

Phytofuse Rejuvenate®

Wound Healing + Anti-Inflammatory + Film-Forming



Tomorrow's Vision... *Today!*®

Phytofuse Rejuvenate®

Technical Information:



Product Code: 16882

INCI Name: Salvia Hispanica Seed Extract

INCI Status: Conforms

Suggested Use Level: 1.0 - 10.0%

Suggested Applications: Wound Healing, Anti-Inflammatory, Film Forming, Moisturizing, Soothing, Antioxidant



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Background



- *Salvia hispanica*, commonly known as chia, is a desert plant native to central and southern Mexico and Guatemala
- Produces several small white and black seeds with a remarkable nutritional profile that surpasses that of any other superfood
- Hydrophilic properties of the *Salvia hispanica* seed produces a unique protective mucilage
 - Allows the seed to retain enough water to germinate and grow in semi-arid regions
- The protective mucilage is rich in polysaccharides with the potential for innovative cosmetic and personal care applications



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Background



- “Chia” is the ancient Mayan word for “strength”
- Skin loses strength and elasticity over time, resulting in fine lines and visible signs of aging
- **Phytofuse Rejuvenate®** harnesses the therapeutic properties of *Salvia hispanica* seed mucilage to naturally strengthen and revitalize the skin
- The Mayans and Aztecs used this now wildly popular superfood in regenerative medicine as a poultice for gunshot wounds to promote healing and reduce inflammation
- Restorative qualities of the seeds are a result of mucilaginous polysaccharide

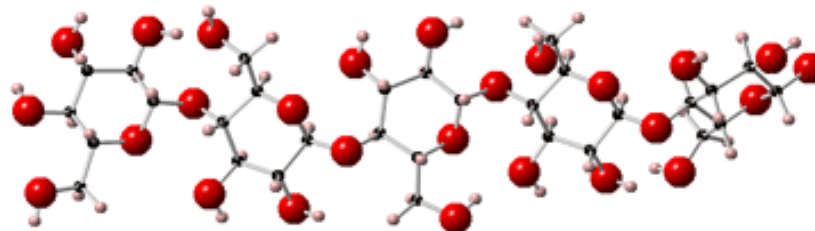


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Polysaccharides



- Polysaccharides are long chain carbohydrates capable of stabilizing biomolecules and assemblages, such as cell wall membranes
- Polysaccharides, such as hyaluronic acid, are sought after for their unparalleled film forming and hydration capacities in cosmetics and personal care formulations
- Additionally, they contribute to the skin's natural ability for repair and renewal
- High molecular weight polysaccharides, such as β -Glucans, have potent immunomodulatory effects that regulate and improve the efficiency of the immune system
 - Exhibit anti-inflammatory effects on the skin



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Skin Repair & Renewal



- Skin is constantly exposed to micro-wounds and abrasion
 - Exposure to the elements (cold weather, wind, UV radiation)
 - Drying surfactants
 - Shaving
- This exposure results in a compromised barrier function
 - Dry, inflamed skin
- **Phytofuse Rejuvenate®**
 - Isolated polysaccharides from the *Salvia hispanica* seed mucilage are bio-transformed into high molecular weight polysaccharides via fermentation
 - **Capable of wound healing and anti-inflammatory benefits**

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Benefits



- ✓ **Anti-inflammatory**
- ✓ **Wound Healing**
- ✓ **Natural Film Former**
- ✓ **Intense Antioxidant**
- ✓ **Pro-Collagen Synthesis**
- ✓ **Improves Barrier Function**
- ✓ **Moisturizing**
- ✓ **Anti-aging**



