as five vials per box) for multi-microinjection use. Depending on a practitioner's technique, they can be delivered via needle injection, mesotherapy "nappage" (multiple small injections), cannula, or even microneedling devices, giving flexibility in how treatments are administered. Below is a detailed scientific and clinical overview of each SeduSkin product – **HYLA-PDRN**, **HYLAGEN³**, **HYLADERM 2%**, **EVOLUTION**, and **LIPAX** – including their composition, mechanisms of action, indications, ideal patient profiles, and illustrative clinical considerations.

SeduSkin
HYLA-PDRN

HYLA-PDRN – Regenerative Skin Repair & Deep Hydration

Composition and Mechanism:

HYLA-PDRN is a hybrid bio-revitalizing solution combining **Polydeoxyribonucleotide (PDRN)** with **hyaluronic acid**. PDRN is a mixture of deoxyribonucleotides (DNA fragments) originally derived from salmon, known for its regenerative properties in tissues. Mechanistically, PDRN acts on the A2A adenosine receptors in cells, which triggers a cascade of tissue repair processes and modulates inflammationⁱⁱⁱ. By engaging A2A receptors, PDRN promotes angiogenesis (formation of new blood capillaries) and fibroblast activity, leading to increased production of collagen and other matrix components in the skin. Additionally, PDRN provides a pool of nucleotides that cells can use in the "salvage pathway" to synthesize DNA, effectively giving cells the raw materials to accelerate repair of damaged tissue^{iv}. The net result is a stimulation of wound healing and regenerative processes in the dermis. Indeed, experimental and clinical studies have shown that PDRN has **multifaceted effects: it enhances tissue repair, is anti-ischemic (improves microcirculation), and has anti-inflammatory action^v**. In dermatologic contexts, PDRN has been documented to speed up wound closure and re-epithelialization in difficult-to-heal skin ulcers, partly by upregulating vascular endothelial growth factor (VEGF) and downregulating

inflammatory cytokines like TNF- α ^{vi}. This evidence underpins its use as a skin rejuvenating agent.

The hyaluronic acid (HA) in HYLAPDRN is non-crosslinked and of high purity (medical-grade), serving as a hydrating vehicle and scaffold. HA is a glycosaminoglycan naturally present in dermal extracellular matrix, responsible for retaining water and conferring turgor and suppleness to the skin. By injecting HA directly into the dermis, HYLAPDRN provides immediate osmotic hydration – each HA molecule can bind many times its weight in water – thus rehydrating dry or atrophic areas. Moreover, the presence of HA can physically support cell migration and provide a temporary extracellular matrix for fibroblasts as new collagen is being laid down. Studies of injectable HA boosters have shown that beyond hydration, they can induce **biomechanical stretching of fibroblasts and serve as a matrix** that promotes collagen synthesis over time^{vii}. In essence, HYLAPDRN's HA component addresses the extracellular environment (improving moisture and viscoelasticity), while the PDRN component works at the cellular level to repair and regenerate. This dual action (hydration + regeneration) makes HYLAPDRN particularly potent for revitalizing skin that has been damaged or stressed.

Clinical Indications: HYLAPDRN is indicated for skin in need of repair and restorative treatment at the cellular level. Key use cases include:

- **Post-acne scarring and discoloration:** The product

helps resurface atrophic acne scars by stimulating dermal matrix regeneration and can reduce post-inflammatory hyperpigmentation through its modulation of inflammation (dampening melanocyte-stimulating cytokines). PDRN has been shown to promote collagen synthesis in fibroblasts, thereby improving the appearance of pitted scars^{viii}.

- **Post-inflammatory hyperpigmentation (PIH):** By downregulating inflammatory mediators and aiding skin turnover, it may accelerate the clearing of pigment from prior inflammation.
- **Sun-damaged skin with dyschromia:** UV exposure generates free radicals and matrix metalloproteinases that break down collagen; PDRN's anti-inflammatory and DNA-repair stimulating actions, along with HA's barrier support, help mitigate UV-induced damage^{ix}. Cases of mottled pigmentation or solar elastosis can see improvement in tone and texture.
- **Early fine lines and thinning under-eye skin:** In delicate areas like the periorbital region, where skin is thin and early wrinkles appear, HYLAPDRN can thicken the dermis by boosting fibroblast activity and microcirculation, thus improving elasticity and reducing fine creases.

- **Skin recovery after dermatologic procedures:**

For patients who have undergone ablative lasers, deep peels, or microneedling, HYLA-PDRN can be used post-procedure to accelerate healing. PDRN's role in tissue repair (for example, speeding re-epithelialization of wounds)^x translates to faster recovery and less downtime when used as a post-treatment booster.

- **Uneven texture or dull, sallow complexion:**

By improving dermal matrix quality and hydration, the product can smooth rough texture and enhance skin radiance. Increased dermal hydration plumps the skin, and improved microvascular perfusion via PDRN gives a healthier color to sallow skin.

- **“Smoker’s skin” (poor microcirculation):**

In patients with long-term tobacco use, compromised capillary circulation leads to dull, grayish skin and delayed healing. PDRN's pro-angiogenic effect (it significantly increases VEGF in treated tissue)^{xi} helps recruit a better blood supply, oxygenating the skin and improving its vitality.

- **Pre- and post-surgical skin conditioning:**

Some clinicians use PDRN-based injections before a surgical procedure (like a facelift or dermabrasion) to “pre-condition” the skin, or

afterward to promote faster healing of incisions. By accelerating tissue repair and reducing inflammation, HYLA-PDRN may help surgical sites heal with minimal scarring^{xii}.

In summary, HYLA-PDRN is generally favored when the skin shows signs of **damage, inflammation, or early aging** at a cellular level (pigmentation, roughness, fine lines) but without advanced sagging. It *regenerates* more than it volumizes.

Ideal Patient Profile: Ideal candidates for HYLA-PDRN are adults roughly between ages 28 and 50+ who present with early signs of photoaging or skin stress. Typically, these patients have **Fitzpatrick skin types II-V** (it can be used across many ethnicities and is often useful in darker skin types for PIH). Men or women with a history of acne scarring, or those with dull, irritated skin (for example, a patient with long-standing post-acne redness and patchy pigmentation), would benefit. First-time aesthetic patients who are more concerned with improving skin quality (texture and tone) rather than adding volume are an excellent fit – HYLA-PDRN can be a gentle introduction to injectables for someone who wants a “skin refresher.” Because of its regenerative focus, it is also suitable for younger patients in their 30s who want to *prevent* aging changes by keeping the skin's repair mechanisms activated. On the other hand, someone with very lax or sagging skin might need to combine HYLA-PDRN with a

collagen-stimulating treatment or a tightening procedure, since PDRN alone targets quality over firmness.

