

ADULT STEM CELL ACTIVATION THROUGH NATURAL INGREDIENTS

An Evidence-Based Approach to Stem Cell Mobilization, Circulation, and Differentiation

By Stemtech

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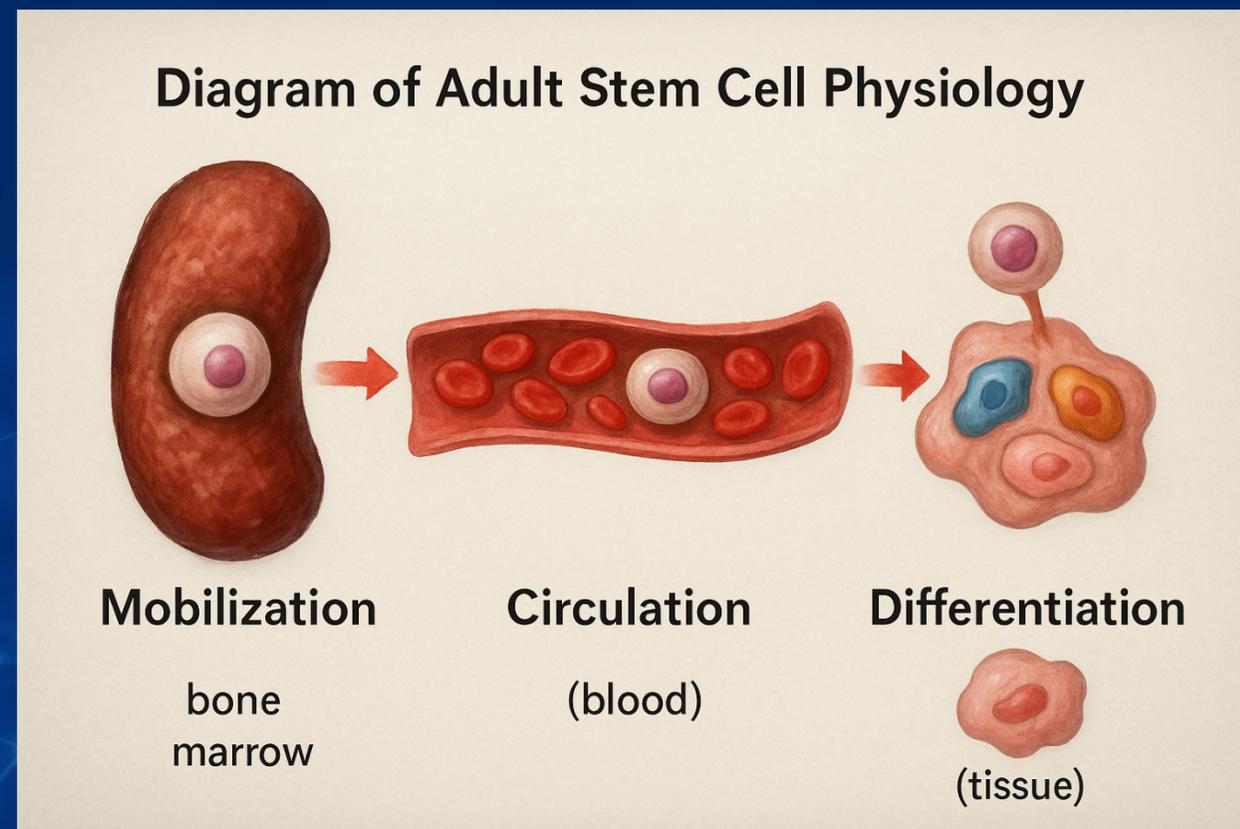
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References

INTRODUCTION

The Role of Adult Stem Cells in Regeneration and Longevity

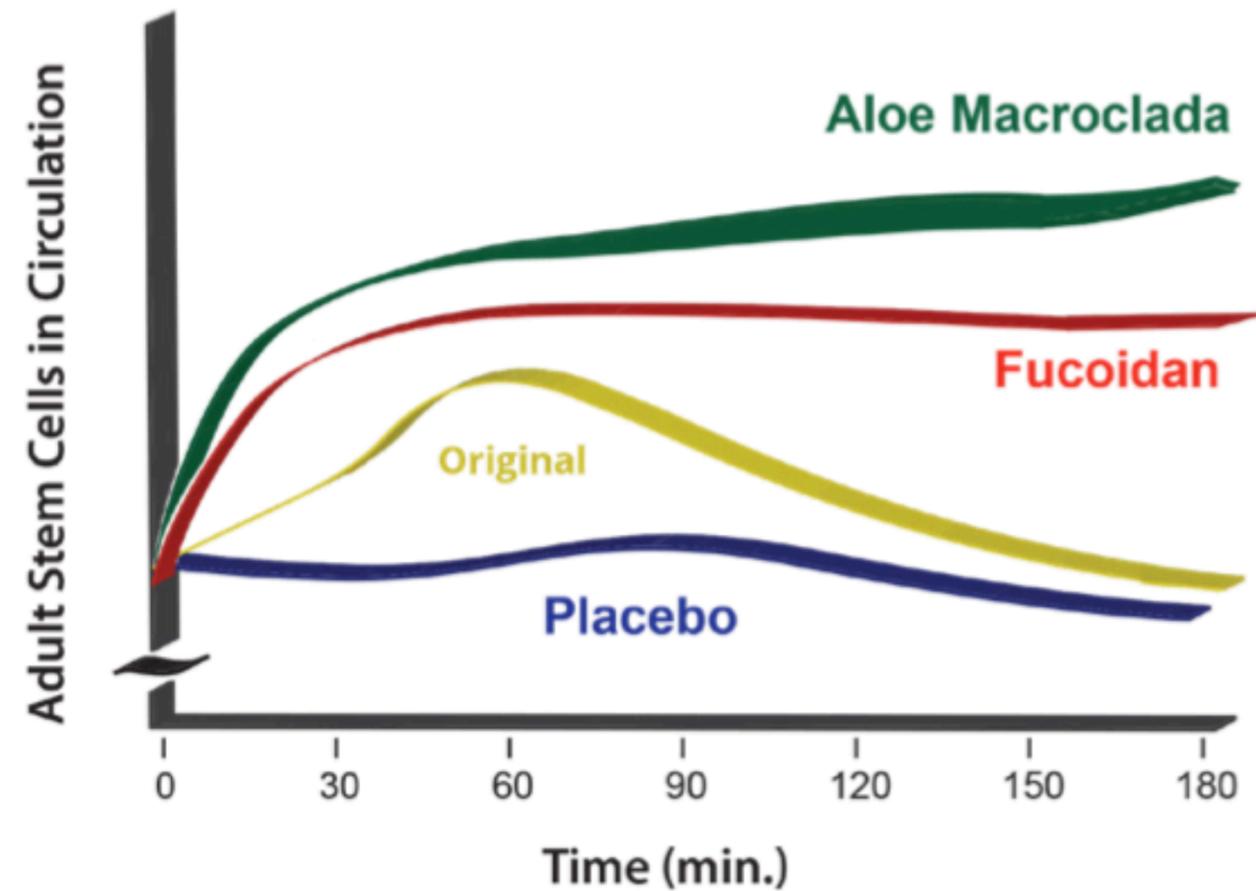
Adult stem cells are essential for tissue repair, immune modulation, and overall cellular health. Their effectiveness depends on three critical phases:



