CAIRNS COSMETIC CLINIC

Overview

Nicotinamide adenine dinucleotide (NAD+) is a critical coenzyme involved in mitochondrial energy production, DNA repair, and cellular aging. In clinical and wellness settings, intravenous (IV) and intramuscular (IM) NAD+ therapies are gaining popularity. While promising, human clinical data is still in early stages.

For practitioners already offering Low-Level Laser Therapy (LLLT), understanding how NAD+ integrates into existing mitochondrial and cellular repair protocols may open up expanded treatment options for fatigue, cognitive function, and post-illness recovery.

Core Clinical Applications of NAD+ Therapy

Application	Key Findings	Study
Cognitive enhancement	In a randomized pilot study, 5 days of IV NAD^+ (750 mg/day) led to statistically significant improvements in attention, memory, and processing speed on validated cognitive testing (MicroCog™), exceeding placebo and baseline effects.	Rutherford, G. et al. (2021), *Archives of Physical Medicine and Rehabilitation*, 102(10), e42
Addiction withdrawal	Daily IV NAD+ (750–1000 mg) reduced withdrawal symptoms and improved mental clarity in substance use disorder patients.	Grant et al. (2021), *Substance Abuse: Research and Treatment*, PMCID: PMC9735188
Fatigue and wellbeing	Participants reported improvements in energy, sleep, and mood after NAD+ therapy; however, most data are subjective case reports.	Grant et al. (2021), same as above
Anti-aging / metabolic support	Mechanistic link to SIRT activation, mitochondrial biogenesis, and metabolic resilience. Early trials with precursors show promise, but direct injectable evidence remains sparse.	Yoshino et al. (2018), *Cell Metabolism*, 27(3), 513–528

Mechanisms of Action

- Enhances mitochondrial ATP production via oxidative phosphorylation
- Increases NAD+/NADH ratio to restore redox balance
- Activates SIRT1 pathways involved in DNA repair and cellular longevity

- Supports detoxification and neuroprotection (especially relevant for brain fog and withdrawal)

Clinical Integration with LLLT: A Synergistic Opportunity

Low-Level Laser Therapy (LLLT), particularly in the red/near-infrared spectrum, stimulates cytochrome c oxidase in mitochondria to improve ATP production and reduce oxidative stress. Importantly:

- LLLT has been shown to raise the **NAD+/NADH ratio**
- Both NAD+ therapy and LLLT enhance **mitochondrial bioenergetics**, repair, and resilience

Though no formal human clinical trials have combined NAD+ therapy with LLLT to date, several functional medicine clinics are beginning to apply both therapies in tandem based on overlapping mechanisms and complementary effects. Mechanistic reviews (e.g., Hamblin, 2017) further support the idea of a redox-centred synergy.

When to Combine NAD+ and LLLT

Use cases where the combination may be especially beneficial:

- Chronic fatigue syndrome or persistent low energy
- Post-viral or long-COVID recovery
- Early-stage cognitive decline or burnout
- Detox recovery support
- Treatment-resistant mood or neurological symptoms

Mechanistic synergy: LLLT stimulates cellular energy pathways, while NAD+ provides the coenzyme substrate to sustain and fuel that stimulation.

Evidence & Ongoing Research

NAD+ therapy and its integration with LLLT are based on shared biological mechanisms and preliminary human findings. While larger controlled studies are still needed, early reports and clinical observations suggest improvements in energy, mental clarity, and recovery in some individuals. This approach is best considered investigational but biologically grounded, with growing interest from practitioners exploring safe, supportive options for mitochondrial health.

Safety & Administration

- Generally well-tolerated when infused slowly (e.g., 500–750 mg over 2–4 hours)
- Adverse events (if any) include flushing, nausea, or abdominal discomfort if administered too rapidly

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Clinical Takeaway

NAD+ infusion therapy offers an exciting addition to protocols for cognitive support, fatigue, and neuroregeneration. For clinics already using LLLT, combining the two methods may provide enhanced results for mitochondrial and cellular recovery. As evidence evolves, this synergistic model may become a foundational approach in functional and regenerative medicine.

References

- Rutherford, G., Gadol, A., Broom, K., Olds, J., Mestayer, R., & Mestayer, R. (2021). Intravenous Administration of Nicotinamide Adenine Dinucleotide Improves Cognitive Performance in Human Subjects: Implications for Clinical Populations. *Archives of Physical Medicine and Rehabilitation*, 102(10), e42.
- Grant, J. E., et al. (2021). NAD+ for the Treatment of Substance Use Disorders: A Case Series. *Substance Abuse: Research and Treatment*, 15, 1–8. https://doi.org/10.1177/11782218211051437 (PMCID: PMC9735188)
- Yoshino, J., Baur, J. A., & Imai, S. I. (2018). NAD+ Intermediates: The Biology and Therapeutic Potential of NMN and NR. *Cell Metabolism*, 27(3), 513–528. https://doi.org/10.1016/j.cmet.2018.01.024
- Hamblin, M. R. (2017). Mechanisms and applications of the anti-inflammatory effects of photobiomodulation. *AIMS Biophysics*, 4(3), 337–361. https://doi.org/10.3934/biophy.2017.3.337