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Biophoton Therapy Enhances Endogenous Stem-Cell Production: A Non-Invasive Approach to Regenerative Medicine

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Abstract

Background
Endogenous stem-cell mobilization represents a promising alternative to transplanted stem-cell therapies, which are limited by poor survival, immune incompatibility, and procedural risks. Biophotons—ultra-weak, non-thermal photons generated by biological systems—have been increasingly implicated in mitochondrial regulation, redox signaling, and cellular repair. Whether controlled biophoton exposure can safely stimulate endogenous stem-cell production in humans has not been previously tested in a randomized clinical setting.

Objective
To evaluate whether a non-invasive, non-thermal biophoton generator can increase circulating stem/progenitor cell counts and improve functional health outcomes in adults.

Methods
In a randomized, double-blinded, placebo-controlled clinical trial (FIAM-SC255; NCT06855459), 71 adults underwent 14 days of nighttime exposure to either an active Tesla BioHealing® biophoton generator or a visually identical placebo. Circulating CD34+, CD133+, and CD34+CD133+ stem/progenitor cells were quantified by flow cytometry at baseline and follow-up. Quality-of-life (SF-36) and Pain Disability Index (PDI) scores were assessed concurrently. After the blinded phase, placebo participants crossed over to active treatment. Safety monitoring occurred throughout.

Results
Active biophoton exposure produced significant increases in circulating stem/progenitor cells compared with baseline and placebo, including a 2.7-fold rise in CD34+, 3.5-fold rise in CD133+ (leukocyte population), and 3.1-fold rise in CD34+CD133+ cells (all $p < 0.01$). No significant changes were observed during placebo exposure. SF-36 scores improved by 16–30% following active treatment ($p < 0.05$), and PDI scores decreased by an average of 7.35 points ($p < 0.00001$). Improvements replicated in the crossover cohort. No adverse events occurred.

Conclusion
Non-thermal biophoton therapy safely and robustly enhances endogenous stem-cell mobilization while simultaneously improving pain-related function and overall quality of life. The magnitude of stem-cell elevation is comparable to levels typically achieved through exogenous stem-cell infusion—yet without invasive procedures or safety risks. These findings support biophoton therapy as a clinically meaningful, non-invasive regenerative modality with potential relevance to neurological, metabolic, and age-related conditions.

Keywords: Biophoton Therapy, Endogenous Stem Cells, CD34+, CD133+, Regenerative Medicine, Mitochondrial Signaling, Pain Disability, Quality of Life, Non-invasive Therapy