stemrelease3™

MOBILIZATION/ RELEASING PHASE

SR3 optimizes stem cell release through key bioactive compounds



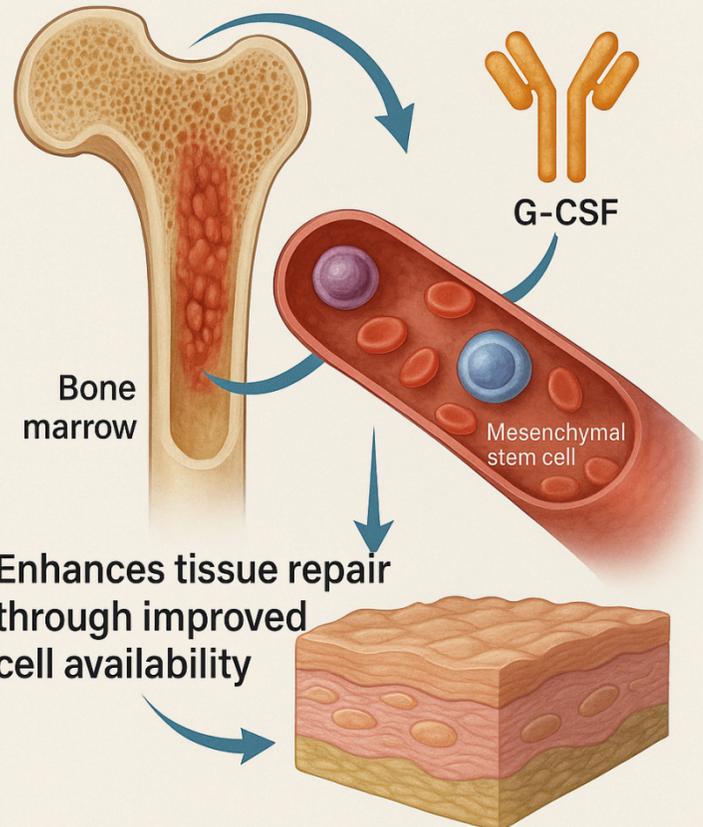
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KEY INGREDIENTS AND MECHANISMS OF ACTION



Aloe Macroclada – Stem Cell Release Enhancer

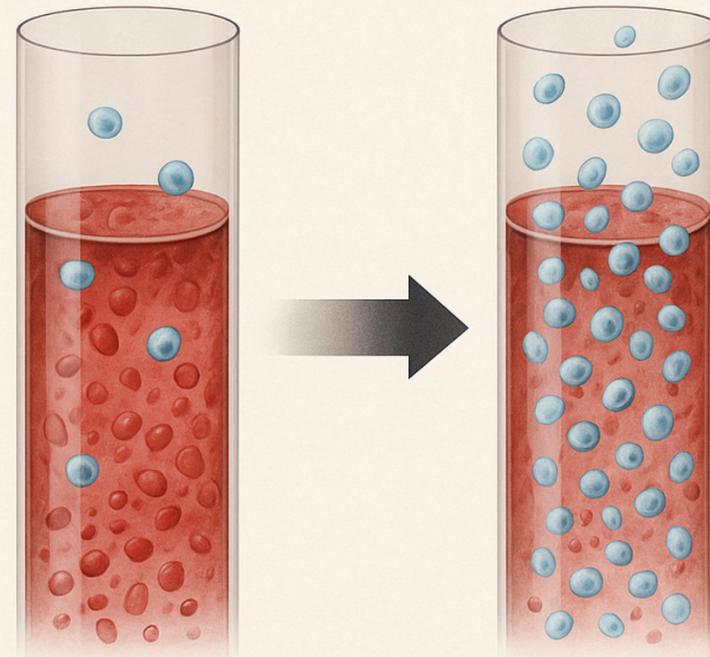
Polysaccharides induce G-CSF expression, prompting the bone marrow to release hematopoietic and mesenchymal stem cells



Comparison of MSCs

Without Stimulation

With Stimulation



Without Stimulation

With Stimulation

Mesenchymal stem cells in circulation are depicted as light blue with darker nuclei and are shown in fewer quantities in the left bar representing “Without Stimulation” as compared to the right bar representing “With Stimulation,” reinforcing