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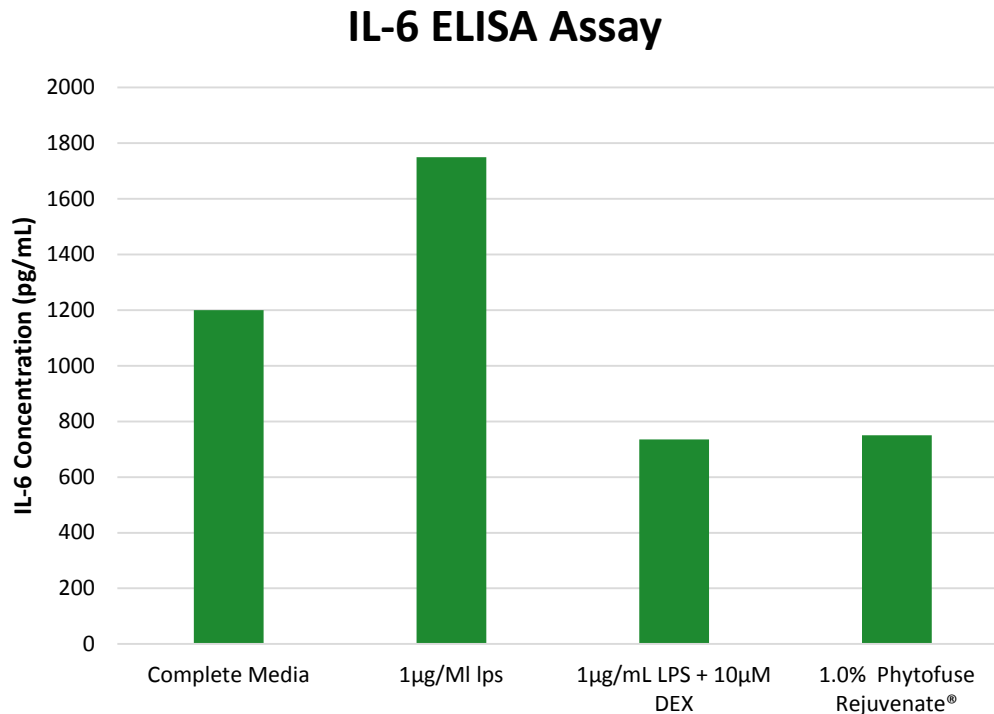


Figure 1. Phytofuse Rejuvenate® treated fibroblasts IL-6 concentrations

Protocol

- Human dermal fibroblasts seeded into 12-well tissue culture plates
- **Phytofuse Rejuvenate®** added to complete DMEM containing 1µg/mL LPS and incubated with fibroblasts for 24 hours
- Concentrations: 1%, 0.1%, 0.01%
- Decrease in IL-6 production indicates a reduced inflammatory environment which could decrease the signs of aging and reduce the formation of fine lines and wrinkles

