HELIO

Helio PDRN

High-Purity Sodium DNA Cosmetic Active Ingredient

Proprietary Extraction · GMP-Scale Production · Marine-Derived Biocompatible DNA

99.35%	<=1000 kDa	1 kg	15 days
Purity (Assay)	Mol. Weight	MOQ	Lead Time

Heliosia Inc. · helio-bio.com · B2B Ingredient Technical Brochure

INCI: Sodium DNA · CAS 68938-01-2 · Data per COA NY-20260413

Helio PDRN — Product Brochure

Proprietary Extraction · GMP-Scale Production · B2B Ingredient Supply

01 What is PDRN (Sodium DNA)

PDRN (polydeoxyribonucleotide) is a class of **biocompatible DNA-fragment** actives, designated **Sodium DNA** (INCI). As an **upstream ingredient manufacturer**, Helio specializes in the extraction and GMP-scale production of high-purity Sodium DNA, sourced from **salmon milt — the DNA-rich, highest-integrity tissue** (not fish flesh). Highly homologous to human DNA with excellent biocompatibility, it is a high-value active for **skin-barrier revitalization and soothing** in cosmetic formulations. Available as solution (primary) or powder.

Marine-derived, biocompatible DNA. Single, traceable source; import cleared by China entry-exit inspection & quarantine.

Origin — PDRN traces back to folk practice: fishermen applied salmon-milt substance to wounds and observed accelerated healing; researchers later isolated the core repair active, PDRN. Its first industrial-scale use dates to after the 1986 Chernobyl disaster, for radiation-induced skin and tissue repair, later extending into skincare and aesthetics.

02 Proprietary Extraction · Quality Advantages

Systematic quality gains across multiple dimensions

PDRN quality is fundamentally governed by **source tissue × molecular-weight control × purity × activity preservation**. Helio's **proprietary extraction and preparation process** delivers **systematic improvements** across these four plus endotoxin control, batch consistency and traceability — directly determining finished-formula stability and performance.

Quality Dimension	Conventional Preparation	Helio Proprietary Process
Source Tissue	Mixed tissues; variable DNA integrity	Salmon milt only — DNA-rich, highest-integrity tissue
MW Control	Broad fragment distribution; batch variance	Fragment window precisely controlled to the cosmetic sweet-spot; narrow, batch-consistent
Purity & Residuals	Elevated residual protein / impurities	Purity 99%+, low residual protein, UV 260/280 approx. 1.9
Activity Preservation	Harsh processes damage DNA structure	Gentle extraction preserving DNA integrity & bioactivity

Endotoxin / Micro.	Inconsistent control	Strict control; data available on request
Batch Consistency	High batch-to-batch variance	GMP standardization + in-process QC; consistent, scalable
Traceability	Unclear origin	Single named, traceable source + full production records

Detailed process parameters can be discussed under a mutual NDA.

03 Production & Quality Control

Scaled · Standardized · Fully QC'd

Helio manufactures under an **ISO 22716 cosmetic GMP system**, supporting evaluation samples through commercial supply with a standard 15-day lead time; delivery plans are confirmed by project. Full analytical QC (HPLC assay / MW, endotoxin, microbiology, ICP heavy metals). **Each batch ships with a COA, independently re-tested by a third party**, with full raw-material-to-product traceability.

Scaled production equipment · reliable & scalable

ISO 22716 GMP cleanroom operation

- **ISO 22716 cosmetic GMP** standardized production system
- **Standard 15-day lead time**, with delivery plans confirmed by project
- **Full analytical QC** (HPLC / endotoxin / microbiology / heavy metals) + per-batch COA + independent third-party re-test
- **End-to-end traceability**, single named source

04 Specifications

INCI Name	Sodium DNA (CAS 68938-01-2)
Source	Salmon milt · wild-caught, origin North Pacific
Purity (Assay)	>=99% (measured 99.35%)
Molecular Weight	<=1000 kDa
UV 260/280	1.8-2.0 (measured 1.9)
Form	Solution (primary) / off-white powder
pH (1% aqueous)	5.0-9.0 (measured 6.2)
Loss on Drying	<=20% (measured 7.1%)

Microbiology / Heavy Metals	All compliant (see COA)
Shelf Life	36 months

05 Compliance & Certifications

- **ISO 22716** cosmetic GMP — standardized, scaled production
- **Independent third-party re-tested COA** (verifiable, not self-issued) · per-batch COA
- **Salmon-origin traceability** — wild salmon milt (origin North Pacific), import cleared by China entry-exit inspection & quarantine; fish-derived (non-BSE/TSE species)
- **China IECIC listed** (Used Cosmetic Ingredient Inventory, No. 383, Sodium DNA)

Full documentation available: per-batch COA / TDS / GHS SDS / stability data / Certificate of Origin / animal-origin & BSE-TSE-free statement.