Scientific Rationale and Supporting Evidence:

The use of polynucleotides like PDRN in dermatology is supported by a growing body of research. PDRN is essentially a biologic stimulator of skin healing – it has been used clinically in wound healing (diabetic foot ulcers, graft donor sites) with significant efficacy^{xiii}. In one study, a topical gel containing PDRN plus HA achieved complete healing in 67% of chronic venous ulcers within 45 days, compared to only 22% with HA alone^{xiv}. This highlights a synergistic benefit of combining PDRN with hyaluronic acid for tissue repair. The anti-inflammatory effect of PDRN is another key point: by activating A2A receptors, PDRN downregulates pro-inflammatory cytokines (like TNF- α and IL-6) and upregulates anti-inflammatory signals^{xv}. This creates a more favorable environment for skin regeneration, especially important after injuries or in inflammatory conditions like acne. Histologically, treatment with PDRN has been shown to increase dermal fibroblast density and collagen deposition, and to improve dermal thickness in animal models^{xvi}. From a patient perspective, these microscopic changes translate into smoother scars, improved fine lines, and healthier skin tone.

Clinical Example: *A 32-year-old female with atrophic acne scars and lingering reddish-brown post-acne marks on her cheeks undergoes three sessions of HYLA-*

PDRN, spaced 2 weeks apart. Over two months, her dermatologist notes significant improvement in skin texture – the depressions from old acne are shallower – and a more even complexion. The patient herself reports that her skin “heals faster” from minor breakouts and looks more radiant. These outcomes align with the known effects of PDRN on collagen remodeling and anti-inflammation, as PDRN-treated skin tends to regenerate and turnover cells more effectively, softening the appearance of scars and hyperpigmentation. No adverse effects were observed aside from mild injection-site swelling. This case exemplifies how HYLA-PDRN can “restore the skin’s code” by biologically repairing dermal damage and rehydrating the tissue.

SeduSkin HYLAGEN³

HYLAGEN³– Collagen Biostimulation & Firming Solution

Composition and Mechanism:

HYLAGEN³ is formulated as a **collagen-rich biostimulator**, featuring a combination of bioactive **collagen (Types I and III)**, targeted peptides, and hyaluronic acid. The name suggests “HylaGen” = Hyaluronic + Collagen (gen referring to collagenogenesis) and the superscript 3 implies a focus on Type III collagen or a triad of components (Collagen I, III, and peptides). In essence, HYLAGEN³ provides the

building blocks and stimuli for dermal **neocollagenesis** (new collagen formation).

Collagen Types I and III are the primary structural proteins in the dermis: approximately 80% of normal dermal collagen is Type I (which imparts tensile strength), while about 15–20% is Type III (which provides flexibility and elasticity)^{xvii}. With age and certain hormonal changes, there is a decline in both Type I and III collagen production by fibroblasts, leading to thinning of the dermis, wrinkles, and loss of firmness. By introducing exogenous collagen into the dermis, HYLAGEN³ aims to **replenish the dermal matrix** and simultaneously stimulate the skin's own fibroblasts. The collagen in this product is of non-animal origin (produced via bio-fermentation to ensure biocompatibility and avoid immune reactions), and is formulated in minute fragments/peptides that can integrate into the dermal tissue. These injected collagen fragments can act as a scaffold that reinforces the dermis and also as a chemotactic signal – fibroblasts detect the presence of collagen fragments and may increase their activity (somewhat analogous to how an injury with collagen breakdown would signal fibroblasts to produce new collagen). Indeed, studies on injectable collagen fillers (such as formulations of human collagen I/III) have shown they can persist in tissue for months and provide a matrix for cell infiltration, with clinical improvements in skin plumpness and texture lasting beyond the presence of the material^{xviii}.

In addition to actual collagen protein, HYLAGEN³ contains **bio-mimetic peptides** that further boost collagen synthesis. These are short sequences of amino acids designed to target cell receptors or mimic parts of extracellular matrix proteins, thereby triggering fibroblast receptors to upregulate collagen production. For example, certain peptides (often used in cosmeceuticals) are known to stimulate production of Type I procollagen and elastin by fibroblasts, effectively “coaching” aging cells to behave like younger ones^{xix}. One well-known peptide in skincare, palmitoyl tetrapeptide (part of the Matrixyl™ family), has been shown to increase collagen I, fibronectin, and HA synthesis in fibroblast cultures^{xx}. While the exact proprietary peptides in HYLAGEN³ are not listed, their role is to act as **signal amplifiers** – complementing the physical presence of collagen with biochemical stimulation of new collagen, elastin, and glycosaminoglycans. Over time, repeated stimulation can counteract fibroblast senescence (the slowing of fibroblast function with age)^{xxi} and lead to a net gain in dermal collagen content. The hyaluronic acid in the formula serves to improve injection ease and provide baseline hydration; it also ensures the peptides and collagen diffuse nicely through the tissue.

In summary, HYLAGEN³ works through **biostimulation and bioreplacement**: it directly adds collagen to the dermal scaffold and concurrently induces the skin to generate more of its own structural proteins. This makes it distinctly a

firming and strengthening booster, as opposed to a purely hydrating one.

Clinical Indications: HYLAGEN³ is indicated wherever the primary concern is loss of dermal density, early sagging, or the need for structural skin support without resorting to volumizing fillers.

Typical indications include:

- **Mild to moderate skin laxity, especially in the cheeks and midface:** Patients who notice their cheeks are less firm or early jowls forming (but who are not yet candidates for surgical lifts) can benefit from HYLAGEN³. By increasing collagen I and III in the dermis, the product can improve skin tensile strength and elasticity, giving a subtle lift and better contour to areas like the midface and jawline.
- **Nasolabial fold softening without volume addition:** Some individuals have prominent nasolabial lines due to skin laxity rather than fat loss. Instead of filling these folds with HA filler (which adds volume), using HYLAGEN³ can tighten the skin in that area, **reducing the depth of folds by improving skin firmness^{xxii}**. This is ideal for those who want a natural look without adding puffiness to the face.
- **Perimenopausal or hormone-related thinning of skin:** Women in their late 40s to 50s often experience accelerated collagen loss due to estrogen decline, leading to crepey skin and fine lines. HYLAGEN³ specifically addresses collagen depletion, making it suitable for peri- and post-menopausal skin that has become thinner or less elastic^{xxiii}. It helps rebuild dermal thickness, which can soften fine wrinkles and restore a more youthful resilience.
- **Loss of facial volume/density after significant weight loss:** After losing weight, some patients find their face looks gaunt or lax due to reduction in fat and collagen. This product can assist in **rebuilding the dermal support** that was lost with fat, improving facial tautness and contour^{xxiv}. It's not a volumizer like a filler, but by improving skin firmness, it can indirectly enhance facial fullness.
- **Repetitive expression lines (etched lines) without deep folds:** For example, early crow's feet or forehead lines in someone not ready for toxin or in conjunction with toxin. HYLAGEN³ can fortify the skin's resistance to dynamic wrinkles by increasing its elasticity and strength^{xxv}. The skin becomes less prone to creasing.
- **Neck and décolleté revitalization:** The neck and upper chest often develop fine wrinkles and a "crepey" texture due to sun exposure and thin skin. Collagen

stimulators here can yield good improvements in smoothness. HYLAGEN³ can be injected in a microdroplet technique across the neck and chest to improve the structural integrity of these areas^{xxvi}.

