

# PHOTOSOMES-V<sup>®</sup>

## LIGHT ACTIVATED MARINE ENZYME

**INCI:** Water (and) Plankton Extract (and) Lecithin

**PRESERVATIVES:** Phenoxyethanol\*

**USE LEVEL:** 0.50-1.00%

**SOLUBILITY:** Water

## DESCRIPTION

Sunburn can cause 100,000 damages to DNA in each cell and it takes one day to remove half of the direct damage. Any disruption to DNA leads to major consequences such as impaired molecule synthesis, inflammatory messenger release, and wrinkles. There are various causes of DNA damage from sun, air pollution, and metabolism. Photosomes-V is one of the solutions to repair damage in DNA with photolyase. Photosomes-V is a liposome containing the enzyme photolyase, expressed by blue-green algae which absorbs visible light to directly cleave and reverse damage caused by shorter wavelength UV.



## FUNCTION

Photosomes-V smart pH targeting technology allows for a delivery of the liposomes in the epidermis and a release of the enzymes with the acidity of the lysosomal sacs. Photosomes-V was tested in vivo to reduce UVB induced erythema and restore the skin's immune response. Ex vivo studies show Photosomes-V is able to enhance DNA repair and reduce photoaging.

## FORMULATION

Photosomes-V is a white to pale yellow translucent liquid with liposomes suspended in an aqueous solution and a characteristic odor. Photosomes-V is water soluble. The recommended pH range is 6.0-8.0.

## CONCEPT

- DNA Repair Technology
- Photoactivation
- Smart Liposome Technology

## LIPOSOME TECHNOLOGY

Photosomes-V is a liposome containing the enzyme Photolyase, a light-activated repair system that immediately repairs DNA damage (dimers) induced by the sun. Liposome delivery systems are designed to penetrate into the epidermis and break down in the cells. Liposomes break at the pH of cells, releasing the DNA repair enzyme.



Figure 1. Photolyase Enzyme

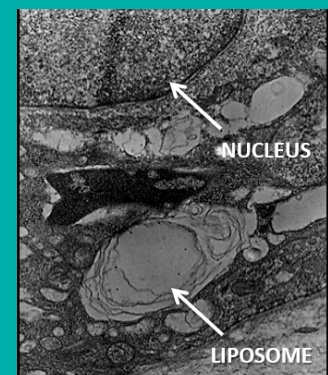


Figure 2. Liposome Delivery System

## TESTING TYPE

### IN VIVO

- Increases Immune Protection
- Reduces MMP-1 Expression

### EX VIVO

- Enhances DNA Repair in Skin
- Reduces Photoaging

# PHOTOSOMES-V

## DNA REPAIR: SUN EXPOSURE

An in vivo study was conducted on 5 volunteers to increase sun exposure time before a sunburn becomes visible. Skin was treated with 1.00% Photosomes-V 1 hour before exposure to solar simulator (UVA and UVB). Erythema was measured at 24 hours. The increased time it takes for the skin to sunburn with Photosomes-V exemplifies the DNA repair effect as damage is occurring.

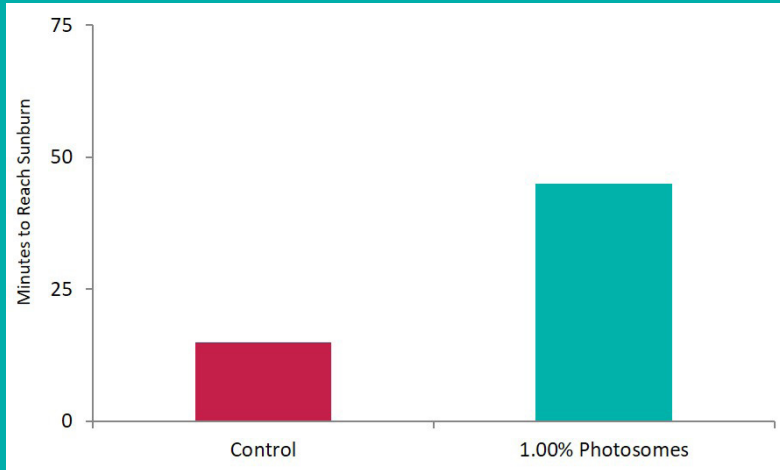


Figure 3. Minutes to Sunburn with 1.00% Photosomes-V

## DNA REPAIR: REDUCED DIMERS

Photosomes-V was tested ex vivo to reduce dimers induced by UVB exposure. Dimers are direct DNA damage created by UV. A control was done for comparison purposes. The skin exposed to UVB showed a large increase in the number of dimers (fluorescent green). The addition of Photosomes-V to the skin exposed to UVB showed a significant decrease in dimers.



Figure 4. No UVB Exposure Control

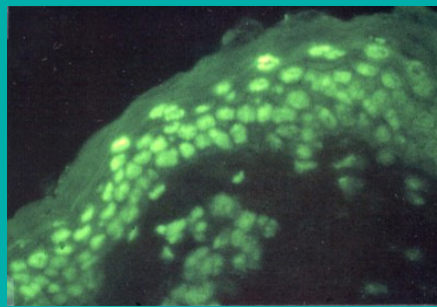


Figure 5. Post 24 Hour Exposure to UVB

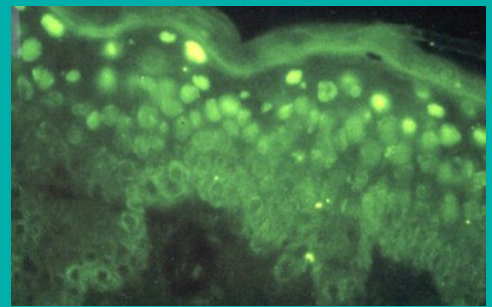


Figure 6. Post 24 Hour Exposure to UVB with Photosomes-V and Visible Light

## GLOBAL COMPLIANCE AND PRODUCT FEATURES

For additional information please contact [technical@barnetproducts.com](mailto:technical@barnetproducts.com). \* An alternate version, Photosomes V-PF, preserved with Phenethyl Alcohol and Hydroxyacetophenone is available upon special request.

COUNTRY	COMPLIANCE
AUSTRALIA	Listed AICIS
CANADA	Listed DSL
CHINA	Listed IECIC
EU	<1 MT Exempt



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