



***Porphyridium cruentum* Biotechnological Exopolysaccharide as a Novel Hyaluronic Acid and PDRN Alternative**

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BACKGROUND INFORMATION

Marine microalga *Porphyridium cruentum*, thriving in harsh intertidal / spray zones, produces a complex sulfated exopolysaccharide (EPS). This EPS is a key part of the alga's adaptive survival mechanisms, forming a protective matrix around the alga, and possesses documented biological benefits. Blue biotechnology enables its fully traceable and sustainable cultivation in optimal conditions.

Hyaluronic acid's (HA) skin structure and hydration benefits diminish with aging – and replacement options are limited. Topical HA application is not reliably effective, and can require blending multiple costly materials; injected HA carries expense, inconvenience, discomfort, and possible side effects.

WHAT IS THE COMPANY INTRODUCING TO THE MARKET/INDUSTRY?

We demonstrate the benefits of this microalgal extract as a safe and highly effective HA-like active. *In vitro*, the extract significantly promoted autophagic flux, reduced inflammation, increased the production of native HA and procollagen I, and was shown to contain polydeoxyribonucleotides (PDRN) and activate the A2A receptor, a PDRN target. Clinically, the extract showed strong HA-like benefits in skin plumpness, hydration, and radiance, and significantly reduced signs of aging (wrinkles, skin roughness, visible spots). In many cases, the effects were significant after a single application (assessed at 1h and/or 24h), and the extract reliably matched or exceeded a 2-grade HA benchmark.

HOW WILL THIS NEW PRODUCT/SERVICE IMPACT THE INDUSTRY (BENEFITS)?

Our results show that this microalgal extract's rapid and strong HA-like benefits, indicating its potential for use in cosmetic formulations as a safe, natural, arguably superior blue-biotechnological HA alternative. This extract addresses key HA-related industry needs, offering a solution that is cost-effective, safe, stable, natural, fully traceable, sustainable, and delivers enhanced efficacy – and avoids the drawbacks of topical or injected HA. The product is a good fit for the current blue biotech, PDRN, and HA sweetheart trends. Its rapid action and formulation compatibility will enable innovative, high-performance products, meeting consumer demand for natural, effective solutions.