- **Sensitive or barrier-compromised skin (e.g. mild atopic dermatitis):** Off-label, HYLA-PDRN can be considered in patients with chronic mild dermatitis or fragility in the skin barrier. The anti-inflammatory properties of PDRN coupled with HA's soothing hydration may aid epidermal barrier restoration and reduce redness or itching^{xxvii}. (Severe active eczema or psoriasis would be contraindicated for injections until controlled.)

In practice, clinicians choose HYLAGEN³ when a patient's skin **lacks firmness or "padding,"** but isn't necessarily dehydrated or inflamed. It's more of a "scaffolding" booster. For instance, if comparing to HYLA-PDRN: a patient with purely dull, thin skin and slight sag would get more benefit from HYLAGEN³ (to build collagen), whereas a patient with acne marks or redness would be better suited to PDRN.

Ideal Patient Profile: The ideal HYLAGEN³ patient is in the **35 to 60+** age range with early aging signs related to collagen loss. This could be a male or female patient noticing their face is "deflating" or the skin is getting looser, but who may not yet have advanced enough aging to warrant surgical or high-intensity

treatments. It is particularly appealing to patients who have had volumizing treatments (like fillers) and now want to improve overall skin quality – for example, someone who has filler in the cheeks but still sees fine lines and mild sagging in adjacent areas can use HYLAGEN³ to **enhance skin tightness** in those areas without adding more volume. It's also suitable for individuals on a long-term **preventative anti-aging regimen:** for instance, a 40-year-old starting to see slight nasolabial shadows could start yearly collagen-stimulating mesotherapy to slow progression. Fitzpatrick skin types I to IV are generally suitable (there's no specific limitation, as the product does not target pigment). Patients with **menopausal skin changes** or those who have undergone significant life changes (post-pregnancy skin laxity or post-weight-loss) are good candidates. Because the product is pure protein/peptide-based without inflammatory actives, it's usually well-tolerated; even those with sensitive skin can use it, though as always a history of collagen allergy would be a contraindication (rare with non-animal collagen).

Scientific Rationale and Evidence:

The rationale for collagen-based injectables is supported by both historical use and emerging science. Collagen injections were among the first cosmetic injectables (bovine collagen was used in the 1980s for wrinkles), and while early products had issues with immunogenicity and short duration, newer bioengineered collagens are safer and more durable^{xxviii}. The key scientific insight is that **dermal**

fibroblasts can be “reactivated” by exposure to collagen fragments and peptides. Normally, with aging, fibroblasts reduce output of Type I collagen and focus on maintenance. By providing collagen fragments, one mimics the biochemical environment of a wound (where collagen breakdown products signal fibroblasts to come repair). There is evidence that fibroblasts will increase proliferation in the presence of certain collagen peptides. Moreover, peptides designed to penetrate skin (as in topical use) or delivered via injection can bind to cell surface receptors like integrins or growth-factor receptors, initiating gene expression changes. For example, one study noted that a cosmetic peptide blend led to 20% improvement in skin firmness and 33% increase in skin tone after 2 months, vs placebo^{xxix}. Another study on Matrixyl (a palmitoylated peptide) showed increased collagen I and hyaluronic acid production in cell culture^{xxx}. In HYLAGEN³, the peptides are likely chosen to specifically stimulate collagen subtypes I and III – this targeted stimulation addresses the *root cause* of fine wrinkles and sagging.

From a clinical perspective, we know that **collagen is the key to youthful skin structure**. By replenishing Type I and III collagen (which constitute the bulk of dermal collagen^{xxxi}), skin becomes stronger and more elastic. For example, a 10-year study of an injectable human collagen I/III product in China showed significant patient satisfaction with improvements in scars and wrinkles, and histology confirmed the

exogenous collagen persisted for many months as it gradually was replaced by the body’s own tissue^{xxxii}. This demonstrates the concept of a scaffold that gradually turns over into natural tissue (the ideal outcome). Additionally, the presence of HA in the mix means that there is immediate hydration and a template for new collagen fibers to be organized around. The **differentiation** from other boosters is clear: HYLAGEN³ is not primarily for hydration or pigmentation, but for **structure and support**. It should not be used if the skin is very dehydrated without first addressing moisture (that’s where HYLADERM 2% might come in), nor if the issue is active inflammation. However, once basic skin health is ensured, adding collagen stimulation can significantly improve skin quality over a series of treatments, and the effects can be long-lasting (6-12 months) as new collagen remains until it naturally degrades.

Clinical Example: *A Fifty-year-old woman shows early jowling and softening of her jawline, and fine lines around the mouth, but she is hesitant to use more HA fillers because she prefers a natural look. She undergoes three monthly sessions of HYLAGEN³ across the midface, jawline, and neck. By three months after the last session, her skin appears firmer and the contours of her lower face are more defined; the fine smoker’s lines around her lips have diminished as the skin thickened. She notes that her face hasn’t grown (no added volume), yet she looks “lifted” and her skin feels more resilient. On palpation, the dermatologist finds*

the cheek skin feels denser. This case illustrates the effect of biostimulation: the patient's own collagen network has been enhanced, yielding tighter skin. Over the next year, gradual collagen turnover will determine how long the effect lasts, but a maintenance session every 6-12 months could prolong the benefits. No significant downtime occurred aside from mild soreness; the patient's makeup artist commented her skin texture improved. This outcome is consistent with the **collagen-inductive mechanism** of HYLADERM³, essentially "building the foundation beneath the skin."