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Scratch Assay

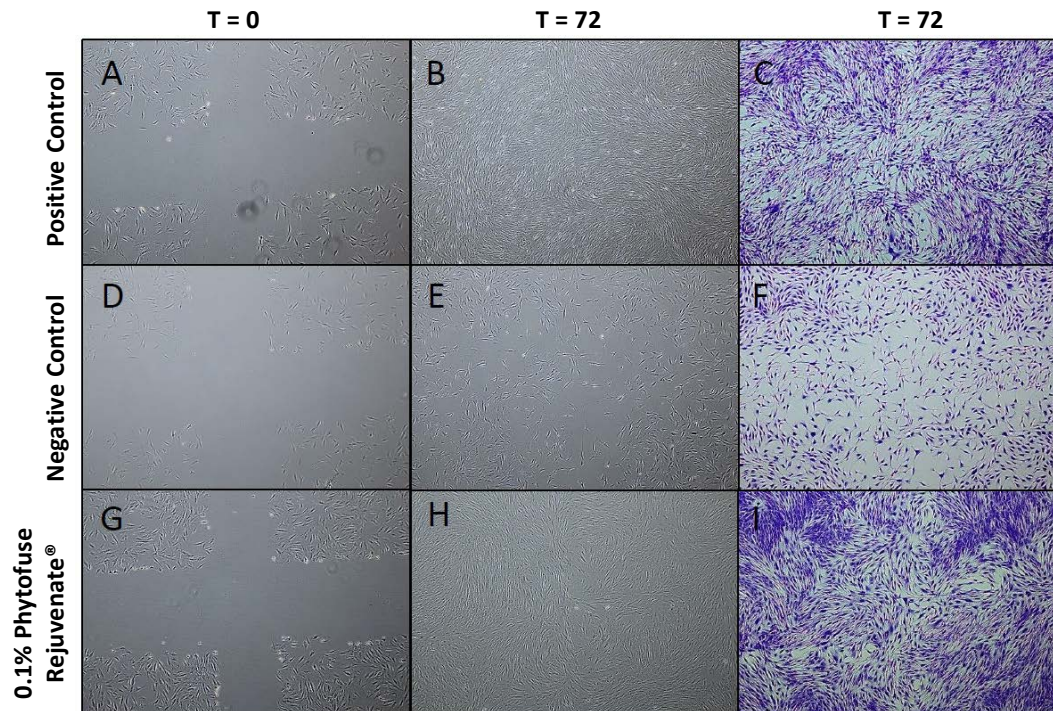


Figure 2. Images right after scratch, after 72 hours and after 72 hours but stained for enhanced microscopy

Protocol

- Human dermal fibroblasts were seeded into 6-well tissue culture plates
- 0.1% & 0.2% concentration of **Phytofuse Rejuvenate®** was added to the serum-free DMEM and incubated with fibroblasts
- Scratch took place every 24 hours and up to 72 hours
- **Phytofuse Rejuvenate®** was able to increase cell migration and close the scratch at a rate comparable to the positive control
- Product has healing abilities and cell proliferation properties

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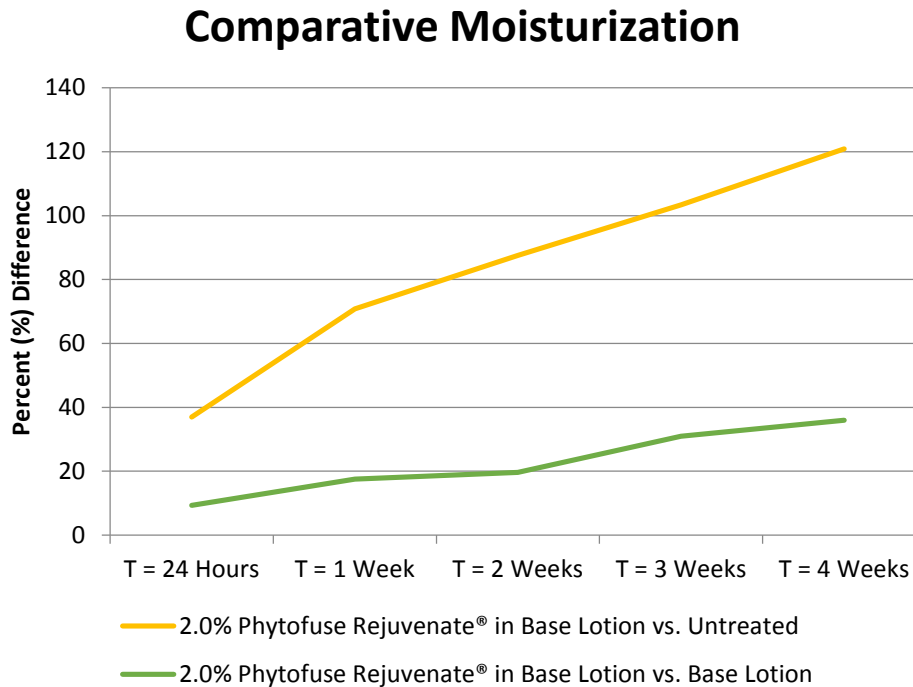


Figure 3. Improvements in moisturization

Protocol

- **Equipment:** DermaLab Combo
- **Principle of measurement:** Conductance, single frequency
- **Subjects:** 10 (m/f)
- **Test area:** Volar forearms
- **Concentration used:** 2.0%
- **Frequency of application:** Twice daily

