



# PhytoSpherix™

## Plant-based glycogen to energize the skin

**PhytoSpherix™ is a phytoglycogen that is isolated from a special non-GMO sweet corn variety. Due to its native bio-identical structure, PhytoSpherix™ has similar effects as animal-derived glycogen. It increases cellular metabolism and promotes collagen and hyaluronic acid production in skin cells, leading to a youthful-looking skin.**

### The issue

Skin cells are continuously exposed to environmental stresses, and, therefore, greatly rely on large amounts of energy to combat cellular – and consequently skin – damage. As we age, cellular energy levels decline and the deficiencies in skin energy can result in premature skin aging. One consequence of this includes the formation of wrinkles or skin hyperpigmentation due to photodamage. Therefore, increasing cell energy levels can be a good approach to target skin aging.

By providing glycogen, the cells are given energy to use whenever it is needed and wherever it is needed. This can then result in many beneficial effects for the skin. There is, however, one problem: Glycogen is the glucose storage unit found in mammalian cells and it is usually isolated from animal sources.

### The solution

PhytoSpherix™ is a plant-based alternative to animal-derived glycogen. It is chemically identical to the glycogen stored in animal cells but is produced and stored in a special variety of non-GMO sweet corn.

It is extracted through a mild water-based process, resulting in a safe and natural botanical extract. These qualities, combined with the chemical properties and the known beneficial effects of glycogen for the skin, make PhytoSpherix™ an excellent and multi-purpose cosmetic active.

### The benefits

- Energizes skin cells
- Promotes collagen and hyaluronic acid production
- Reduces wrinkles and fine lines
- Improves skin hydration
- Reduces pigment spots



### The source

Sweet corn is one of the very few plants which is able to produce glycogen as an energy source. This phytoglycogen can be isolated out of the corn through multiple purification steps. This results in PhytoSpherix™: a unique phytoglycogen for cosmetic applications.

**INCI (EU/PCPC) Declaration:** Glycogen (COSMOS approved\*). Liquid version and version for feminine hygiene application available (COSMOS approved\*).

\* Raw material approved by ECOCERT GREENLIFE in accordance with the COSMOS Standard

## Study results

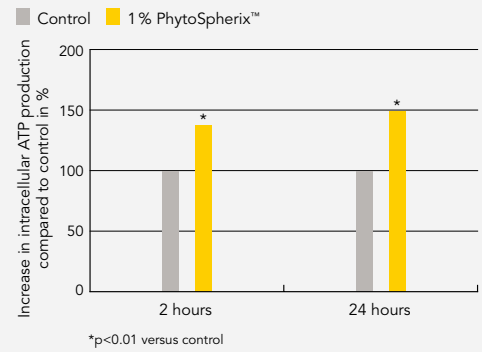
### Stimulation of ATP Production

S-1178



**Cell line:** Human keratinocytes  
**Test compound/ treatment:** Cells cultured in the presence or absence (control) of 1% PhytoSpherix™ for periods of 2h and 24h  
**Parameter:** Intracellular ATP production (luminescence assay)

→ **PhytoSpherix™ stimulates cellular ATP production, which benefits the cell in metabolic processes**



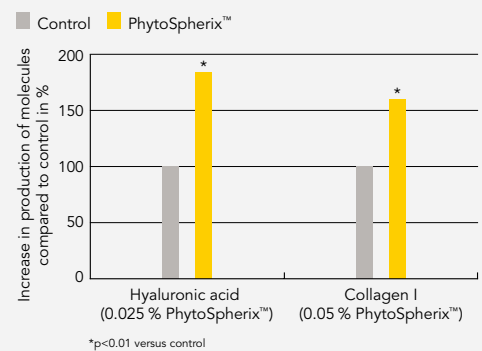
### Increase in Hyaluronic Acid (HA) and Collagen

S-1179



**Cell line:** Human fibroblasts  
**Test compound:** 0.025 % HA resp. 0.05 % PhytoSpherix™  
**Treatment:** Cells were either treated or not (control) with the respective concentration for 36h  
**Parameters:** HA synthesis (ELISA), extracellular collagen I (immunofluorescence staining and microscopy)

→ **PhytoSpherix™ significantly increased HA secretion by 83%**  
 → **PhytoSpherix™ led to a significant increase of collagen I deposition**



### Visible Anti-Aging Effects

S-1181



**Volunteers:** 5, f, 51–65y  
**Test compound:** Cream containing 0.1% PhytoSpherix™  
**Treatment:** Application on entire face, twice daily, for 6 weeks  
**Parameters:** Wrinkles (Newtone technology)

→ **Decreased crow's feet wrinkle area and volume by 42% and 49.6%**  
 → **Reduced forehead wrinkle volume and area by 54.9% and 45.6%**  
 → **Decreased forehead wrinkle length by 53.2%**



### In Addition

S-1180/S-1182



**Reduction of Skin Hyperpigmentation:** Application of 0.1% PhytoSpherix™ for 6 weeks significantly improved skin hyperpigmentation and skin tone evenness, compared to placebo, by 30% and 37%. Further pigment spots were visibly reduced in images taken from the volunteers.



**Hydrating and Hyaluronic Acid (HA) Boosting Effects:** PhytoSpherix™ demonstrates a significant hydrating effect, comparable to HA. Moreover, a blend of HA and PhytoSpherix™, at half the concentrations each, yields superior moisturizing effects to the use of either ingredient alone at higher concentrations.

**Recommended use level:** 0.1–0.3%

**Characteristics:** Powder, water-soluble, without alcohol, without preservatives

**Applications:** Anti-aging formulas, hydration creams, skin-energizing essences, pigment correction and brightening fluids

**Moreover:** Unique phytoglycogen based on non-GMO sweet corn, synergistic effect with hyaluronic acid, patented production process, 100% natural origin

### Benefits PhytoSpherix™

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