

# A rising star in Aesthetic Field

# PDRN Polydeoxyribonucleotide

# Anti-aging & Repair

<u>PDRN (polydeoxyribonucleotide)</u> is a mixture of deoxyribonucleotides derived from a controlled purification process of Salmon Trout or Chum Salmon sperm DNA which makes sure its safety and stability. PDRN activates the adenosine  $A_{2A}$  receptors and generates nucleotides that can contribute to DNA formation, thus having a tissue repairing, wound healing and anti-aging effect. Therefore, it is widely used in mesotherapy & dermal fillers.

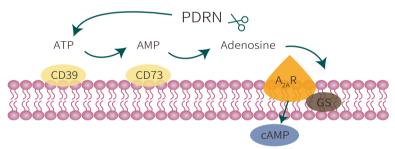
## Mechanism of Action

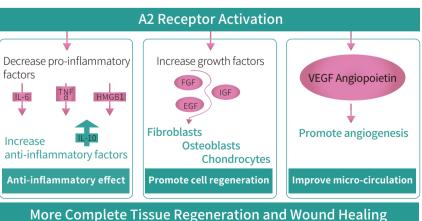
### 1. Activation of adenosine A<sub>2A</sub> Receptor

Adenosine activates four distinct adenosine receptors indicated as  $A_1,\,A_{2A},\,A_{2B},\,$  and  $A_3.$  The  $A_{2A}$  receptor plays a central role in modulating inflammation, oxygen consumption, ischemia, cell growth, and angiogenesis. PDRN is able to generate active deoxyribonucleotides, nucleosides, and bases exerting their pharmacological effects and activating the  $A_{2A}$  receptor. PDRN interacting with the  $A_{2A}$  receptor provides a more complete tissue regeneration and wound healing effect.

#### 2. DNA synthesis savage pathway:

Cell growth was accompanied by internalization of PDRN-derived nucleotides to offer purine and pyrimidine rings for the "salvage pathway." In fact, damaged or hypoxic tissue very often cannot undergo to the DNA "de novo" synthesis. Under these conditions, salvage pathways operate to recover bases and nucleosides generated from the breakdown of DNA and RNA. The salvaged bases can be then transformed into nucleotides and reincorporated into DNA. PDRN generates nucleotides and nucleosides that can contribute to DNA formation, offering a faster tissue regeneration and wound healing effect.





Pyrimidine Purine

Faster Tissue Regeneration and Wound Healing

Salvage Pathway

**Pyrimidine** 

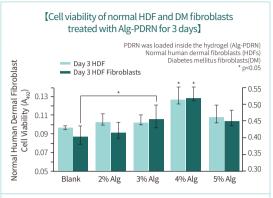
**Purine** 

**DNase** 

## Efficacy experiments

## [Anti-aging]

· Cell regeneration



Test shows: PDRN promotes the growth of human dermal

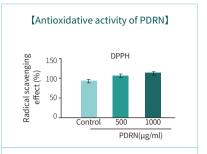
#### · Collagen regeneration

[Effect of polydeoxyribonucleotides (PDRN) on the incorporation of [³H]-proline into the proteins secreted by cultured fibroblasts]

250
200
150
150
100
Control PDRN (80μg/ml) DNAase digested

Proline is one of the most highly represented amino acids in collagens. The cells cultured in the presence of PDRN enhance collagen synthesis and secretion into the medium.

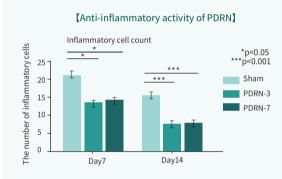
#### · Anti-Oxidation



Antioxidative activity was assessed by DPPH assay. PDRN showed antioxidant activities in a dose-dependent manner, and those activities can suppress cellular oxidative stress in skin cells.

### [Repair]

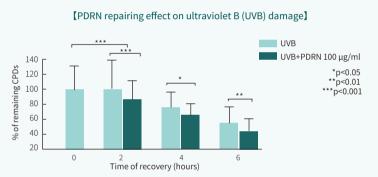
#### · Anti-inflammation



PDRN can effectively decrease the inflammatory cell counts, indicating its anti-inflammatory effect.

#### · Repair of ultraviolet B (UVB) damage

PDRN (80µg/ml)



Cyclobutane pyrimidine dimers(CPD) is a typical indicator of UVB damage. PDRN can effectively reduce CPD percentage, proving its repairing effect on UVB damage.

#### · Wound Healing



In the in vitro scratch assay, a significant increase in percentage of wound closure was observed in the PDRN group compared with either the control group or the IL-1 $\beta$  group, suggesting PDRN repairing effect on wound healing.

# Product Information

Product name: Polydeoxyribonucleotide(PDRN)

**INCI Name:** Sodium DNA

Recommended usage: 0.5%-2%

Applications: Mesotherapy and dermal-fillers

REF:Da YS et al. Scientific Reports, 2020, 10(1).
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