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Transepidermal Water Loss

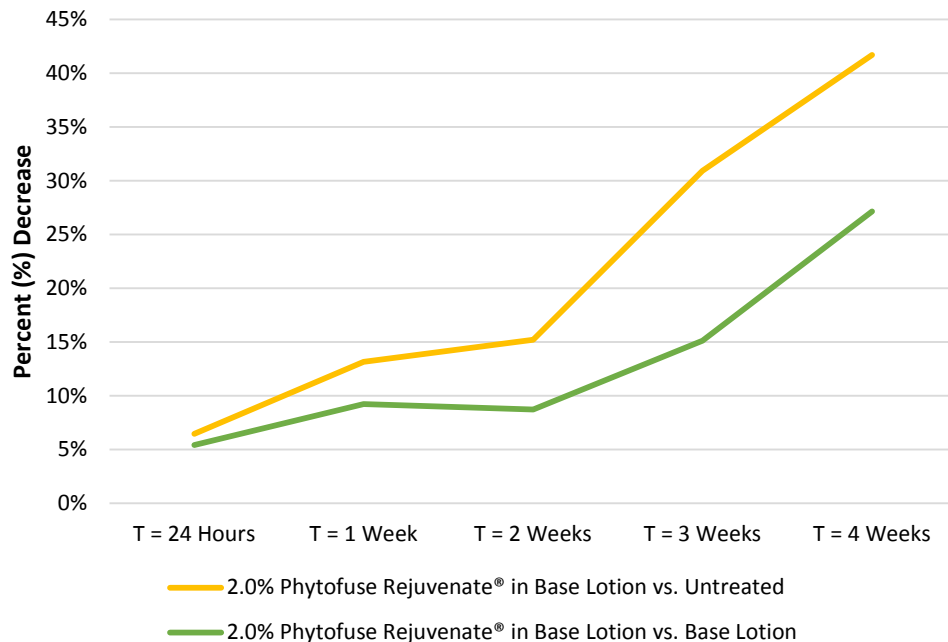


Figure 4. Improvements in barrier function

Protocol

- **Equipment:** DermaLab Combo
- **Principle of measurement:** Open chamber, vapor diffusion gradient
- **Subjects:** 10 (m/f)
- **Test area:** Volar forearms
- **Concentration used:** 2.0%
- **Frequency of application:** Twice daily
- Results indicate continuous improvements in the barrier of the skin throughout the 4 week test period

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Comparative Difference in Skin Density