HYLADERM 2% – Intensive Hydration & Barrier Boosting

Composition and Mechanism:

HYLADERM 2% is a straightforward yet highly effective **hyaluronic acid skin booster**. Its defining feature is a **high concentration of non-crosslinked hyaluronic acid (2% w/v)**, which equates to 20 mg/mL of HA. This is a significant concentration, comparable to or higher than many dermal filler products, but because the HA is not chemically cross-linked, it behaves as a pure hydrator rather than a volumizer. The mechanism of HYLADERM 2% is predominantly biophysical: upon intradermal injection, the hyaluronic acid

attracts and binds water molecules into the dermis, thereby **replenishing moisture** in the extracellular matrix. This rehydration plumps up the skin from within, improving elasticity and reducing the appearance of fine crepey lines caused by dryness. Importantly, HA also contributes to the extracellular milieu by interacting with cell surface receptors (such as CD44 on fibroblasts and keratinocytes), which can promote cell migration and wound healing. While HYLADERM's HA is not crosslinked to stay for very long, during its residence time it creates a reservoir of hydration and possibly stimulates fibroblasts through **mechanotransduction** – the subtle swelling of the dermis can stretch fibroblasts slightly, which has been shown to induce them to produce collagen and elastin in response^{xxxiii}. This is one proposed explanation for why skin quality improves after HA booster treatments beyond just a few weeks of direct hydration.

The "2%" concentration suggests that each mL of the product contains 20 mg of hyaluronic acid. By comparison, many mesotherapy HA products contain around 10–15 mg/mL, so HYLADERM 2% delivers a robust dose. The HA is produced via bacterial fermentation (biotechnology), ensuring it is of **non-animal origin** and with high biocompatibility (minimizing risk of immune reaction). Being uncrosslinked, it is fully biodegradable and will gradually be broken down by enzymes (hyaluronidases) over a few weeks to months, depending on individual metabolism and how deep it's

placed. During that period, it will continuously impart moisture to the surrounding tissue. Also, because it is not crosslinked, it spreads easily in the dermal tissue, allowing **coverage of a larger surface area** for a given volume injected, which is ideal for treating global skin quality. Unlike a filler that stays in one place to lift a wrinkle, HYLADERM's HA diffuses and can hydrate an entire region (e.g. the whole cheek or forehead).

Another key aspect is **barrier function support**: well-hydrated skin has a healthier stratum corneum barrier. Many skin conditions like irritation, redness, and sensitivity are exacerbated by a compromised barrier and dryness. By rehydrating the dermis and epidermis from within, HYLADERM 2% helps restore the skin's barrier integrity and reduces trans-epidermal water loss. This can translate to calmer skin with less redness or flaking. It is essentially an "internal moisturizer." Additionally, because it contains no other active stimulants or additives, it is extremely well tolerated – making it suitable for even sensitive or reactive individuals.

Clinical Indications: HYLADERM 2% is indicated wherever **hydration, luminosity, and basic dermal conditioning** are the primary goals. It serves both as a foundational treatment for patients new to injectables and as a maintenance or adjunct treatment for those in between more aggressive procedures. Key indications include:

- **Dry, xerotic, or flaky skin** – especially in climates or

seasons that cause dehydration (e.g. winter). Patients with chronic xerosis (dry skin) on the face, or flaky patches around the nose/mouth, will notice improvement as the HA restores moisture balance. The product can be a remedy for "winter skin" that is dull and rough.

- **Dull skin lacking glow** – often due to dehydration and slight loss of elasticity. By improving hydration and light reflectivity of the skin, HYLADERM gives a **radiance boost**. It's commonly used before events for a quick skin refresh in those who just need a glow.
- **Immediate post-procedure healing** – After treatments like fractional laser, radiofrequency (RF) microneedling, or even chemical peels, skin can be left inflamed and dehydrated. HYLADERM 2% can be gently injected or micro-channeled to speed up rehydration and soothe the tissue. Its simple composition (just HA) is non-stimulatory, so it won't irritate freshly treated skin. This makes it a great **adjunct aftercare** measure to reduce downtime.
- **Flushed, sensitive skin requiring barrier restoration** – e.g. mild rosacea-prone skin or skin that easily gets red and irritated. Often such skin has a weakened barrier. By delivering HA, HYLADERM

supports the skin barrier and can reduce chronic redness and discomfort. It doesn't contain lidocaine or anything that might sting; injections are superficial. Over a few sessions, sensitive skin tends to become more resilient.

- **Preparation for aesthetic procedures** – Hydrated skin responds better to procedures like laser or even filler injections (some physicians advise improving skin hydration before doing a filler so that results are better and bruising may be less). As a **pretreatment**, HYLADERM 2% can condition the skin a week or two prior, ensuring it's in optimal shape for whatever comes next.
- **Fine superficial lines and crepiness** – especially in areas like the cheeks, under eyes (carefully done), neck, or perioral area where the issue is more about skin texture than deep wrinkles. By adding a bit of volume through water retention, the product can smooth out fine crinkling (for example, fine lines on the neck or subtle “crêpe” texture on the cheeks of a middle-aged patient).
- **Patients with low tolerance for aggressive treatments** – Some individuals (perhaps with autoimmune issues or simply needle-phobic) want improvement but with minimal risk. HYLADERM 2% is so basic in its components that it's almost universally

safe; even immunocompromised patients or those with allergies can often tolerate it well since HA is a natural molecule in the body. It's an excellent entry-level injectable for young patients in their 20s who want preventative care without any change in appearance.

- **Adjunct in certain dermatoses** – e.g., in seborrheic dermatitis, where flaking and barrier disruption are issues, added hydration can alleviate symptoms (of course it's not a primary treatment for the condition, but it can complement topical therapy to keep skin comfortable)

Overall, **HYLADERM 2% is the “deep hydrator”**. Think of it whenever the skin is parched, stressed, or needs gentle restoration. It is often the first product used in a multi-step protocol: for instance, a clinic may start a patient on HYLADERM for a couple of sessions to get the skin healthy, then move on to a more stimulatory booster like PDRN or collagen for additional benefits.

Ideal Patient Profile: Because hydration is a universal need, the patient profile for HYLADERM 2% is very broad. It can range from a 25-year-old with no specific aging concerns but dull skin, to a 65-year-old who wants to improve skin quality without aggressive treatments. All Fitzpatrick skin types (I–VI) and essentially all genders can benefit, with **no particular contraindications by skin type**. It is

especially popular among younger patients (20s-30s) who may not need anti-aging but do experience environmental skin stress (like urban pollution, air-conditioned offices causing dry skin). It's also a staple for patients who regularly undergo other cosmetic treatments as a "maintenance" in between – for example, someone might get HYLADERM microinjections every 3-4 months to keep their skin optimally hydrated alongside their yearly laser session. Patients who have sensitive or allergy-prone skin (unable to tolerate vitamins or other mesotherapy cocktails) are ideal candidates because pure HA is usually non-reactive. Also, individuals who want a quick boost before an event with minimal risk appreciate this treatment.