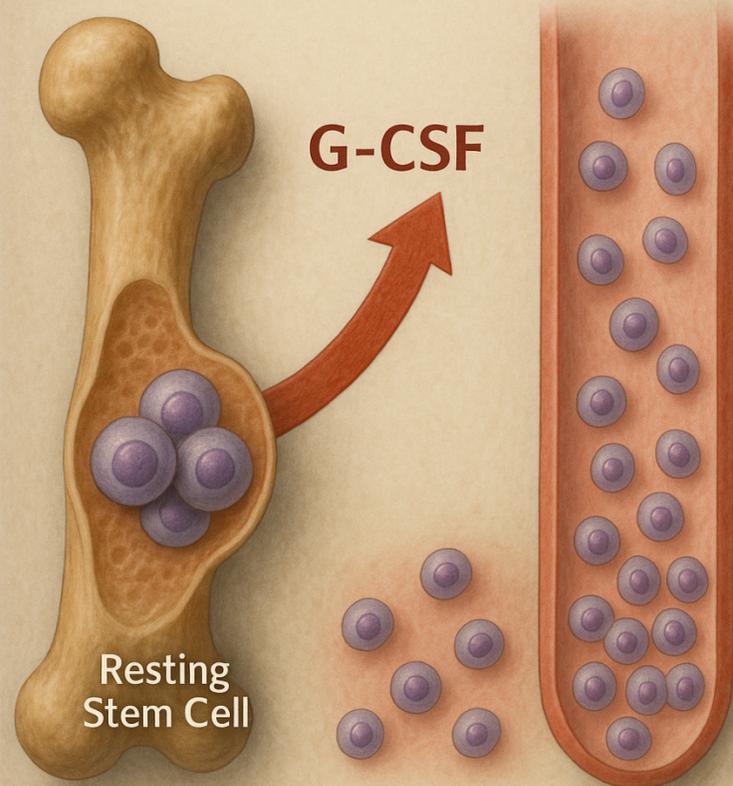
Scientific Evidence:

- Aloe Macroclada increases circulating stem cells by up to 53% within hours of ingestion, promoting rapid regeneration (Drapeau et al., 2015).

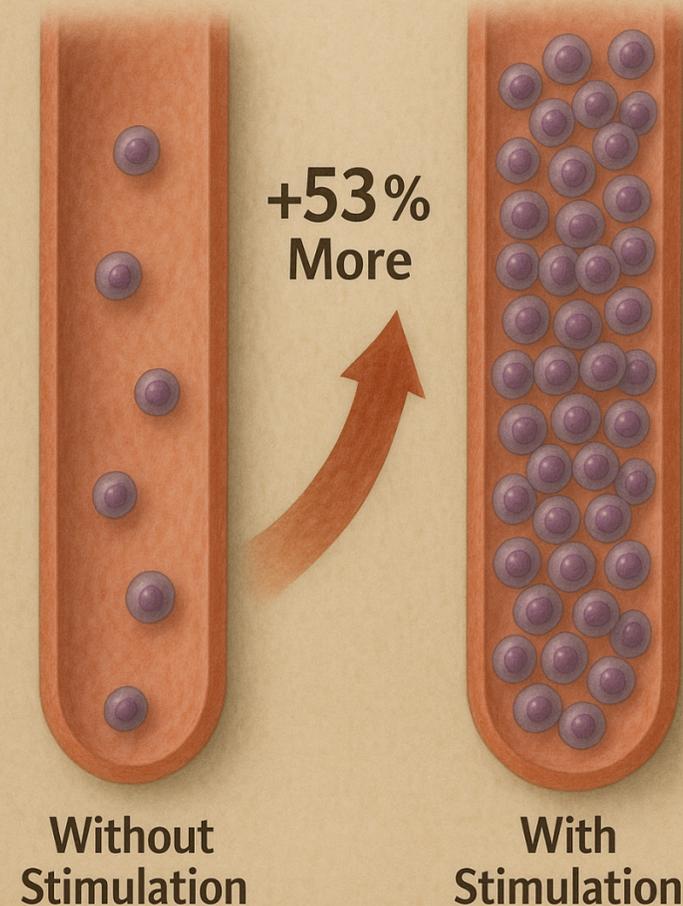
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KEY INGREDIENTS AND MECHANISMS OF ACTION

Illustration of Granulocyte Colony-Stimulating Factor (G-CSF) and Stem Cell mobilization



Comparison of Circulating Mesenchymal Stem Cells



Aloe Macroclada – Stem Cell Release Enhancer

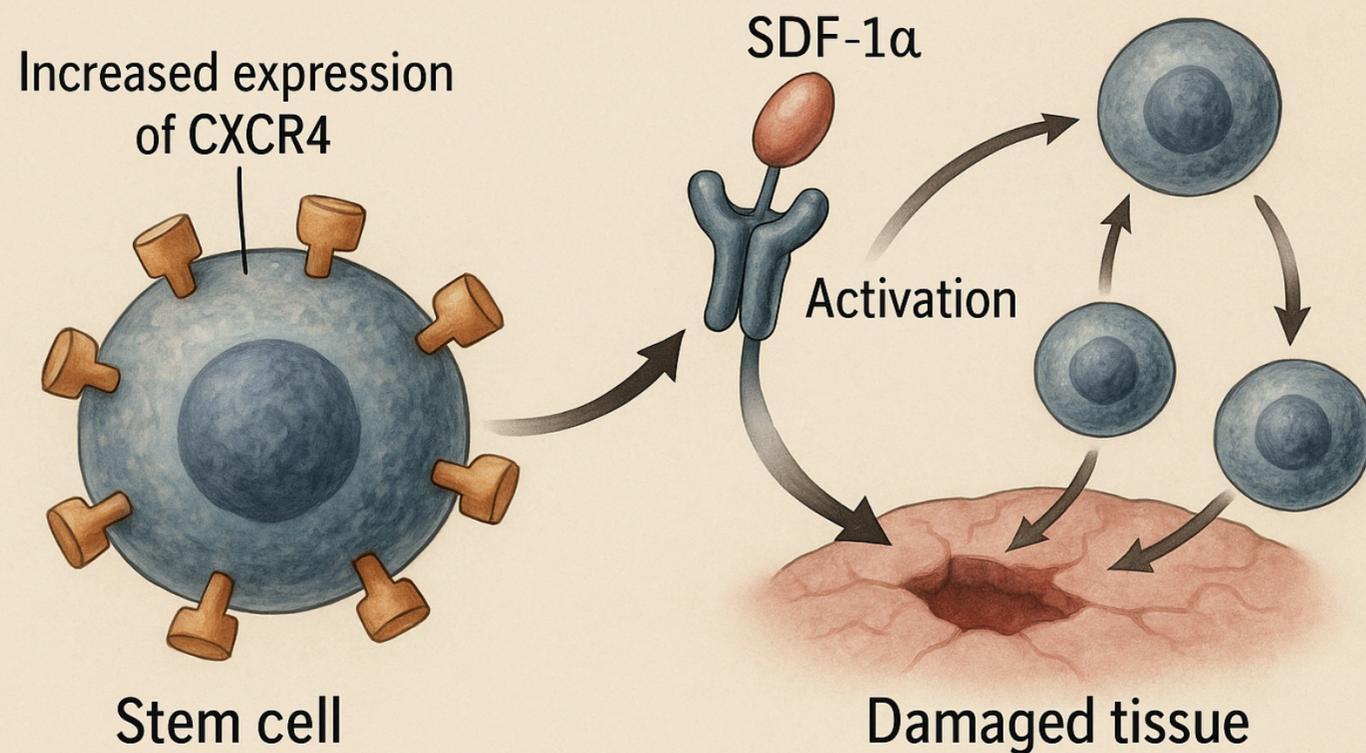
Potential Mechanism of Action:

