

sofw journal

Home & Personal Care Ingredients & Formulations

powered by **SOFW**



Phytoglycogen: A new energy booster for hair

E. Bönzli

Phytoglycogen:

A new energy booster for hair

Consumers increasingly seek solutions that maintain hair growth, density, and vitality. PhytoSpherix™ Hair, a new active ingredient from Mibelle Biochemistry, is a glycogen derived from non-GMO corn that meets the high energy demands of hair follicles, the miniature biological factories that produce hair shafts.

The energy recycling system of hair follicles

Hair follicles are highly dynamic mini-organs whose growth requires substantial energy, especially in rapidly dividing matrix cells at the follicle base. Intensive keratin production places heavy strain on cellular metabolism. A key metabolic pathway supporting this process is the Cori cycle, an internal energy-recovery mechanism that provides local energy reserves. Central to this system is glycogen, a glucose-based polysaccharide that releases free glucose upon breakdown.

Although glycogen is mainly associated with the liver and skeletal muscle, it is also present in the skin. In the hair follicle, matrix cells and the outer root sheath (ORS) rely on glycogen breakdown to generate ATP. A high glucose and

energy supply is especially critical during the anagen phase, the most energy-intensive phase of the hair cycle. Stored glycogen can be rapidly mobilized when blood glucose cannot meet demand, such as during nutrient deficiency, impaired microcirculation, or temporary stress. Under these conditions, the Cori cycle (**Fig. 1**) stabilizes ATP production and supports continued growth.

However, the efficiency of this system declines with age, inflammation, chronic stress, nutrient deficiencies, or hormonal changes such as menopause. When the energy-recycling mechanism can no longer meet follicular demand, ATP production drops, cell turnover slows, and hair growth diminishes, resulting in thinning and increased hair loss. Replenishing internal energy reserves is therefore essential for sustained growth and long-term follicle vitality.

PhytoSpherix™ Hair contributes to hair longevity

“Hair longevity” describes maintaining youthful biological characteristics of hair and scalp for as long as possible, including a regular growth cycle, stable structure, smooth cuticle, elasticity, and shine. Because these depend on the hair follicle, supporting its energy-intensive growth phase is crucial. By promoting follicular function and energy availability, PhytoSpherix™ Hair helps establish the foundation for long-lasting hair vitality.

The energy source in non-GMO sweet corn

Glycogen is a compact, spherical, water-soluble molecule composed of thousands of glucose units. Its structure makes it an efficient cellular energy store and valuable for hydration support in cosmetic formulations. Since natural glycogen is typically animal-derived, Mibelle Biochemistry developed PhytoSpherix™ Hair: a vegan, plant-based glycogen extracted from a special non-GMO sweet corn

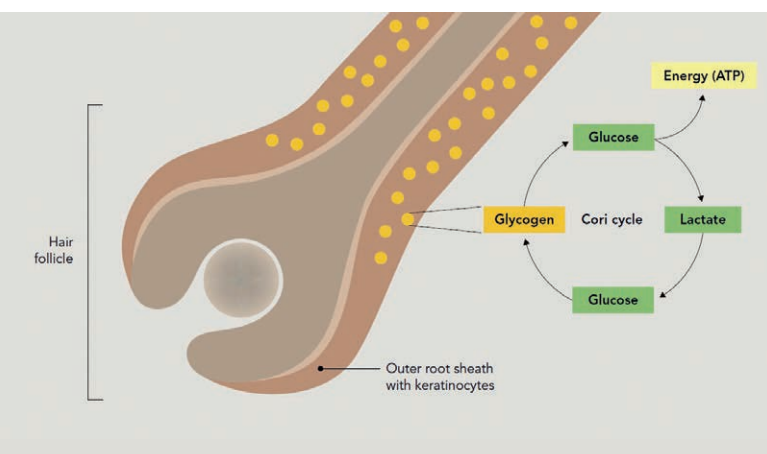


Fig. 1 The internal Cori cycle in the hair follicle



Picture Credit: Naimul Islam / stockadobe.com

variety. This corn-based glycogen is chemically identical to mammalian glycogen.

