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# Turning the spotlight on solutions for blue light pollution

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## Blumilight™ biofunctional from Vincienc™



[ashland.com](http://ashland.com) / efficacy usability allure integrity profitability™



## Introduction

As passionate, tenacious solvers the Ashland teams seek out the best solutions to amplify the efficacy, improve the usability, add to the allure, ensure the integrity and improve the profitability of your skin care products. The line of Vincience biofunctionals enhance the benefits and appeal of your products.

## Concept ID

Blumilight™ biofunctional is a Theobroma Cocoa Seed extract to help skin fight blue light pollution. A sustainable sourcing from Alto Piura in Peru allows to select a rare and premium variety of cocoa: criollo porcelana, prized by chocolate lovers for its superior taste and quality.

Blumilight contains cocoa peptides, saccharides and polyphenols derived from non fermented seeds. Due to its unique composition, Blumilight is associated with a better resistance to blue light stress, compared to conventional cocoa polyphenols, *in vitro*.

By limiting the visible effects of blue light pollution on skin, Blumilight addresses the changing lifestyles of consumers in a hyper-connected world.

## Rational Design

1. In China, a new anti-aging trend is called **3C aging** for consumers concerned by air pollution from the **city**, blue light pollution from **computers** and wireless radiation from **communication devices**.
2. 60% of people spend more than **six hours** a day in front of a digital device.
3. Eye exposure to blue light has been associated to eye strain and a **premature aging** of the eyes.
4. Studies show that blue light can generate an oxidative stress and opsin alteration in skin cells eventually leading to premature aging, which we could consider as **digital aging**.

## Marketing Corner: Key Words

- Blue light pollution
- Digital aging
- Photosensory system
- Theobroma cocoa peptides
- Superfruit
- Antioxidant
- Skin elasticity
- Skin wrinkles

## Application Ideas

- Day care products for city dwellers and hyper-connected consumers
- Both indoor (blue light) and outdoor (visible light) skin care products
- Daily Defense (DD) creams
- Anti-aging face care products
- Night care products
- Eye contour, anti-wrinkle products

## Formulation Bar

### Cocooning Chocolate Base with Blumilight

Formulation #: 100-10122

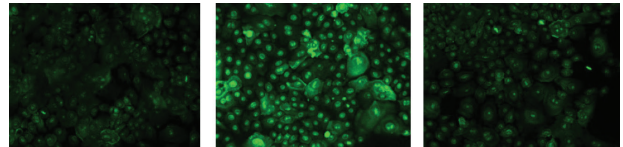
### Outdoor Trinity Protection Fluid SPF 30 *in vitro*

Formulation #: 200-10039A

## Scientific Evaluation

### 1. Blue light stress

- Blumilight is associated with less Reactive Oxygen Species (*in vitro*)



Untreated (Dark) Blue Light Stress Blue Light Stress + Blumilight 0.1%

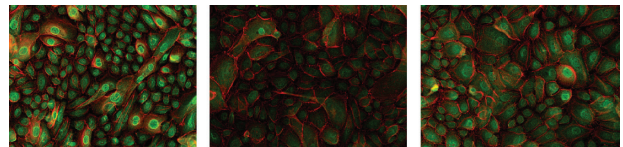
**Cell culture:** Normal Human Keratinocytes

**Product application:** 0.1% Blumilight for 48h

**Stress:** Blue LED 415 nm (3 mW/cm<sup>2</sup> - 18min) at 24h and 48h

**Evaluation:** CellROX fluorescence intensity staining

- Blumilight is associated with a maintenance of blue light photoreceptors (opsin) (*in vitro*)



Untreated (Dark) Blue Light Stress Blue Light Stress + Blumilight 0.1%

**Cell culture:** Normal Human Keratinocytes

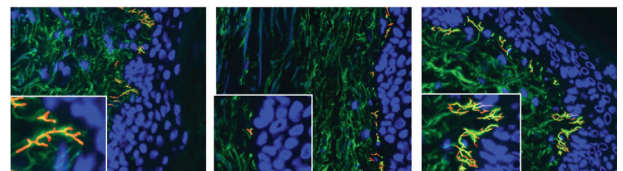
**Product application:** 0.1% Blumilight for 48h

**Stress:** Blue LED 415 nm (3 mW/cm<sup>2</sup> - 18min) at 24h and 48h

**Evaluation:** OPN1SW immunostaining

### 2. Aging biomarkers

- Blumilight is associated with more collagen I, fibrillin-1 and syndecan-4 (*in vitro*, *ex vivo*)
- Blumilight is associated with a visible improvement of elastin fibers network (*ex vivo*)



Placebo (Dark) Blue Light Stress Blue Light Stress + Blumilight 1%

**Cell culture:** Skin biopsies (54 year old)

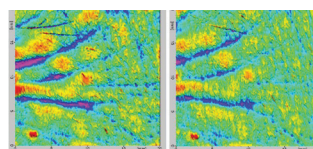
**Product application:** 1% Blumilight for 72h

**Stress:** Blue LED 470 nm (5 mW/cm<sup>2</sup> - 18min) at 24h and 48h

**Evaluation:** Fibrillin-1 immunostaining and computer-assisted image processing

### 3. Skin wrinkles

- The aim of the study was to evaluate a cream formulation containing Blumilight at 1% on wrinkles in volunteers exposed to blue light (tablet, cell phone, and computer) on average 3.8 hours per day
- Blumilight at 1% is associated with less visible wrinkles (main wrinkles and fine lines) and with a smoother skin surface



Day 0 Day 56

**Volunteers:** 20 (ages 40 to 66)

**Study:** double blind study against placebo

**Application:** 2 applications per day on the face

**Duration:** 8 weeks

**Control visits:** D0 and D56

**Measurements:** dermaTOP\* analysis

Best volunteer results, volunteer #1,

56 year-old

## Technical Information

- INCI (proposed): Water/Aqua (and) Butylene Glycol (and) Theobroma Cacao (Cocoa) Seed Extract
- Preservative system: preservative-free
- Formulation: add in water phase below 40°C; or in emulsion add on cool-down post emulsion
- Recommended use level: 1% (clinically tested at 1%)