- Induces G-CSF expression, prompting the bone marrow to release hematopoietic and mesenchymal stem cells.
- Enhances tissue repair through improved cell availability

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KEY INGREDIENTS AND MECHANISMS OF ACTION

Fucoidan Enhances Stem Cell Homing via CXCR4



Fucoidan – Telomeric Protection & Stem Cell Activation

Scientific Evidence:

Fucoidan promotes CXCR4 expression, increasing stem cell homing efficiency. (Mohammad R. et al, Experimental Hematology 35 (2007) 989–994)

Fucoidan, or heparin enhanced the SDF-1α/CXCR4 axis and promoted NSC migration via activation of the PI3K/Akt/FOXO3a signaling pathway (Cui, C. et al, (2016)

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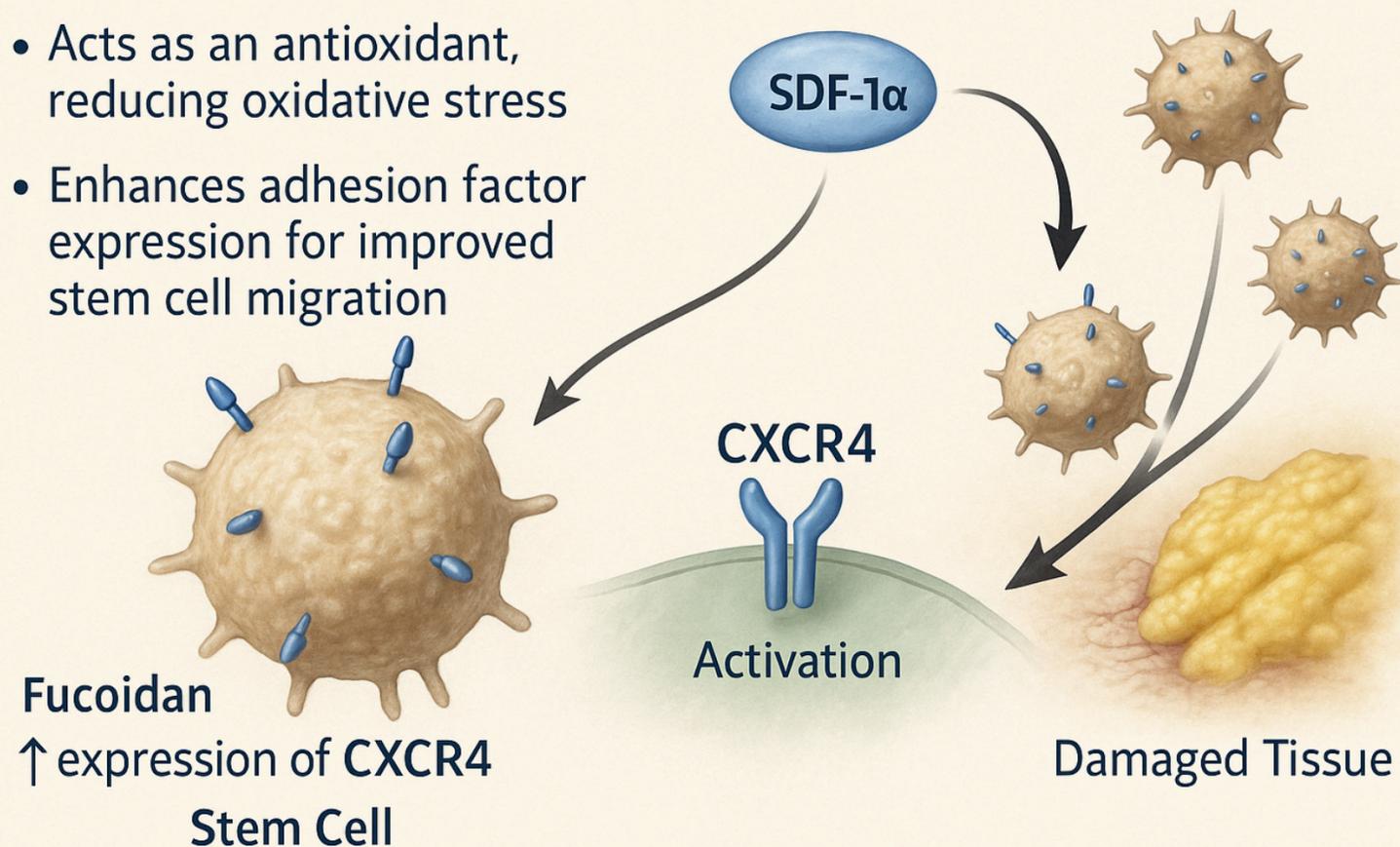
KEY INGREDIENTS AND MECHANISMS OF ACTION



Fucoidan – Telomeric Protection & Stem Cell Activation

Fucoidan Enhances Stem Cell Homing via CXCR4

- Acts as an antioxidant, reducing oxidative stress
- Enhances adhesion factor expression for improved stem cell migration



Potential Mechanism of Action:

- Acts as an antioxidant, reducing oxidative stress.
- Enhances adhesion factor expression for improved stem cell migration.