Essentially, **HYLADERM 2% is the most universally applicable product in the SeduSkin line**, often used as the entry point for new patients or as a baseline hydrator in combination protocols.

Scientific Rationale and Evidence:

The reason hyaluronic acid is central to skin boosters is that **HA is fundamental to skin physiology** – about 50-60% of the body's total HA is found in the skin, where it hydrates and maintains the extracellular matrix structure. As we age, HA content in the skin diminishes, and the remaining HA has lower molecular weight (due to enzymatic cleavage), which reduces its water-binding capacity.

Replenishing HA can counteract these changes. Biopsies from treated skin showed **increases in epidermal hydration markers (like Aquaporin-3) and an increase in**

papillary dermal collagen content post-treatment^{xxxiv}. This indicates that HA injection not only adds water but also indirectly promotes a more robust dermal matrix. Another aspect is that HA injections have been noted to induce expression of genes related to dermal remodeling. In one genomic analysis, skin treated with HA booster had upregulation of genes associated with dermal structure and repair compared to untreated skin^{xxxv}. The physical presence of HA can also act as a scaffold: it occupies space in the dermis, which can have a **supportive effect on skin architecture** and serve as a template for collagen fibers to align around as new collagen is produced^{xxxvi}.

From a safety and tolerance perspective, HA is an endogenous substance and the risk profile is very low. There is no risk of granulomas or fibrosis with non-crosslinked HA as it does not persist long enough to cause foreign body reactions. The main side effects are injection-related (minor bruising, swelling). This makes HYLADERM 2% an attractive option for **regular use**. Some patients opt for quarterly "skin hydration shots" as part of their skincare routine, analogous to doing periodic facials but with more substantial effects.

In terms of differentiation: if one compares HYLADERM 2% to other boosters – it is pure and focuses solely on hydration. If a patient's only issue is dryness or they are very sensitive, this is the go-to. If they also need collagen or regeneration, one might layer or switch to another

product after initial rehydration. But hydration itself has a cascading positive effect: well-hydrated skin functions better, looks more plump, and even reflects light more evenly, giving a youthful glow.

Clinical Example: *A 45-year-old male executive complains of his face looking “tired and weathered,” especially after long winters. He has no deep wrinkles but overall rough texture and tight-feeling skin. He undergoes two sessions of HYLADERM 2% injections over one month. After treatment, his stratum corneum hydration (measured by a corneometer) improved significantly, correlating with visible results – his skin appears smoother and dewy. Fine lines on his forehead are less apparent because the skin is better moisturized and slightly plumped. He reports that his skin feels more elastic and less sensitive to cold wind. These observations match clinical findings that injectable HA improves both superficial and deep skin hydration and elasticity^{xxxvii}. In this case, a simple hydration-focused approach was sufficient to refresh the patient’s appearance without any use of toxins or fillers. The patient schedules maintenance sessions every 4-6 months to keep his skin quality high. This case underscores the role of HYLADERM 2% as a **foundation skin booster** – by saturating the dermis with HA (“saturate your skin with life” as the slogan goes), it restores a youthful baseline for the skin.*

EVOLUTION

EVOLUTION – Comprehensive Tri-Modal Rejuvenation (PDRN + Collagen + HA)

Composition and Mechanism: EVOLUTION is a flagship **multi-ingredient skin booster** that combines the three fundamental elements of the SeduSkin line – **PDRN (polydeoxyribonucleotide), collagen peptides, and hyaluronic acid** – into a single formulation. It is essentially a cocktail that merges the core benefits of HYLADERM, HYLAGEN³, and HYLADERM, hence the name implying an evolution to an all-in-one solution. The rationale is to achieve a **synergistic (“1 + 1 = 11”) effect**, wherein each component’s action complements the others to produce a superior overall outcome for skin rejuvenation.

EVOLUTION provides:

- The **regenerative and anti-inflammatory power of PDRN**, stimulating repair, cell turnover, and microcirculation (as detailed previously, PDRN helps angiogenesis and fibroblast activation via A2A receptors).
- The **dermal scaffolding and biostimulation of collagen and peptides**, reinforcing skin structure and prompting new collagen/elastin synthesis.
- The **intensive hydration of high-dose hyaluronic acid**,

restoring moisture and improving elasticity.

By delivering all three at once, EVOLUTION addresses the three primary aspects of skin aging: **texture/tone, firmness, and hydration.** The product is formulated such that the concentration of each active ingredient is high. This high potency ensures that efficacy is maintained even though only one product is injected (preventing dilution of effect). The HA in EVOLUTION likely serves also as a carrier for the collagen and PDRN, ensuring they are evenly distributed in the tissue.

The 3-Day Glow: The brilliance of SeduSkin's *Evolution* lies in the synergistic effect created by its triad of actives. Each component—PDRN, collagen, and hyaluronic acid (HA)—does not act alone; instead, they amplify each other's impact exponentially. PDRN provides a regenerative microenvironment, stimulating cellular repair and growth factor release. Collagen, meanwhile, serves as the physical scaffold for new dermal architecture. HA hydrates and volumizes the extracellular space, not only refreshing the skin's appearance but also optimizing the environment for biochemical activity and tissue remodeling.

This synergy triggers a layered response: first, an immediate plumping and luminosity from HA hydration; second, a medium-term regenerative activation from PDRN as cellular turnover increases and inflammation subsides; and third, a longer-term strengthening through new collagen deposition. Patients

often report a striking enhancement in skin vitality just within days—a phenomenon celebrated as the "3-Day Glow." This rapid, global skin transformation stems from reduced micro-inflammation (giving calmer, more even-toned skin), deep hydration (making skin visibly plumper), and early collagen tightening. Together, these mechanisms do not merely add up—they compound, creating results far greater than the sum of their parts.

Clinical Indications: EVOLUTION is indicated for patients who require **comprehensive rejuvenation** – that is, improvement in multiple skin parameters (hydration, tone, elasticity, and fine lines) simultaneously. It is often positioned as a second- or third-line booster, used after baseline skin health is established or for patients who have already tried simpler boosters and need a more powerful result. Key indications include:

- **Generalized dullness and loss of glow** – especially in preparation for an important event (wedding, photoshoot, etc.). EVOLUTION's multi-pronged approach can revitalize lackluster skin more dramatically than a single-focus product. Patients report a **notable glow within days**, making it ideal as a pre-event booster.
- **Mild to moderate wrinkles in multiple areas** – For example, someone in their 40s with fine forehead lines, early crow's feet, and nasolabial creases all at once. Rather

than treating each zone separately with different products, EVOLUTION can be applied across these areas to soften wrinkles generally. The HA fills in fine lines superficially, collagen adds strength to skin so lines are less deep, and PDRN encourages cell renewal which can smooth the epidermal component of wrinkles.