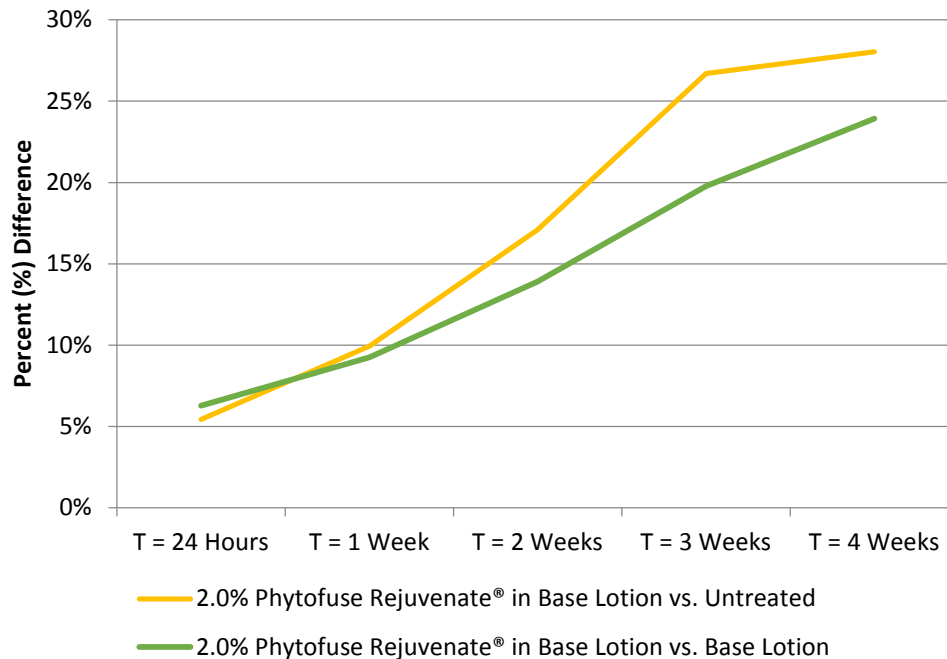


Figure 5. Improvements in skin density

Protocol

- **Equipment:** DermaLab Combo
- **Subjects:** 10 (m/f)
- **Test area:** Volar forearms
- **Concentration used:** 2.0%
- **Frequency of application:** Twice daily
- **Phytofuse Rejuvenate®** is capable of improving skin density when compared to both the untreated control as well as the base lotion

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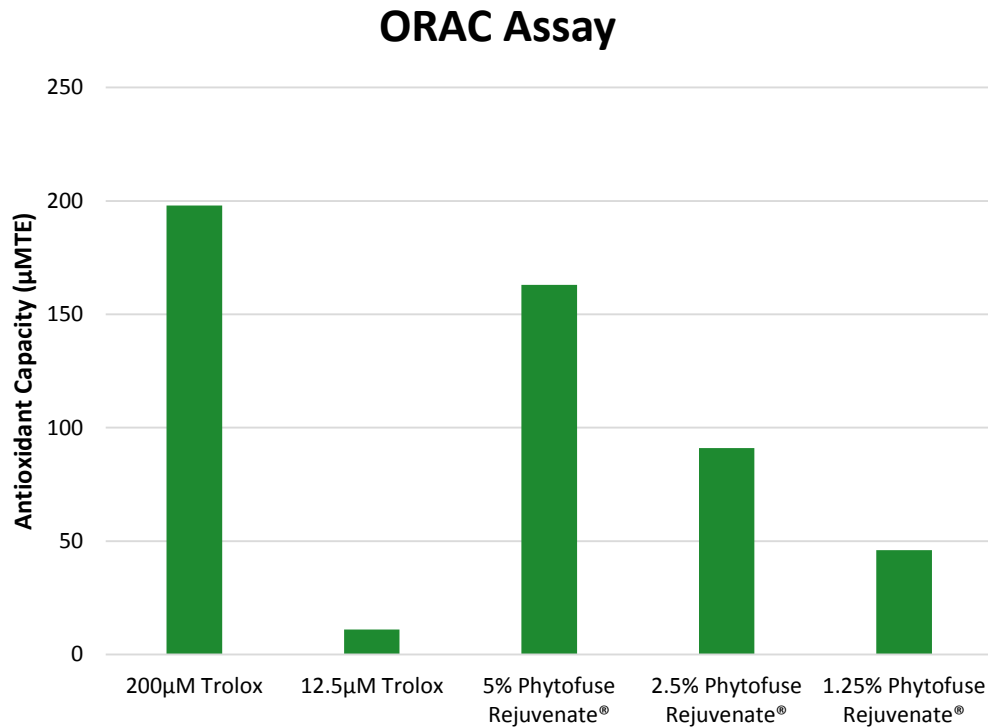


Figure 6. Antioxidant capacity of **Phytofuse Rejuvenate®**

Protocol

- Trolox® was used as the positive control
- Solutions were prepared at three concentrations, as a reference
- Fluorescent measurements were taken every 2 minutes for 2 hours
- **Phytofuse Rejuvenate®** showed antioxidant activity