The science behind the active

Studies show that PhytoSpherix™ *Hair* promotes collagen and hyaluronic acid production and supports skin hydration. *In vitro*, keratinocytes treated with the extract showed up to 49% higher ATP levels, indicating enhanced cellular energy production. In an *ex vivo* model, human anagen follicles treated with PhytoSpherix™ *Hair* showed a 123% increase in hair shaft length, outperforming epidermal growth factor. (Fig. 2).

In a double-blind, placebo-controlled clinical trial with women and men aged 50–64, a serum containing 0.5% active ingredient increased hair density by 3% after 45 days and 6% after 90 days, while density declined in the placebo group. The anagen/telogen ratio increased by

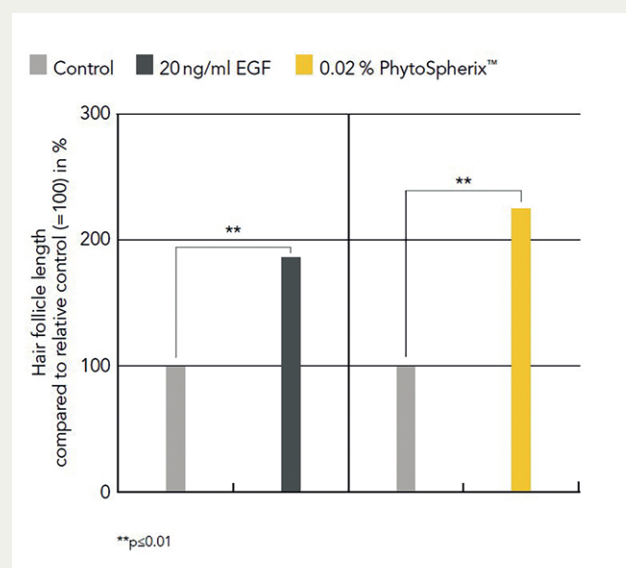


Fig. 2 Improved hair follicle growth rate (performed on extracted hair follicles)

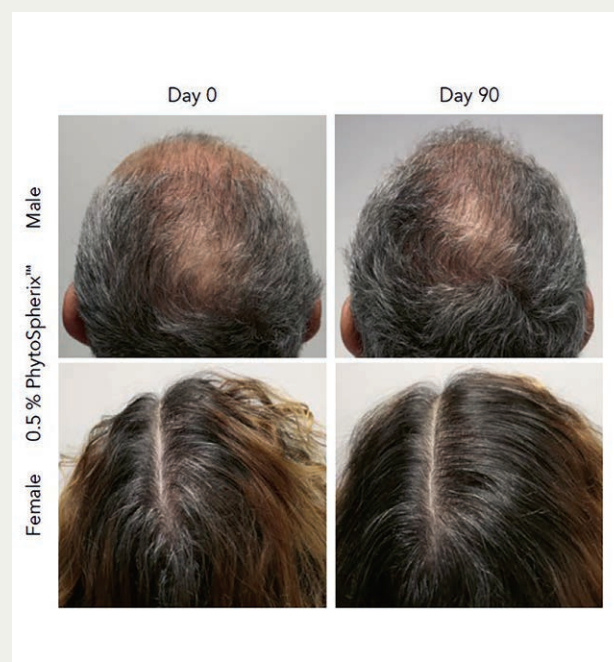


Fig. 3 Visibly fuller hair

38% after 45 days and 26% after 90 days, reflected by visibly fuller hair. (Fig. 3).

Conclusion

PhytoSpherix™ *Hair* delivers targeted energy to hair follicles, helping counteract processes that reduce growth and density. It provides a scientifically supported way to enhance hair longevity at the follicular level.

Author:

Dr. Eva Bönzli | Scientific Project Manager
Solabia Biochemistry AG, CH-Buchs/Switzerland

Find out more:
www.mibellebiochemistry.com



Product

<https://mibellebiochemistry.com/phytospherixtm-hair>

Movie

<https://vimeo.com/1165352490>