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KEY INGREDIENTS AND MECHANISMS OF ACTION

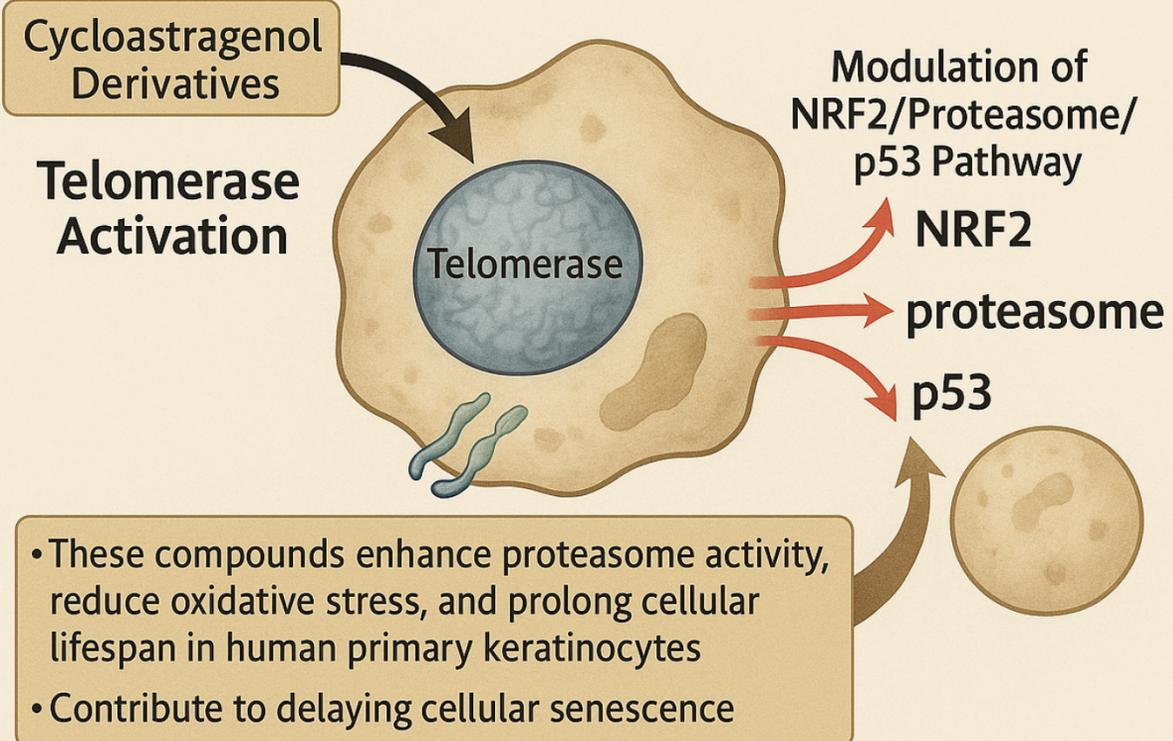


Astragalus – Telomerase Activation & Cellular Longevity

Scientific Evidence:

- **Cicloastragenol, an Astragalus bioactive, boosts telomerase activity, prolonging cellular lifespan (Sinem Yilmaz, Erdal Bedir, Petek Ballar Kirmizibayrak, 2014).**
- **Astragalus improves immune response and stem cell viability (Wang et al., 2016).**

Cycloastragenol Derivatives and Cellular Senescence



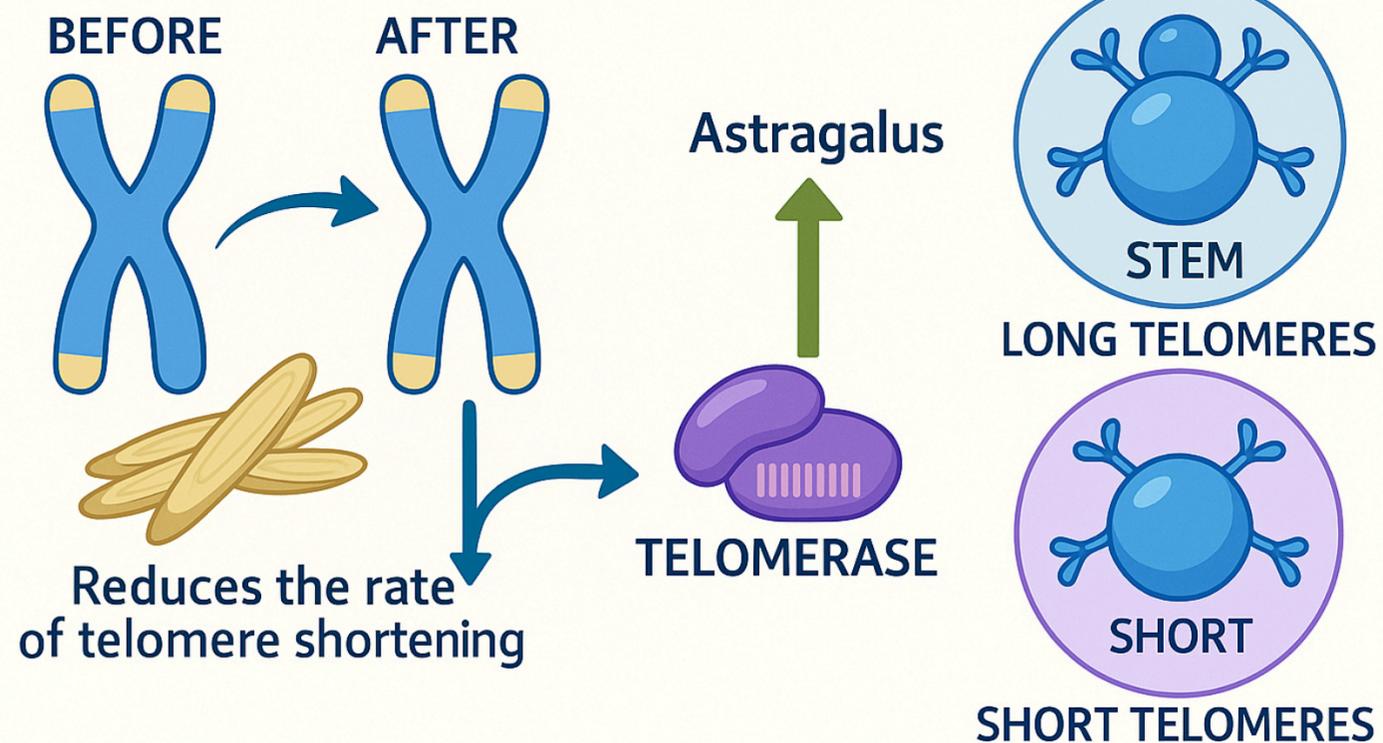
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KEY INGREDIENTS AND MECHANISMS OF ACTION



