



Anti-Pollution Assay Analysis Cleanser Wash Off

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Tradename: ACB Yerba Santa Glycoprotein PF

Code: 20342PF

CAS #: 68990-14-7 & 1686112-10-6 (or) 84775-94-0

Test Request Form #: 3244

Lot #: 46522P

Sponsor: *Active Concepts, LLC; 107 Technology Drive Lincolnton, NC 28092*

Study Director: *Maureen Danaher*

Principle Investigator: *Jennifer Goodman*

Test Performed:

Pollution Protection Assay

Introduction

The role of pollution in the appearance of premature wrinkles and age spots has become a new frontier in anti-aging active ingredients. While we have known about the harmful effects of pollution on our health for years, new research indicates air pollution plays a detrimental role in extrinsic aging. Carbon and metal micro particles found in polluted air embed in the dermis causing oxidative stress, initiating the inflammatory cascade leading to the breakdown on the collagen, elastin, and other structural components in the skin. Additionally, polyaromatic hydrocarbons overstimulate the aryl hydrocarbon receptors on keratinocytes and melanocytes resulting in hyperpigmentation and age spots. Providing a physical barrier will prevent embedment of carbon particles, thus reducing the signs of extrinsic aging.

Our pollution protection assay was conducted to assess the ability of **ACB Yerba Santa Glycoprotein PF** in a base cleanser solution to provide immediate wash off protection from carbon air pollution.



Anti-Pollution Assay Analysis

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Materials

- | | |
|---------------|---|
| A. Equipment: | Dino-Lite Digital Microscope; Pipettes |
| B. Reagents: | Micronized activated charcoal; Cetaphil Gentle Skin Cleanser for All Skin Types |
| C. Other: | Disposable pipette tips; Wash bottles |

Methods

Volunteers, male and female, between the ages of 23 and 45 and who were known to be free of any skin pathologies participated in this study. All subjects were asked to apply 2 mg of each test material, experimental, control, and untreated on their volar forearms. Cleansers were rubbed in a circular motion for a 15 second cleansing period. The test areas were then thoroughly rinsed in warm water and patted dry with a paper towel. The micronized charcoal used as the pollution simulation has a particle size of 2.5 microns (PM 2.5) or less that mimics the small particulates found in polluted air. Each treatment area was washed five times using deionized water. Images were taken pre- and post-wash using a dissecting microscope.

The test material consisted of 2.0% **ACB Yerba Santa Glycoprotein PF** in a Cetaphil Gentle Skin Cleanser for All Skin Types. For added perspective, images of an untreated test site and a site treated with Cetaphil Gentle Skin Cleanser for All Skin Types were recorded.

Color analysis was conducted on the images and results depicted in optical density values and pigmentation histograms. Images were inverted and standard coloration values recorded and assigned absorbance units. The lower the mean optical density value the better protection against carbon particle embedment or PM 2.5 inhibition.

Results

The data obtained from this study met criteria for a valid assay and the controls performed as anticipated.

ACB Yerba Santa Glycoprotein PF at a concentration of 2.0% was able to provide protection from carbon pollution.

Untreated Results:

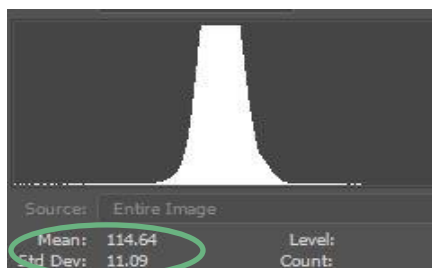


Figure 1. Untreated, Post Initial Wash (Image + Histogram Quantification)

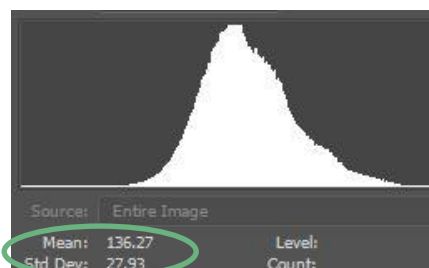


Figure 2. Untreated, Post Pollution (Image + Histogram Quantification)

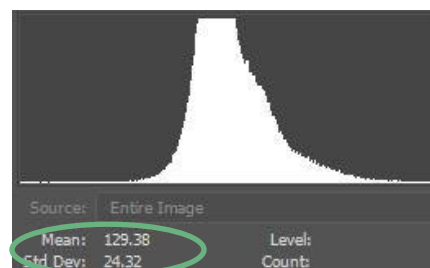
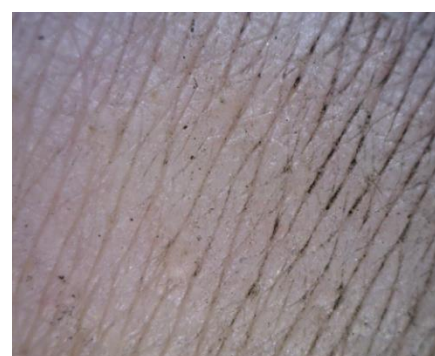


