chronogen™ yst biofunctional

inspired by clock genes, sync your skin for a younger, fresher look

INCI (proposed name): water (aqua) (and) glycerin (and) hydrolyzed yeast protein

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description

Chronogen[™] YST from Ashland's Vincience laboratories in France is one of the first biofunctional ingredients inspired by clock genes, and is designed to provide a cosmetic solution to the deleterious effects of social jetlag on the skin.

Social jetlag is a new field of medical studies connected to health problems in modern societies. Social jetlag is a mismatch between the body's biological clock and sleep patterns linked to late social activities (television, online activities, personal hobbies...).

key features

o clock genes

In the past two decades, research has uncovered the mechanisms responsible for circadian rhythms within cells. In 2017, the Nobel Prize in Physiology or Medicine was awarded for the elucidation of the molecular mechanisms controlling circadian rhythms.

The cellular "timekeeping" tempo, comparable to a metronome, is produced by a molecular oscillator involving the clock genes such as CLOCK, BMAL, PER and CRY.

o cell synchronization

Clock genes represent a major anti-aging breakthrough strategy in cosmetic science. They are key regulators that play a central role in 43% of gene expression.

o social jetlag

Social jetlag and sleep deprivation are important modern society health concerns that demand cosmetic solutions such as Chronogen[™] YST.



Chronogen[™] YST is a natural extract that introduces an innovative approach to help skin maintain the proper synchronization of key day and night regulators and is a new age-defying approach to help strengthen the skin's capabilities for protection and self-regeneration.

formulation ideas

chronogenics — eye balm

- a relaxing eye balm with pleasant application
- this cream gel helps the eye area to feel relaxed and pampered with a silky smooth finish

harmonizing — facial lotion SPF 20 in vitro¹

• a lightweight, non-greasy lotion that applies easily and provides broad-spectrum protection

flash bright — natural mist

- oil-free mist refreshes skin while helping to keep it hydrated and bright
- enriched with biofunctionals to help maintain skin health and wellness

technical information

- preservative system: sodium benzoate
- COSMOS validated
- listed on China IECIC and IECSC







clock genes expression

• Chronogen[™] YST is associated with an increased capacity for the skin to express CLOCK, BMAL1 and PER1 in keratinocytes and fibroblasts *in vitro*.

CLOCK immunostaining on keratinocytes



PER1 immunostaining on fibroblasts





cell synchronization

 In *in vitro* testing, after application of Chronogen[™] YST, 77% of the fibroblasts produced collagen III with medium intensity, suggesting that the cells were better synchronized.



skin turnover in vivo study

The oscillation of clock genes around a day/night cycle beats the "cellular tempo" and plays an important role in regulating the cellular cycle.

The aim of this *in vivo* study was to test if a cosmetic formulation containing Chronogen[™] YST at 1% may help improve skin turnover, a skin parameter that slows with aging.

• The results suggest that formulations with Chronogen[™] YST may help skin engage in more effective skin renewal.

in vitro DNA protection and repair

• *in vitro* results show less UV induced DNA damage. comet assay on fibroblasts irradiated with UVB



ex vivo skin protection

• chronogen[™] YST is associated with less UVB induced apoptotic cells (blue circles).

ex vivo skin irradiated with UVB





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