Astragalus – Telomerase Activation & Cellular Longevity

Astragalus Stimulates Telomerase to Protect Stem Cells



Potential Mechanism of Action:

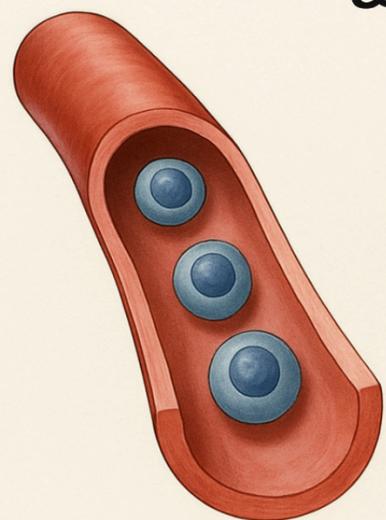
- Stimulates telomerase to prevent stem cell depletion.
- Strengthens mitochondrial function, optimizing cellular repair.

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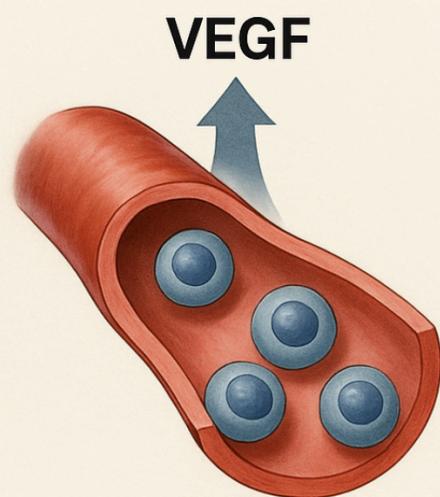
KEY INGREDIENTS AND MECHANISMS OF ACTION

Cordyceps – Stem Cell Proliferation & Vascular Support

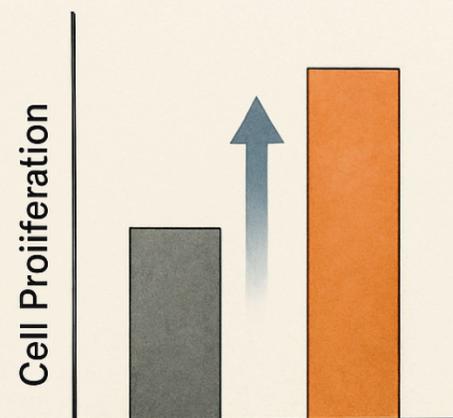
Cordyceps Enhances Stem Cell Proliferation & Vascular Support via VEGF



Stem cells traveling through blood vessels



VEGF promotes blood vessel expansion



VEGF is key in Cordyceps-mediated cell expansion

Scientific Evidence:

- Cordyceps enhances hematopoietic stem cell proliferation, supporting immune function (Lee et al., 2017).
- Increases vascular endothelial growth factor (VEGF) expression, improving stem cell circulation (Chen et al., 2015).

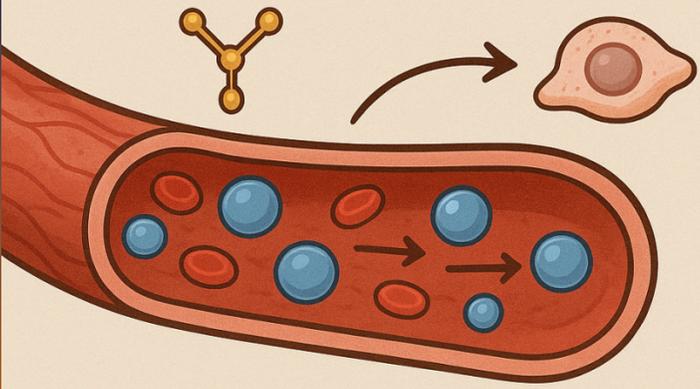
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KEY INGREDIENTS AND MECHANISMS OF ACTION



CORDYCEPS

- Optimizes vascular function for efficient stem cell transport
- Stimulates natural growth factors for tissue-specific differentiation



Cordyceps – Stem Cell Proliferation & Vascular Support

Potential Mechanism of Action:

- Optimizes vascular function for efficient stem cell transport.
- Stimulates natural growth factors for tissue-specific differentiation.