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Cellular Viability

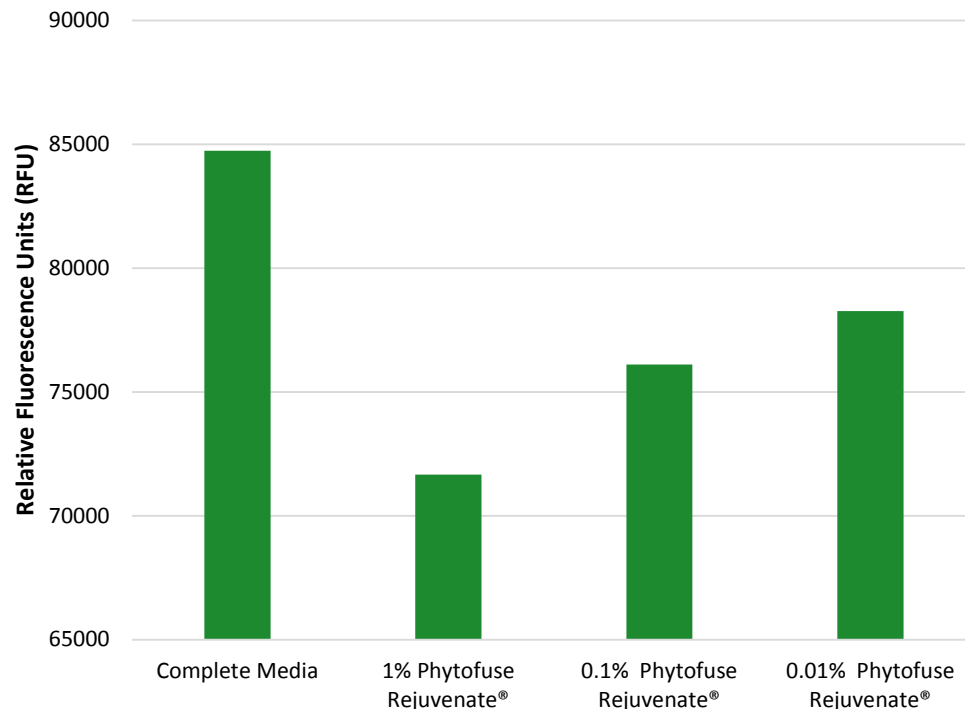


Figure 7. Cellular metabolism of **Phytofuse Rejuvenate®** treated fibroblasts in terms of relative fluorescence units (RFU)

Protocol

- Human dermal fibroblasts seeded into 96-well tissue culture plates
- Ten microliters of viability reagent was added to 90µL of cell culture media in culture wells
- Concentrations: 1%, 0.10%, 0.01%
- **Phytofuse Rejuvenate®** at all concentrations does not inhibit cell viability and is not cytotoxic