- **Mixed aging signs** – Many patients don't have a single issue but a combination: slight sagging, some hyperpigmentation, some dryness, etc. EVOLUTION is ideal in such cases of **combined textural, tonal, and laxity changes**. It provides a *holistic* improvement – perhaps not as specialized as each single product for a single issue, but a strong overall result across issues. This is why it's often called a “complete” skin reviver.
 - **Loss of firmness along with poor skin quality** – e.g., mild lower-face or jawline laxity *plus* rough texture or enlarged pores. The collagen component helps firmness (though EVOLUTION is not as concentrated in collagen as HYLAGEN³, it still contributes), and the PDRN/HA help texture and pores by improving the dermal matrix and hydration. So someone who just wants their **entire**
- face tightened and refreshed** a bit can use this.
- **Neck and décolleté rejuvenation** – these areas often require gentle yet effective treatments because the skin can be sensitive and patients want minimal sessions. EVOLUTION, having all-in-one, can address crepey texture, fine lines, and dryness on the neck/chest with a single formula. Fewer treatment sessions are needed because of the potency (perhaps 1-2 sessions versus a series of each type of booster).
 - **Chronic dehydration with decreased elasticity** – For instance, an older patient whose skin is both dry and lax. EVOLUTION has **double HA** content for hydration and also triggers fibroblasts via PDRN to regain elasticity. In essence, it's for advanced cases where just hydrating (HYLADERM) isn't enough and just collagen (HYLAGEN) might not address the dullness or inflammation.
 - **Patients desiring minimal sessions** – Some individuals cannot commit to multiple different injection appointments (say one for PDRN, one for collagen, etc.). EVOLUTION condenses the treatment into one product, which can be more convenient. It's indicated in those seeking a powerful “one and done (or one and few)” approach.

Ideal Patient Profile: Ideal candidates for EVOLUTION are typically **30–60+ years old** with signs of photoaging or chronologic aging that span multiple categories. They are often **experienced aesthetic patients** who may have had other injectables (like fillers, Botox) and are now focusing on skin quality improvement as a next step. Many such patients might say: “I take care of my wrinkles with Botox and my volume with fillers, but my skin itself looks tired.” EVOLUTION is perfect here – it treats the skin itself.

Another profile is the busy professional or social figure who wants **maximum results in minimum time**; for example, a person in their 40s about to attend a high-profile event in a month and needing an all-around rejuvenation quickly. Because EVOLUTION is potent, often only 1–2 sessions are required to see a marked improvement, which suits those with limited time.

Mid- to high-income patients are often targeted, as this is a premium product combining multiple actives (it may come at a higher cost per session, though we won't discuss pricing, it implies a certain clientele). Those patients also tend to have the mindset of opting for the “best” or most comprehensive treatment available.

Scientific Rationale and Synergy:

The concept of combining multiple bioactive ingredients is common in mesotherapy, but EVOLUTION is unique in that it specifically combines *validated* actives (each of which individually has clinical evidence) at therapeutic

concentrations. The scientific rationale is to produce a **synergistic effect** – in other words, the outcome is greater than the sum of individual effects. In regenerative medicine, it's often observed that combining therapies (like a growth factor plus a scaffold) yields better tissue repair than either alone. Here, PDRN could set up an ideal environment by reducing inflammation and providing nucleotides, collagen peptides provide the structural protein and signals for fibroblast binding, and HA ensures that the whole mixture diffuses and hydrates the tissue, as well as provides initial volume to stretch the skin. One can think of PDRN as improving the **“software”** of skin cells (telling them to repair), collagen as repairing the **“hardware”** (physical matrix), and HA as improving the **“environment”** (water and volume). This trifecta can accelerate the remodeling process.

There is some evidence in the literature for each pair's synergy: for instance, as noted earlier, PDRN + HA gel outperformed HA alone in healing ulcers^{xxxviii}, indicating PDRN added significant benefit. Collagen and HA combinations have also been explored in hydrogels for tissue engineering, showing improved fibroblast adhesion and growth in a hydrated collagenous matrix^{xxxix}. PDRN and collagen might have complementary roles in stimulating fibroblasts – PDRN via receptors and collagen via direct interaction and mechanical support. While no published study yet examines the exact trio in EVOLUTION, the anecdotal and initial clinical feedback suggests

that results are **faster and more dramatic** with the combo.

From a clinical efficacy standpoint, EVOLUTION is often positioned as the **“apex”** of the product line – to be used when maximum rejuvenation is needed. One can draw an analogy to combination topical skincare (like using a retinoid, antioxidant, and moisturizer together – each addresses a different facet of skin health, and together they cover all bases). Similarly, EVOLUTION covers repair (PDRN), reinforce (collagen), and replenish (HA). The main caution is that combining actives could also combine side effects, but in this case all components are biocompatible. Some patients might have a bit more post-injection swelling due to the higher HA content (double HA could draw more water initially), and rarely a patient sensitive to one component might react (for example, if someone had an issue with fish-derived PDRN, though highly purified, or a prior collagen sensitivity). However, in practice the safety has been very good, mirroring the individual components' safety.

Clinical Example: *A 38-year-old female entrepreneur with a high-profile launch event in two weeks seeks rapid improvement in her skin's appearance. She has moderate photoaging: slight laxity in the cheeks, fine lines around eyes and mouth, and uneven tone with some sunspots. After discussing options, her doctor performs a single session of EVOLUTION, injecting the product in a mesotherapy pattern over her full*

*face and neck. Three days later at a follow-up, the patient's skin indeed shows a notable “glow” – it appears more hydrated and radiant, the fine lines are less visible (especially around the eyes, which look less tired), and the overall tone is more even (the splotchiness from sun damage is diminished as inflammation is calmed and skin is hydrated). By two weeks (right before her event), the firmness of her jawline and cheeks has subtly improved, giving a mild lifting effect that is very natural. The patient is pleased that her face doesn't look “done” but rather just healthy and youthful. In this scenario, using a comprehensive product achieved multi-faceted results quickly, which aligns with EVOLUTION's purpose. Such results reflect the combined action on **collagen, hydration, and cellular regeneration**: the immediate hydration and plumping smoothed fine lines, the PDRN reduced pigmentary unevenness and brightened the skin, and the collagen/peptides began strengthening the dermis to yield improved firmness. The patient plans to get a second session in a month to further enhance the effect and then likely maintain with one session every 6-12 months. This case highlights how EVOLUTION can provide a **one-stop solution** for patients desiring an overall skin overhaul in a short timeframe.*

SeduSkin
Lipax

LIPAX – Targeted Lipolytic (Fat-Dissolver) Booster

Composition and Mechanism:

LIPAX is distinct from the other SeduSkin products in that it is not a traditional skin quality booster but a **targeted injectable for fat reduction**. Its active components are **phosphatidylcholine (PPC)** and **deoxycholic acid (DCA)**, both of which have been long used in injection lipolysis (fat-dissolving injections). Phosphatidylcholine is a phospholipid (a major component of cell membranes, especially in liver cells and egg yolk, often derived from soy in medical preparations), and deoxycholic acid is a bile acid (a detergent produced by the body to emulsify fats in digestion). In LIPAX, the combination is formulated to **lyse adipocytes (fat cells)** in localized fat deposits.