Figure 3. Untreated, Post Final Wash (Image + Histogram Quantification)

Base Cleanser Results:

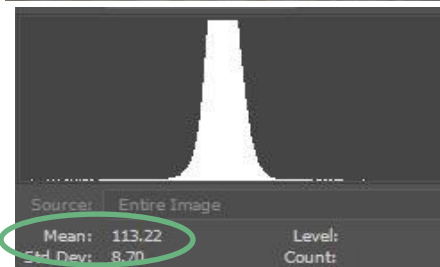
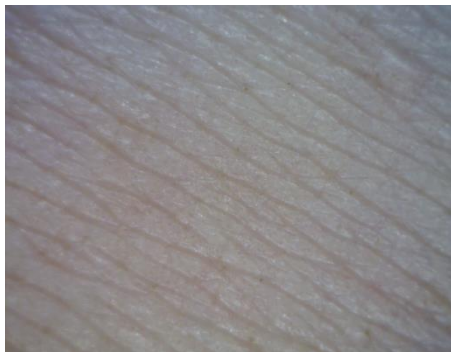


Figure 4. Base Cleanser, Post Initial Wash (Image + Histogram Quantification)

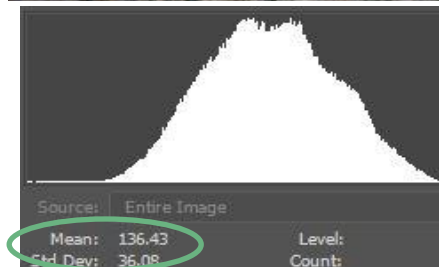


Figure 5. Base Cleanser, Post Pollution (Image + Histogram Quantification)

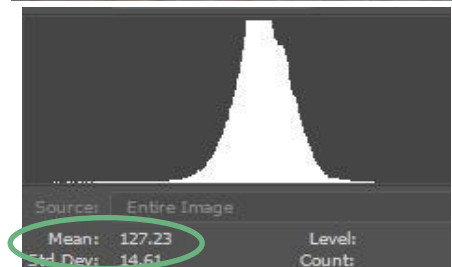


Figure 6. Base Cleanser, Post Final Wash (Image + Histogram Quantification)

ACB Yerba Santa Glycoprotein PF Results:

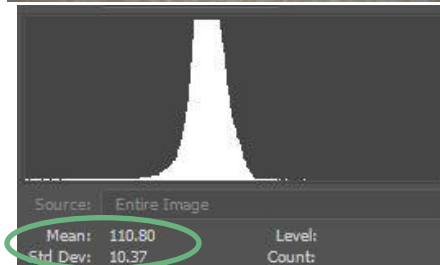


Figure 7. ACB Yerba Santa Glycoprotein PF, Post Initial Wash (Image + Histogram Quantification)

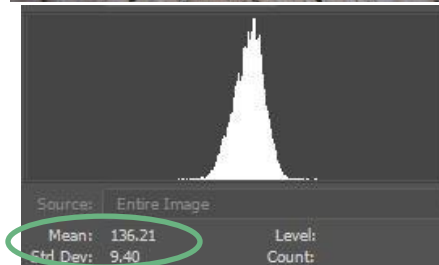


Figure 8. ACB Yerba Santa Glycoprotein PF, Post Pollution (Image + Histogram Quantification)

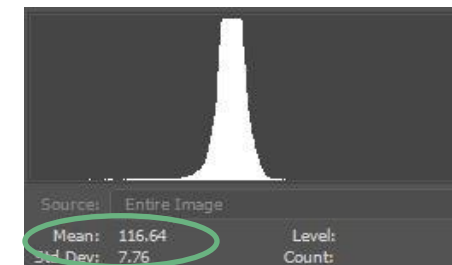


Figure 9. ACB Yerba Santa Glycoprotein PF, Post Final Wash (Image + Histogram Quantification)



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Discussion

As shown in figures 7, 8, and 9, **ACB Yerba Santa Glycoprotein PF** was able to provide pollution protection as specified by micronized carbon residue. The small amount of carbon that remains compared to the untreated control indicates the ability of **ACB Yerba Santa Glycoprotein PF**® to provide barrier protection against everyday air pollution and slow the extrinsic aging process. It can therefore be concluded that at normal use concentrations **ACB Yerba Santa Glycoprotein PF** can be used as a skin pollution protection active ingredient.

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