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Sirius Red Fast Green Assay

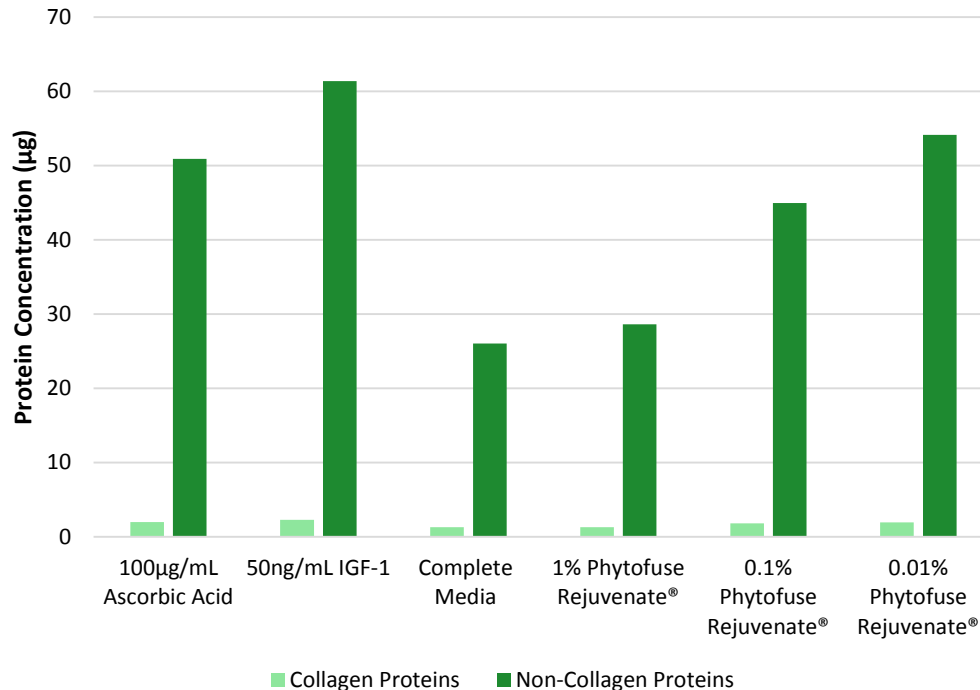


Figure 8. Collagen & non-collagen protein concentrations

Protocol

- AA2G and IGF-1 were used as positive controls
- Test Quantity: 1%, 0.1%, and 0.01%
- 200µL of the Sirius Red/Fast Green dye solution added and incubated at room temperature for 30 minutes
- **Phytofuse Rejuvenate®** elicited positive effects on collagen synthesis and may lead to improvement in the dermal-epidermal junction integrity and improved scaffolding matrix

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Sirius Red Fast Green Assay

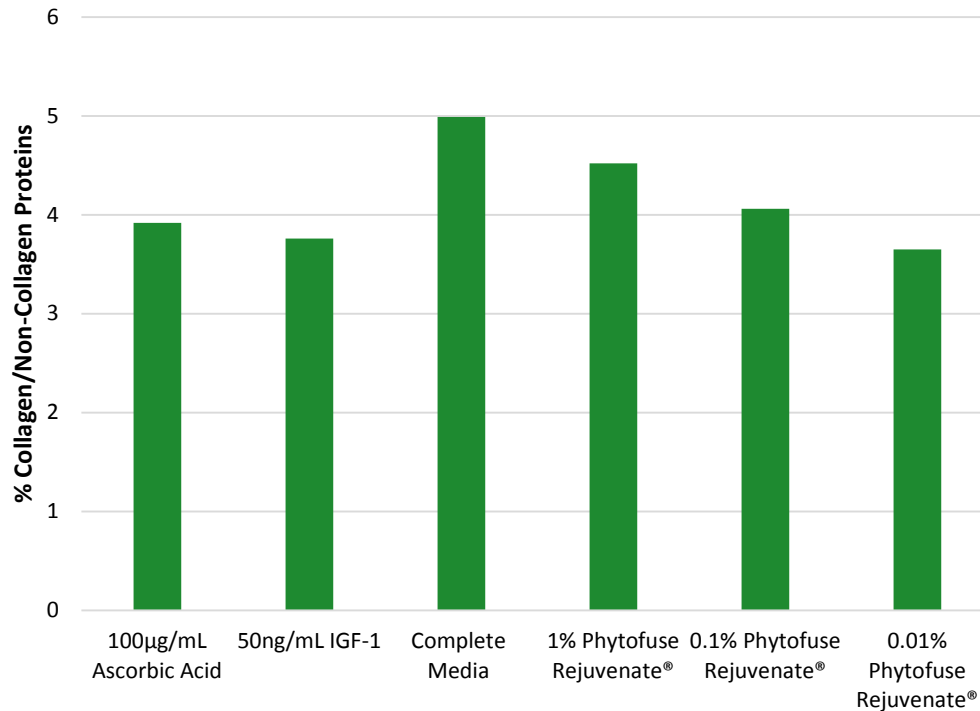


Figure 9. Percent collagen compared to non-collagen proteins

Protocol

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- Test Quantity: 1%, 0.1%, and 0.01%
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- **Phytofuse Rejuvenate®** elicited positive effects on collagen synthesis and may lead to improvement in the dermal-epidermal junction integrity and improved scaffolding matrix

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Product Recap



- **Phytofuse Rejuvenate®** capitalizes on the isolated polysaccharides extracted from the *Salvia hispanica* seed
 - Able to aid in cell proliferation
 - Imparts wound healing and anti-inflammatory properties to the skin
- **Phytofuse Rejuvenate®** soothes the skin and provides antioxidant and moisturization benefits
 - A functional, active ingredient
 - Improves the slip and cushion in finished formulations
- **Phytofuse Rejuvenate®** is ideal for skin and hair care formulations
 - Helps to increase moisture levels and provide protection from environmental stressors

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Active Concepts LLC



THANK YOU

For more information –Visit our website!

www.activeconceptsllc.com