

Transdermal Delivery of NAD⁺, Glutathione, and Peptides via Iontophoresis

The Regenerage Longevity Patch System for Regenerative, Antioxidant, and Mitochondrial Optimization

Systemic depletion of molecules like NAD⁺ and Glutathione is increasingly recognized as a driving factor in aging, inflammation, chronic fatigue, and impaired cellular repair. While demand for replenishment therapies has grown, traditional delivery routes such as oral supplementation and intravenous infusion face significant limitations.

Regenerage Longevity Patch offers a clinical solution through its iontophoresis-based transdermal patch system. Each 12-hour patch uses a low-level electrical current to deliver bioavailable NAD⁺, Glutathione, and select peptides directly into the bloodstream. The platform allows for sustained delivery without injections, digestive degradation, or the time burden of IV infusions.

Limitations of Traditional Delivery Methods

Oral NAD⁺ and Glutathione Precursors

Compounds such as NMN, NR, and reduced glutathione are limited by poor bioavailability due to degradation in the gastrointestinal tract and hepatic first-pass metabolism. Clinical responses are variable and often insufficient in individuals with compromised metabolism or high oxidative burden.

Intravenous Delivery

IV infusions bypass metabolism but require trained personnel, in-clinic appointments, and extended administration times. NAD⁺ infusions frequently cause adverse reactions such as flushing, nausea, and chest tightness. Glutathione IVs, while better tolerated, are not practical for long-term or frequent use.

Iontophoresis: Mechanism of Action

Iontophoresis is a non-invasive method that uses a mild electrical current to drive charged molecules across the skin barrier and into systemic circulation. The process involves three synergistic mechanisms:

- **Electromigration:** Direct movement of ionized molecules such as NAD⁺ and Glutathione along the electric field gradient.
- **Electroosmosis:** Bulk solvent flow enhances transport of both neutral and charged solutes.
- **Increased skin permeability:** The current temporarily modifies the lipid matrix of the stratum corneum, enhancing passive diffusion.

This combination allows for clinically relevant transdermal absorption of hydrophilic, water-soluble compounds over an extended time window.

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Key Advantages of Regenerage Longevity Patch

- **Direct-to-bloodstream delivery**

Regenerage Longevity Patch enables active compounds such as NAD⁺, Glutathione, and therapeutic peptides to enter systemic circulation by bypassing the gastrointestinal tract and the liver. This preserves molecular integrity and avoids the enzymatic breakdown that limits the effectiveness of oral supplements. The result is consistent and efficient delivery of bioactive compounds at clinically meaningful levels.

- **Needle-free administration**

The system eliminates the need for injections, infusions, or invasive devices. Patients apply the patch directly to the skin, allowing for complete therapeutic absorption without pain, risk of infection, or procedural preparation.

- **Enhanced tolerability and steady-state delivery**

Regenerage Longevity Patch delivers each active ingredient gradually over a 12-hour window. This avoids the rapid plasma concentration spikes that are often responsible for the flushing, nausea, and anxiety associated with intravenous NAD⁺ therapy. By maintaining a stable pharmacokinetic profile, Regenerage Longevity Patch maximizes therapeutic benefit while minimizing unwanted side effects.

- **Convenient at-home application**

Patients can administer each patch on their own, without needing to travel to a clinic or arrange for procedural care. This greatly increases access to regenerative and mitochondrial therapies, especially for individuals managing long-term recovery, detoxification, or performance protocols. The convenience of at-home use supports better adherence and broader program compliance.

- **Designed for provider-guided treatment plans**

Regenerage Longevity Patch was created to function as a tool within clinician-directed protocols. It allows providers to manage dosage, frequency, and compound selection while giving patients the flexibility to administer therapy independently.

- **Synergistic multi-compound formulations**

By combining NAD⁺ with bioactive peptides such as BPC-157 or KPV, or with master antioxidants such as Glutathione, Regenerage Longevity Patch formulations are capable of engaging multiple biological pathways simultaneously. These combinations allow for targeted support of mitochondrial function, inflammatory regulation, tissue repair, and detoxification.

- **Flexible integration into clinical practice**

The Regenerage Longevity Patch platform requires no infrastructure, no refrigeration, and no specialized handling. It fits easily into any clinic's toolkit, whether used as part of a regenerative protocol, a neuroimmune recovery plan, or a longevity-focused wellness program. Its simplicity and reliability allow providers to scale advanced therapies without adding operational burden.

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Product Line: 12-Hour Therapeutic Patches

Each kit includes 6 single-use patches designed for continuous 12-hour transdermal application.

Product Name	Composition	Per Patch Content	Clinical Focus
NAD ⁺ 1300 Kit	NAD ⁺ only	1300 mg NAD ⁺	Mitochondrial support, energy, cognition
NAD ⁺ + BPC-157 Kit	NAD ⁺ + BPC-157	250 mg NAD ⁺ + 2000 mcg BPC-157	Musculoskeletal recovery, gut lining, angiogenesis
NAD ⁺ + KPV Kit	NAD ⁺ + KPV	250 mg NAD ⁺ + 10 mg KPV	Immune modulation, inflammation, neuroimmune regulation
Glutathione Kit	Reduced Glutathione	500 mg Glutathione	Detoxification, antioxidant defense, liver health, redox balance

Comparative Delivery Overview

Parameter	Oral NAD ⁺ /GSH	IV NAD ⁺ /GSH	Regenerage Longevity Patch Iontophoresis
Bioavailability	Low and variable	High	High
Onset Time	Delayed	Rapid	Moderate
Administration Time	Immediate	1–4 hours	12 hours (passive wear)
Tolerability	High	Variable	High
Procedure Requirement	None	Clinical setting	None
Delivery Consistency	Unpredictable	Pulsatile	Steady-state

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Mechanistic Synergy of Core Formulations

NAD⁺ + BPC-157

Supports cellular energy production while promoting endothelial stability, fibroblast recruitment, and regenerative signaling in connective tissue and gut mucosa.

NAD⁺ + KPV

Combines redox-driven mitochondrial enhancement with melanocortin-mediated cytokine suppression. Especially useful in chronic inflammatory conditions or neuroimmune dysregulation.

Glutathione

Acts as the body's primary intracellular antioxidant and cofactor for detoxification enzymes. Transdermal delivery bypasses enzymatic breakdown and supports glutathione-dependent phases of toxin metabolism, immune modulation, and oxidative repair.

Clinical Applications

- Cognitive decline and neurodegeneration
- Chronic fatigue and mitochondrial dysfunction
- Post-viral syndromes and long-haul recovery
- Muscle, tendon, and ligament injury protocols
- Toxin clearance and oxidative stress reduction
- Anti-aging and longevity programs
- Athletic recovery and performance enhancement

Regenerage Longevity Patch delivers next-generation therapeutic access to NAD⁺, Glutathione, and peptides without the constraints of traditional delivery systems. With its 12-hour iontophoresis technology, it enables steady-state systemic exposure, high tolerability, and at-home convenience. Each formulation is designed for clinical integration into regenerative, neurological, metabolic, and performance-focused care.

For clinicians, practices, and white-label partners, Regenerage Longevity Patch represents a scalable and highly differentiated platform that expands the frontiers of non-invasive systemic therapy.