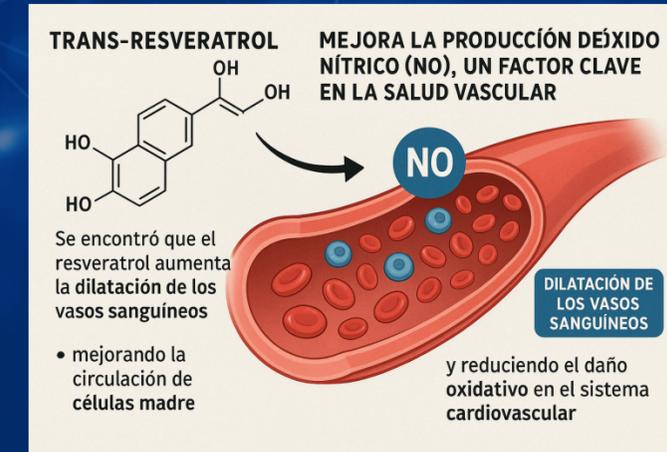
stemflo®

Supporting Stem Cell Circulation

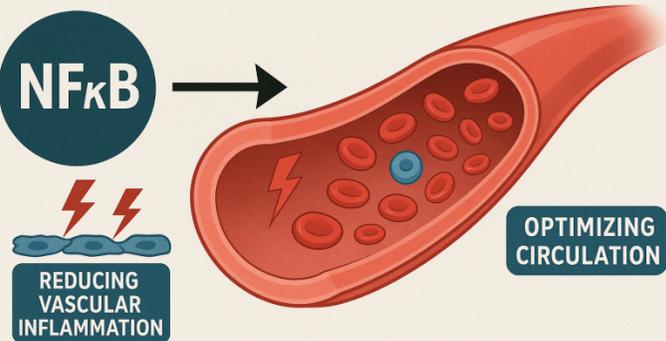
StemFlo enhances the second step of stem cell physiology—circulation—by improving blood flow and reducing oxidative stress.

Trans-Resveratrol – Circulatory Enhancer

- Promotes nitric oxide (NO) production, improving endothelial function.
- Reduces oxidative damage, protecting circulating stem cells from degradation (Sharma et al., 2021).



MODULATES NF- κ B PATHWAYS, REDUCING VASCULAR INFLAMMATION AND OPTIMIZING CIRCULATION

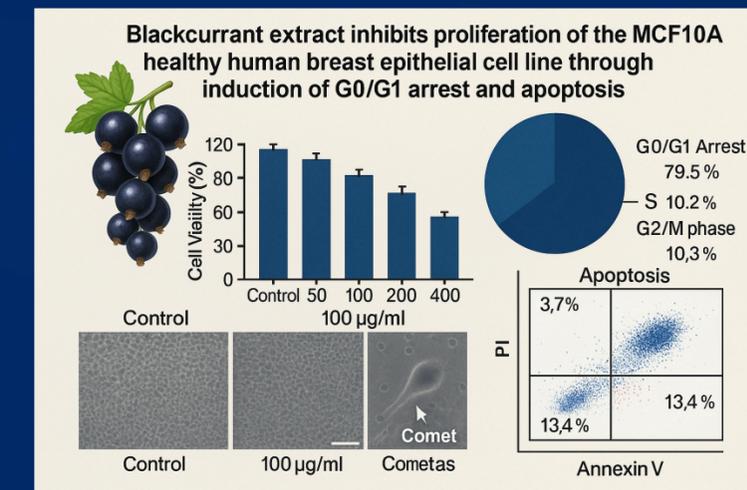


- Modulates NF- κ B pathways, reducing vascular inflammation and optimizing circulation (Jurenka, 2009).
- Increases bioavailability, improving therapeutic effectiveness.

Curcumina (Theracumin) – Anti-Inflammatory Support

Black currant & Amla – Vascular Protection & Antioxidant Defense

- Rich in anthocyanins, protecting endothelial health and supporting microcirculation (Hassimotto et al., 2013).
- Neutralizes free radicals, preventing damage to circulating stem cells.



migrastem[®]

SUPPORTING STEM CELL MIGRATION & DIFFERENTIATION

Migrastem optimizes the final phase—migration & differentiation—by ensuring stem cells successfully integrate into tissues.

Goji Extract – Stem Cell Migration Enhancer

- Boosts CXCR4 expression, improving stem cell homing efficiency (Gupta et al., 2020).
- Supports collagen production, essential for tissue regeneration.

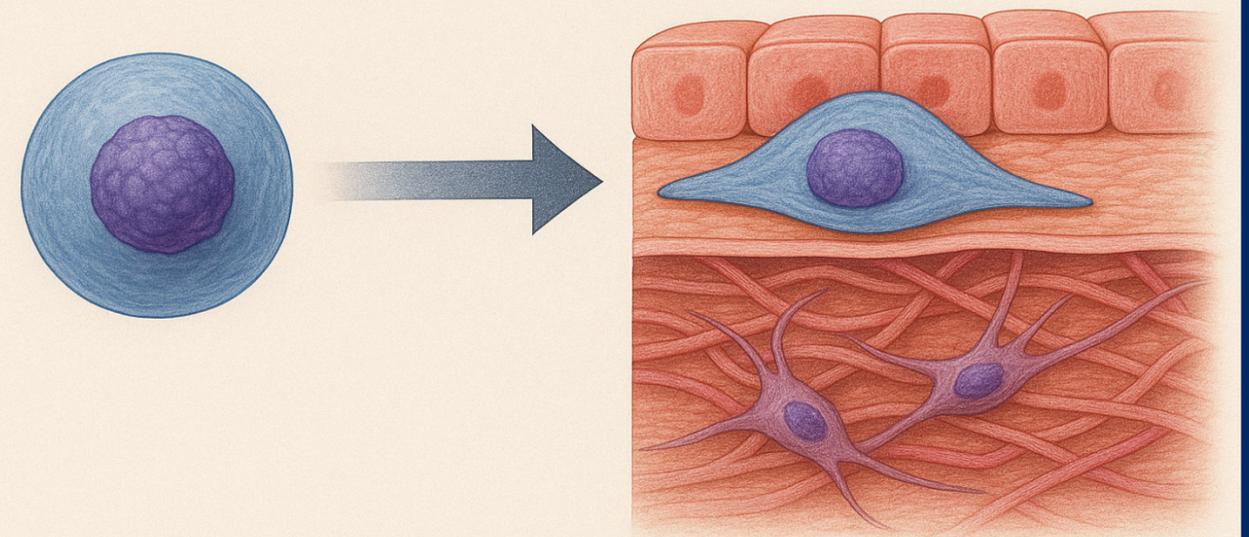
Ganoderma Lucidum – Immune Modulator & Cell Differentiation Support

- Regulates cytokine pathways, enhancing stem cell immunomodulation (Paterson, 2006).
- Promotes mesenchymal stem cell differentiation into connective tissues.

