



Humidity Protection Analysis

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Tradename: PhytoCycle® Orange

Code: 16925

CAS #: 7732-18-5 & 84012-28-2 (or) 8028-48-6 & 1686112-36-6 (or) 68333-16-4

Test Request Form #: 7095

Lot: N200818K

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

Study Director: *Maureen Danaher*

Principle Investigator: *Jennifer Goodman*

Test Performed:

Humidity Exposure with Qualitative Observation

Introduction

This study was performed to qualitatively assess the humidity protection capabilities of **PhytoCycle® Orange (16925)** on the hair. The purpose was to determine if **PhytoCycle® Orange** could provide comparable hair humidity protection to animal-derived keratin such as AC Keratin Hydrolysate 30 PF (20586PF).

Materials

- A. Hair Sample:** Untreated; 5.0% **PhytoCycle® Orange** (16925) Treated; 5.0% AC Keratin Hydrolysate 30 PF (20586PF) Treated; H2O Treated
- B. Conditions:** Average 28°C; Average 93% RH
- C. Equipment:** HOBO Onset temp/RH logger; Cannon EOS Rebel

Methods

Four bleached hair swatches were collected and treated with either 5.0% **PhytoCycle® Orange** in H2O, 5.0% AC Keratin Hydrolysate 30 PF in H2O, H2O alone, or nothing (untreated control). Each test swatch was evenly soaked in its designated treatment and blown dry for one minute. Initial images were taken post treatment and drying. The hair swatches were then fastened to the lid of the humidity chamber allowing of a natural hanging position and space in between each swatch. A 2000 ml beaker of boiling water was placed into the chamber and the lid secured allowing of a closed controlled environment. The temperature and humidity was monitored for the duration of the exposure. Final images were taken at the 30 minute time mark.

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Results

5.0% **PhytoCycle® Orange** in deionized (DI) water provides hair humidity protection. Additionally, **PhytoCycle® Orange** appears slightly shinier and smoother in texture than AC Keratin Hydrolysate 30 PF post humidity exposure.



Figure 1: Pre-humidity exposure



Figure 2: Post 30-minutes humidity exposure



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Discussion

A qualitative study was performed to determine the humidity protecting ability of **PhytoCycle® Orange (16925)** compared to animal-derived keratin, AC Keratin Hydrolysate 30 PF. The humidity protection of an H2O control and untreated control were also performed. As demonstrated in Figure 2, the untreated and H2O control hair swatches were both extremely frizzy post 30 minutes of high humidity exposure.

Conversely, the hair swatches treated with **PhytoCycle® Orange** and AC Keratin Hydrolysate 30 PF were both polished and smooth, with **PhytoCycle® Orange** appearing slightly shinier than AC Keratin Hydrolysate 30 PF.

The results of this study indicate that **PhytoCycle® Orange** is capable of protecting the hair from the deleterious effects of high humidity environments comparable to animal-derived keratin, such as AC Keratin Hydrolysate 30 PF. Both materials help smooth the hair better than the untreated and H2O controls after an equivalent exposure to high humidity. Overall, the **PhytoCycle® Orange** is a suitable protein-free replacement for animal-derived keratin in finished formulas intended to have anti-frizz or anti-humidity properties.

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