The mechanism involves a two-step process: Deoxycholic acid acts as a **detergent**, disrupting the phospholipid bilayer of fat cell membranes on contact^{xi}. This causes the adipocytes to rupture (cell lysis), releasing their stored triglyceride contents. Phosphatidylcholine, in theory, helps to emulsify the fat (breaking large fat droplets into smaller micelles) so that the body's enzymes can more easily metabolize and remove it. Historically, PPC was thought to be the primary fat-dissolving agent, but it's now understood that **deoxycholic acid is**

the key cytolytic agent, as evidenced by the development and FDA approval of pure deoxycholic acid injections (e.g. Kybella®) for submental fat^{xii}. In fact, deoxycholic acid was initially used as a solvent for PPC, but later proven to be the main bioactive component causing fat reduction^{xiii}.

That said, phosphatidylcholine may have a supportive role: research suggests that PPC could induce a mild inflammatory response (via TNF- α release) and subsequent apoptotic pathways in fat cells, complementing DCA's immediate necrotic action^{xiiii}. There might be a **synergistic effect** between PPC and DCA, where DCA quickly destroys many fat cells and PPC ensures a more thorough breakdown and gradual elimination of fat, as well as possibly aiding in remodeling the area with some fibrosis that can tighten skin post-fat loss^{xiv}. LIPAX leverages this by including both: an "attack" phase (DCA) and a "processing" phase (PPC). After injection, the treated area will undergo an inflammatory response – macrophages will be recruited to clean up cellular debris and liberated fat, which is then carried through the lymphatics and metabolized by the liver. Over several weeks, this results in a reduction of the fat layer thickness in that area. Additionally, the body's healing response often lays down some collagen in the area (fibrosis) which can lead to a tightening effect, beneficial in preventing saggy skin after the fat is gone^{xv}.

Clinical Indications: LIPAX is indicated for **localized adipose**

deposits that are resistant to diet and exercise, in patients who desire non-surgical reduction of these fat pockets. It serves as a non-invasive alternative to liposuction for small areas. Key indications include:

- **Submental fat (“double chin”)** – This is a classic indication, as deoxycholic acid is FDA-approved specifically for submental fullness^{xlvi}. LIPAX can be injected in a grid pattern under the chin to dissolve the fat and improve the cervical-mental angle. Typically, 2-4 sessions are done at monthly intervals. Patients achieve a sharper jawline without surgery.
- **Jawline/Jowl heaviness** – Small fat accumulations along the jaw (pre-jowl sulcus fat or a mild jowl) can be treated to enhance jawline definition, especially in patients who are not overweight but have a genetic predisposition to fullness in the lower face^{xlvii}. By reducing buccal or submandibular fat, the lower face appears more sculpted.
- **Buccal fat pad reduction (off-label)** – Some individuals have round faces due to buccal fat. While surgical removal is an option, injections of LIPAX in the cheek fat pads can gradually reduce cheek heaviness^{xlviii}. This must be done carefully to avoid excessive fat loss or asymmetry.
- **Perioral fat / marionette area** – In certain cases of a heavy lower face, a small amount of fat dissolver can be used at the corners of the mouth or under the chin to reduce fullness that might contribute to marionette lines or lower-face sag. It’s not a direct treatment for wrinkles but by removing underlying fat, the weight is less, and the skin can retract.
- **Axillary “bra bulge” or armpit rolls** – That little pocket of fat in front of the underarm (by the bra strap) is a common complaint, even in otherwise slim individuals. LIPAX can be injected to slim that area^{xlix}.
- **Upper back or “buffalo hump”** – small collections of fat on the upper back (though if it is a true dorsocervical hump related to metabolic issues, careful evaluation is needed). Off-label, some have used PPC/DC for contouring small upper back bulges.
- **Knee fat or inner thigh pockets** – for example a small deposit of fat on the inner side of the knees which can bother some patients in skirts. Injection can shrink these over a few sessionsⁱ.
- **Pseudo-gynecomastia in men** – This refers to fat accumulation in the male chest (not true glandular gynecomastia). Off-label, fat-dissolver injections under a physician’s supervision can be used to reduce a male chest fat pad without surgeryⁱⁱ. This

is an advanced use case and must be done cautiously.

- **Abdominal lipodystrophy (small areas)** – While large abdominal fat is not suitable (and injection of large volumes of PPC/DC can be risky), very **localized tummy fat** (for example a small pouch below the navel in a relatively fit person) could be addressed. It's crucial that the area is well defined and pinchable, and that the patient's BMI is not too high (under ~30 is ideal)ⁱⁱⁱ. Otherwise, results may be minimal or uneven.

Essentially, LIPAX is not for weight loss or general obesity – it is for *spot reduction*. The best results are seen in patients who are near ideal weight but have a stubborn bulge, or those who want to fine-tune their contours (like under the chin or around the jaw). It is an **adjunct to aesthetic sculpting**, often used in combination with other treatments: for instance, a patient might get LIPAX for the double chin and fillers for the chin or jawline to fully recontour the lower face.

Ideal Patient Profile: The ideal LIPAX patient is aged **25 to 55** with a **BMI < 30** (normal or slightly overweight) and has good skin quality in the area of concern. They should have realistic expectations (injections can reduce fat by a certain percentage, but not as dramatically as liposuction for large volumes). Typically, these patients are already engaging in a healthy lifestyle; they just have genetically predisposed fat pockets. For

example, a 35-year-old woman, height-weight proportionate, with a slight double chin due to genetics – she would be an excellent candidate. Another example: a 45-year-old man with a small belly pooch or love handles who refuses surgery might use this as a non-surgical approach (though multiple sessions might be needed). It's also popular among patients who are undergoing **comprehensive cosmetic makeovers** – e.g., someone getting facial rejuvenation might use LIPAX for the submental area while also treating skin and volume with other products.