Maca & Bladderwrack – Stem Cell Differentiation Promoters

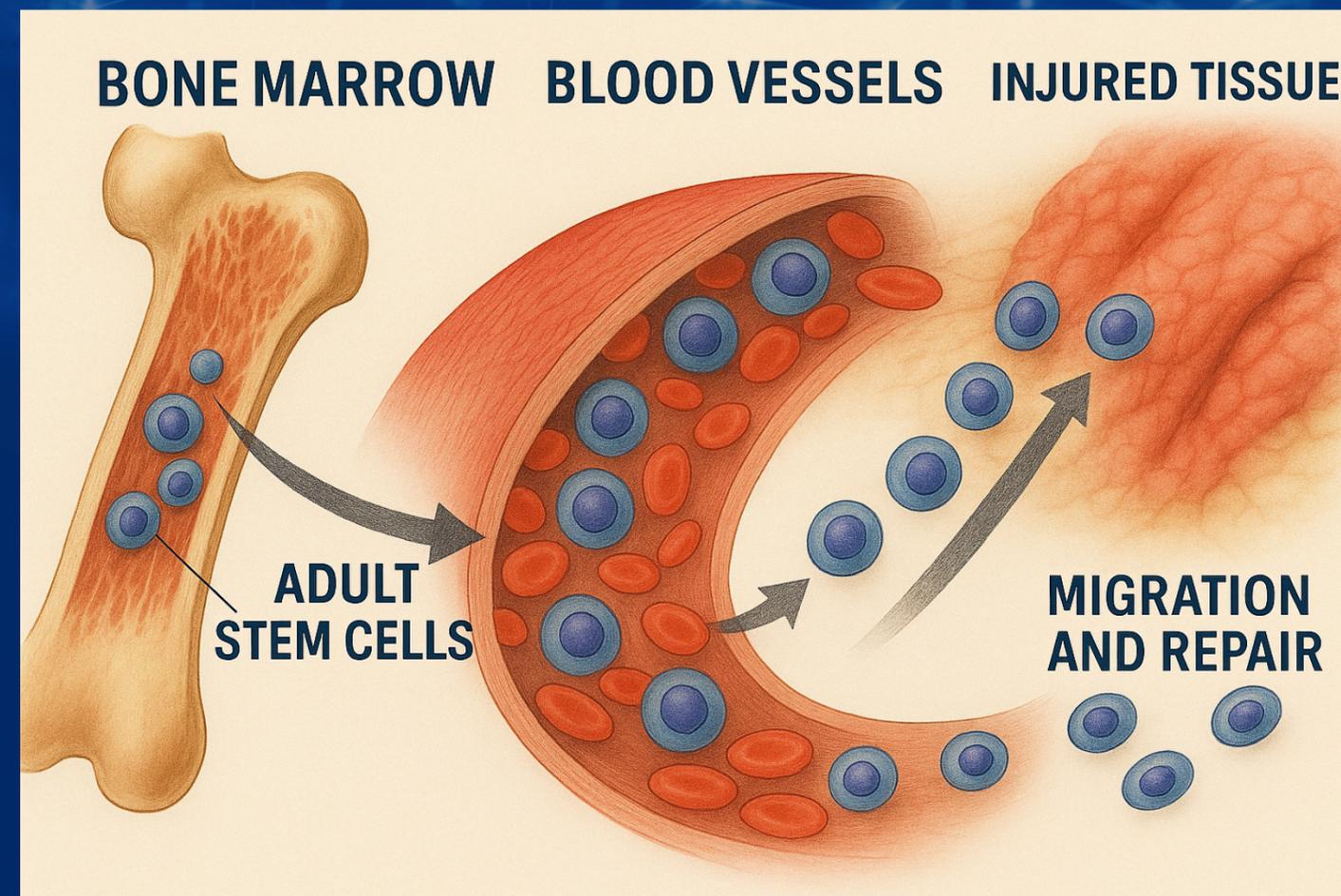
- Rich in essential minerals, supporting targeted stem cell differentiation.
- Facilitates adaptation to physiological stress, optimizing integration efficiency.

MIGRATION & DIFFERENTIATION MESENCHYMAL STEM CELL INTEGRATING INTO SPECIFIC TISSUES



CONCLUSION

- Final scientific validation & positioning





Cuerpo



Title: Stichopus japonicus Polysaccharide, Fucoidan, or Heparin Enhanced the SDF-1 α /CXCR4 Axis and Promoted NSC Migration via Activation of the PI3K/Akt/FOXO3a Signaling Pathway

Authors: Chao Cui, Peng Wang, Ningshan Cui, Shuliang Song, Hao Liang & Aiguo Ji Published in: Cellular and Molecular Neurobiology Date: February 17, 2016

Summary: This study examines how fucoidan, along with other compounds, promotes neural stem cell (NSC) migration via activation of the SDF-1 α /CXCR4 pathway and PI3K/Akt/FOXO3a signaling. Researchers found that fucoidan increases CXCR4 expression, enhancing cellular migration toward damaged tissue areas.

Resveratrol - Nitric Oxide Production
Title: Resveratrol and Endothelial Nitric Oxide
Authors: Ning Xia, Ulrich Förstermann, Huige Li
Published in: Molecules (MDPI) Date: 2014

Summary: This study examines how resveratrol stimulates nitric oxide (NO) production by activating the eNOS enzyme, improving vascular function and reducing oxidative stress. Resveratrol also prevents NO deactivation by free radicals, increasing its bioavailability.
Access: [Full article](#)

Title: Evaluation of Immune Modulation by β -1,3; 1,6 D-Glucan Derived from Ganoderma lucidum in Healthy Adult Volunteers

Authors: Shiu-Nan Chen, Fan-Hua Nan, Ming-Wei Liu, et al. Published in: Foods (MDPI) Date: 2023

Summary: This randomized clinical trial found that Ganoderma lucidum polysaccharides enhance immune function by modulating T-cell proliferation and natural killer (NK) cell activity. Additionally, the study suggests that Ganoderma supports stem cell differentiation into immune and connective tissue cells.

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