THEATRE 2
Tuesday 4th April 2017

Coming up next...
15:30 – 16:00

Cleanse, detoxify, protect
The next generation of anti-pollution actives

Active Concepts Srl
AC CytoPure PF

- Anti-Pollution
- Anti-Ageing
- Cellular Detoxification
The Background

- While most anti-pollution products focus on protection at the skin surface, we are looking to address the detrimental effects of pollution at a cellular level.

- Drawn from research into sulfur biology.

- Sulfur is present in all classes of biomolecules. Select sulphur-rich compounds play essential roles in combating the signs and symptoms of ageing via up-regulation of Glutathione (GSH), a tripeptide shown to have potent chemo-preventative and anti-inflammatory properties.

- Working to minimize the effects of oxidative stress and accelerate wound healing, through an increase in GSH, while providing protection against cellular and external environmental pollution.

Inner health, outer beauty
AC CytoPure PF

Glutathione

- Glutathione (GSH) is an important antioxidant capable of neutralizing the free radicals produced by the mitochondria.

- Glutathione is converted to its oxidized form, glutathione disulfide (GSSG). Once oxidized, glutathione can be reduced back by glutathione reductase. The ratio of reduced Glutathione to oxidized glutathione within cells is often used as a measure of cellular oxidative stress.
AC CytoPure PF
Glutathione

• Environmental pollutants have the ability to reduce cellular Glutathione levels
  - UV radiation, Atmospheric particulates

• When levels of glutathione are depleted, the build-up of oxidative damage in the cells can change the appearance of the skin
  - Resulting in fine lines and visible signs of aging
  - Disturbing the process of wound healing

• AC CytoPure PF activates the specific oxidant and toxin cleansing power of glutathione in the skin to slow down the rate of the aging process from within the cell

• Purifying the cells from the inside out to reverse effects of cellular pollution
AC CytoPure PF

*Crypthecodinium cohnii*

- The ocean is filled with pollutants and underwater volcanoes are a key player in the cause of this water pollution.
- Following the eruption of an underwater volcano, ocean water transforms from blue to a deep crimson due to a bloom of dinoflagellate microalgae.
- These dinoflagellates are able to survive in this toxic and polluted water.
- Dinoflagellates are unicellular organisms that have sulfur-rich polysaccharide plates that act as a shield to provide intracellular pollution protection.
AC CytoPure PF
The Science

• As elemental sulfur is highly inefficient by topical application, we looked for natural sources to contribute sulfide donors (to upregulate the production of GSH) from nature.

• This lead to the culturing of the extremophile plankton (*Crypthecodinium cohnii*) using supplemented sulfur rich growth media.

• This allowed for the isolation of the sulfated polysaccharides from the dinoflagellate microalgae.

• These sulfated polysaccharides act as sulfide donors, playing a role in the up-regulation of GSH.

• They provide an innovative and sustainable anti-ageing pathway promoting the power of GSH to cleanse cellular pollution and detoxify the skin from within, minimizing the effects of oxidative stress and accelerating wound healing.
AC CytoPure PF

*In-vitro* Glutathione Assay

- A Glutathione Assay was conducted to assess the changes in GSH concentration in AC CytoPure PF treated *in-vitro* cultured human dermal fibroblasts

- L-Cysteine, a precursor for GSH, was used as a positive control

- Complete media was used as a negative control

- Human dermal fibroblasts were seeded into 96-well tissue culture plates

- 1.0% AC CytoPure PF was added to complete media and incubated with fibroblasts for 72 hours
AC CytoPure PF

*In-vitro* Glutathione Assay

Figure 1 demonstrates that AC CytoPure PF exhibited increased concentrations of GSH in human dermal fibroblasts. This increase in GSH indicates an increase in antioxidant capacity that is known to reduce toxins and oxide species in the intracellular environment. Working to void toxins from the cell to increase overall cellular health can have a positive effect on cellular viability and attenuating the signs and symptoms of aging by regulating DNA synthesis. It can therefore be concluded that at normal use concentrations of AC CytoPure PF promotes anti-aging via GSH enhancement that in turn increases overall cell health and function.
Trolox®, an analogue of Vitamin E, was used as the positive control.

Solutions were prepared at two concentrations, as a reference.

Florescent measurements were taken every 2 minutes for 2 hours.

Demonstrates that AC CytoPure PF can provide antioxidant properties compared to the control. The antioxidant capacity increased as the concentration of the active increased. As a result we can assure that its ability to minimise oxidative stress is also dose dependent.
AC CytoPure PF

*In-vitro* Scratch Assay

- Wounded tissue has a cascading effect, starting with a complex and structured series of events in order to repair the damaged region.

- Some of these events include upregulation of angiogenic factors causing increased vascularization, increased deposition of extracellular matrix, and increased cell proliferation.

- The wound healing process begins as cells polarize toward the wound, initiate protrusion, migrate, and close the wound area.

- These processes reflect the behavior of individual cells as well as the entire tissue complex.

- The scratch assay was conducted to assess the wound healing properties of AC CytoPure PF treated *in-vitro* cultured human dermal fibroblasts.
AC CytoPure PF

*In-vitro* Scratch Assay

From the results illustrated in Figure X AC CytoPure PF was able to increase cell migration and close the scratch at a rate comparable to the positive control.

The mechanisms of the cells in the *in-vitro* scratch assay mimic the mechanisms seen in *in-vivo* wound healing therefore the results are translatable outside the laboratory.

These results suggest that AC CytoPure PF has wound healing abilities and cell proliferation properties.

Figure 3. Images at t=0 hours (A, D, G) and t=72 hours (B, E, H) for AC CytoPure PF, positive control, and negative control. At experiment completion (t=72 hours), cells were fixed in paraformaldehyde and stained with crystal violet (C, F, I).
AC CytoPure PF

*In-vivo* Skin Moisturisation Assay

**Equipment**: DermaLabCombo

**Measurement**: Conductance, single frequency

**Subjects**: 10 (m/f)

**Test area**: Volar forearms, Frequency of application: Twice Daily

**Concentration of active used**: 2.0%

Demonstrates that AC CytoPure PF is capable of increasing skin moisturisation when compared to both the untreated control as well as the base lotion

*Figure 4. Average increase in skin moisturisation per test site*
AC CytoPure PF
Product Summary

• AC CytoPure PF activates the power of Glutathione to cleanse cellular pollution and detoxify skin from within
• Minimizes effects of oxidative stress
• Imparts anti-ageing and wound healing properties to the skin
• Protects against extrinsic and intrinsic stress
• A natural and sustainable next generation active
• Ideal for both skin and scalp care formulations
AC CytoPure PF
Technical Information

**Code:** 20757PF

**INCI Name:** Crypthecodinium Cohnii Extract & Leuconostoc/Radish Root Ferment Filtrate

**Appearance:** Clear to Slightly Hazy Semi-Fluid Gel

**Suggested Use Level:** 1.0%-5.0%

**Suggested Applications:** Cellular Detoxification, Anti-Pollution, Anti-Ageing, Aids Wound Healing, Calming

**Efficacy Data:** ✅ in-vivo ✅ in-vitro


Visit us on stand NN10

Active Concepts Srl
Via Petrolo Litta, 9 - 20010 Bareggio - Italy
www.activeconcepts.it
info@activeconcepts.it