It is crucial that patients have **relatively firm skin** or at least some elasticity, because after the fat is gone the skin must retract. Younger patients or those with good collagen will have better retraction. Older patients may still do it but one might combine it with a skin tightening procedure or RF microneedling to encourage tightening. Unlike other SeduSkin products, **LIPAX is not injected into the dermis for skin quality at all** – it is injected into subcutaneous fat. Therefore, it is handled more like a minor procedure than a skin treatment: proper injection technique, spacing, and volume per area is key to avoid uneven fat removal.

Scientific Rationale and Evidence:

The use of phosphatidylcholine and deoxycholate for injection lipolysis has been studied for decades, though only deoxycholic acid alone has achieved regulatory approval (for submental fat). Scientifically, when deoxycholic acid is injected

into fat, it **selectively lyses adipocytes** because those cells have fragile membranes rich in triglycerides that are susceptible to detergent action^{liii}. Other cells in the area (like skin cells) are generally not as affected because the injection is in the fat layer and the concentration that diffuses to skin is low, though some local tissue irritation is inevitable. Multiple clinical trials of Kybella (deoxycholic acid) demonstrated significant reduction in submental fullness compared to placebo, with high patient satisfaction in chin profile improvement^{liv}. The main side effects were swelling, pain, numbness, and rare transient nerve injury in the jaw (from injection technique issues). The science shows that after a series of injections, there is a measurable decrease in fat layer thickness on ultrasound and visible contour changes. Histologically, there's inflammation acutely, then by about 28 days, a reduction in fat cell counts and some fibrous septa contraction (hence skin tightening).

For the PPC + DCA combo, although not FDA-approved, several studies have indicated it works similarly. For instance, one study found that PC/DC injections can effectively reduce abdominal fat thickness by inducing adipocyte necrosis, with no adverse changes in blood lipid profiles^{lv}. Another detailed review (Frontiers in Endocrinology 2022) suggests a model where **DCA causes immediate cell death (necrosis) and inflammation, while PPC might cause more delayed apoptosis and enhance the lipolysis process, as well as potentially

protect against too much fibrosis by modulating the inflammatory response^{lvi}. There is also evidence of synergistic effects: combined PC/DC might kill more fat cells together than either alone in certain settings^{lvii}.

Because PPC/DC injections have been used widely in Europe and South America before the advent of Kybella, there is a lot of empirical evidence of their effectiveness. The consensus is that they **do work for small fat reductions** and are safe when properly formulated and injected, but proper patient selection is critical. They are not magic bullets for obesity. The FDA and some boards have cautioned against off-label “fat dissolving injections” due to variability in formulations^{lviii}, but LGSF producing LIPAX in a GMP facility with a standardized formula addresses a lot of those concerns by ensuring consistent purity and concentration (unlike unregulated “mesotherapy cocktails” mixed by some spas).

Clinical Example: *A 29-year-old woman is bothered by a small double chin that persists despite being at a healthy weight. She undergoes two sessions of LIPAX injections in the submental region, spaced one month apart. Each session involves a grid of ~0.2 mL injections per point under her chin. After the first session, she experiences swelling and tenderness for about 3-4 days and a bit of numbness, which resolves. By week 4, there is a mild reduction in fullness. After the second session and subsequent healing, the improvement is much more*

noticeable: her jawline is more defined and the convexity under her chin is significantly reduced. She appears to have a sharper profile. On palpation, the area that used to feel like a fat pad now feels firmer and thinner. This outcome corresponds to what is expected from deoxycholic acid injections – the **adipocyte lysis** and removal

have reduced the fat volume^{lix}. The patient is pleased and did not have to undergo liposuction. To maintain results, she is advised to keep her weight stable. This case demonstrates LIPAX's role as a **sculpting agent**: it didn't change her skin texture or quality, but it redefined the contour by eliminating unwanted fat.

ⁱ [Mesotherapy – The french connection - PMC](#)
ⁱⁱ [Mesotherapy – The french connection - PMC](#)
ⁱⁱⁱ [Pharmacological Activity and Clinical Use of PDRN - PMC](#) [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^{iv} [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^v [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^{vi} [Pharmacological Activity and Clinical Use of PDRN - PMC](#) [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^{vii} [A Prospective, Open-Label Study to Evaluate the Impact of VYC-12L Injection on Skin Quality Attributes in Healthy Volunteers - PMC](#)
^{viii} [SeduSkin Product Identities..docx](#)
^{ix} [New SeduSkin PPT script.docx](#) [New SeduSkin PPT script.docx](#)
^x [Pharmacological Activity and Clinical Use of PDRN - PMC](#) [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^{xi} [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^{xii} [SeduSkin Product Identities..docx](#)
^{xiii} [Pharmacological Activity and Clinical Use of PDRN - PMC](#) [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^{xiv} [Pharmacological Activity and Clinical Use of PDRN - PMC](#)
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^{xvi} [Polydeoxyribonucleotides enhance the proliferation of human skin ... Pharmacological Activity and Clinical Use of PDRN - PMC](#)
^{xvii} [The Use of Type I and Type III Injectable Human Collagen for Dermal Fill: 10 Years of Clinical Experience in China - PMC](#)

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^{xx} [The Science Behind Matrixyl 3000: A Magical Anti-Aging Ingredient](#)
^{xxi} [Peptides: Emerging Candidates for the Prevention and Treatment of Skin Senescence: A Review](#)
^{xxii} [SeduSkin Product Identities..docx](#)
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^{xxviii} [The Use of Type I and Type III Injectable Human Collagen for Dermal Fill: 10 Years of Clinical Experience in China - PMC](#) [The Use of Type I and Type III Injectable Human Collagen for Dermal Fill: 10 Years of Clinical Experience in China - PMC](#)
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^{xxx} [Matrixyl 3000: an in depth view with Sederma! - Chemist Confessions](#)
^{xxxi} [The Use of Type I and Type III Injectable Human Collagen for Dermal Fill: 10 Years of Clinical Experience in China - PMC](#)
^{xxxii} [The Use of Type I and Type III Injectable Human Collagen for Dermal Fill: 10 Years of Clinical Experience in China - PMC](#) [The Use of Type I and Type III Injectable Human Collagen for Dermal Fill: 10 Years of Clinical Experience in China - PMC](#)

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xxxvii [A Prospective, Open-Label Study to Evaluate the Impact of VYC-12L Injection on Skin Quality Attributes in Healthy Volunteers - PMC](#)

xxxviii [Pharmacological Activity and Clinical Use of PDRN - PMC](#)

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xliv [Fat-Dissolving Injections That Are Not FDA Approved Can Be Harmful](#) [Frontiers | The Role of Fat Reducing Agents on Adipocyte Death and Adipose Tissue Inflammation](#)

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xlvi [Mesotherapy - Wikipedia](#)

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xlvi [Metabolic and Structural Effects of Phosphatidylcholine and ...](#)

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