06 Mechanism of Action

PDRN binds the adenosine A2A receptor, triggering multiple pathways

- **Anti-inflammatory / soothing** — A2A activation raises cAMP -> PKA -> CREB, driving anti-inflammatory cytokines (e.g. IL-10); blocks NF-kB, suppressing IL-1 / IL-6 / IL-12 / TNF-alpha.
- **Growth factors** — stimulates fibroblast secretion of EGF / FGF / IGF, remodeling the damaged-skin microenvironment.
- **Collagen synthesis** — promotes fibroblast beta-catenin nuclear translocation and CTGF expression.
- **Microcirculation** — induces VEGF (via HIF-1), improving local circulation and nutrient supply.
- **Melanin inhibition** — down-regulates MITF and tyrosinase via the cAMP/PKA pathway (brightening).
- **Salvage pathway** — recycles nucleotides, accelerating cellular DNA synthesis and skin renewal.
- **Antioxidant** — potent radical scavenging: at 1.2 mg/mL, hydroxyl-radical scavenging reaches **81.8%** (vs ~26.4% for Vitamin E at equal concentration).

07 Four Core Repair Capabilities

Full-chain skin-barrier repair

1. Soothe & calm — break the sensitivity cycle

Suppresses inflammatory cytokines; relieves redness, stinging, burning and itching stress at the source.

2. Activate cells — repair damaged tissue

Activates fibroblasts and keratinocytes; promotes epidermal/dermal repair and barrier rebuilding.

3. Supply building blocks — rebuild the barrier

Serves as raw material for cellular nucleic-acid synthesis, shortening the barrier-repair cycle.

4. Optimize the microenvironment — lasting stability

Improves microcirculation and tolerance; adds brightening and anti-aging for long-term stability.

08 Stability Studies

- **Thermal** — 0.5% aqueous, 60C/8h: no change in pH, transmittance, viscosity; 80C/8h: pH & transmittance unchanged, viscosity slightly reduced (stable within 6h).
- **Photostability** — 0.5% aqueous, 4500 LX / 40C / 10 days: good photostability.
- **pH stability** — clear and stable across pH 3.0-11.0.

Note: avoid prolonged high-temperature heating in formulation.

09 Scientific Evidence

20+ high-impact-factor references · IF up to 10.6

Efficacy Axis	Key Reference (Author · Year)	Journal	IF
Brightening	Choi et al. (2020) — inhibits MMP-1 & melanin; mitochondrial biogenesis	J Invest Dermatol	**7.56**
Brightening (review)	Nguyen et al. (2025) — systematic review, brightening in aesthetic derm.	The Aesthetics	**3.22**
Anti-aging	Park et al. (2024) — protects SIRT1 vs autophagy; anti-photoaging	PLOS ONE	**3.75**
Skin repair	Thellung et al. (2025) — accelerates impaired skin wound healing	J Dermatol Sci	**4.52**
Anti-inflammatory	Chen et al. (2025) — regulates macrophage M1/M2 polarization	Front Immunol	**8.79**
Regeneration	Kim et al. (2025) — tissue engineering & regeneration review	Acta Biomaterialia	**10.63**
Concept / mechanism	Marques et al. (2025) — PDRN & polynucleotide framework	Biomolecules	**6.06**
Dermatology	Raffoul et al. (2025) — PN vs PDRN molecular mechanisms	Biomolecules	**6.06**
Pharmacology	Squadrito et al. (2017) — pharmacological activity & clinical use	Front Pharmacol	**5.99**

Technical buyers value evidence — a full PDRN literature & clinical dossier is available for R&D; evaluation.

10 Applications & Formulation

Serums / ampoules: solution form adds easily

Texture: gentle, compatible across categories

Suitable for: serums · ampoules · masks · lotions/creams · eye care · post-procedure / functional skincare. **Directions:** barrier repair, soothing, hydration, brightening, early anti-aging.

Finished-product consumer claims are the brand's responsibility per its market regulations.

11 Formulation Guide

- Recommended pH 5.5-6.5; solution form adds directly; avoid prolonged high heat.
- Compatibility: avoid direct strong combination with high-concentration L-ascorbic acid / AHA / BHA / retinol / high alcohol.
- Use level: gradient-evaluate against formulation goals and cost (formulation guidance & samples available).

12 Why Helio

Dimension	Helio Advantage
Proprietary process	Milt-only sourcing + precise MW control + gentle activity preservation — multi-dimensionally superior to conventional prep
GMP manufacturing	ISO 22716 + full QC; supports reliable project-based delivery
Purity / spec	99% grade, controlled MW, spec on par with premium suppliers
Trust	ISO 22716 + independent third-party COA + salmon-origin traceability + China IECIC listed
MOQ / lead time	MOQ from 1 kg, 15-day lead time — low-risk trial
Value	High purity + competitive pricing to optimize formulation cost
Proven	Existing clients placing repeat bulk orders

13 Contact

- **MOQ** 1 kg · **Lead time** 15 days · Samples: shipped upon confirmed use, with full documentation
- Quotes / samples / partnership **Email**: carefulconsideration0@gmail.com · **Phone / WeChat**: +86 131 6106 5552
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14 Compliance Statement

This brochure covers Helio PDRN **cosmetic grade** (INCI: Sodium DNA), for external cosmetic formulation use; injectable / medical grade is a separate product line (inquire separately). Finished-product consumer claims are the responsibility of the brand per applicable market regulations. Images are illustrative.