AC Kerazyme®
Curl Retention Study

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Abstract

Unlike formaldehyde based hair systems, **AC Kerazyme®** is an all-natural ingredient that is capable of modifying hair shape while protecting it from styling damage. This unique ingredient consists of a blend of hydrolyzed keratin and *Trametes versicolor* extract. *Trametes versicolor* is a type of mushroom that contains an oxidative enzyme called laccase. This distinct heat activated enzyme cross-links free carboxylic acid groups in the hydrolyzed keratin with the amine groups along the cuticle to create a stable network that holds the hair's texture in a given shape. The purpose of this study was to determine the curl retention properties of **AC Kerazyme®.**

Materials and Methods

The humidity chamber was equilibrated two hours prior to testing at 25° C and 90% Relative Humidity. Then two swatches were washed and allowed to dry under ambient conditions. The swatches were then combed 30 times each to remove tangles. One of the swatches was treated with the unloaded vehicle (O/W emulsion) and the second swatch was treated with the vehicle containing 2% **AC Kerazyme®**. Both hair swatches were then curled with a curling iron. After completing the respective hair treatment, the tresses were hung on the support stand in the humidity chamber. Pictures were taken immediately after hanging the swatches and 4 hours later. The readings from the ruler are then converted to percent curl retention by using the following calculation:

$$\text{Percent (\%) Retention} = 100 - \left[\frac{(\text{Tress length after 4 hours} - \text{Tress length immediately after curling}) * 100}{\text{Tress length after 4 hours}}\right]$$

Results

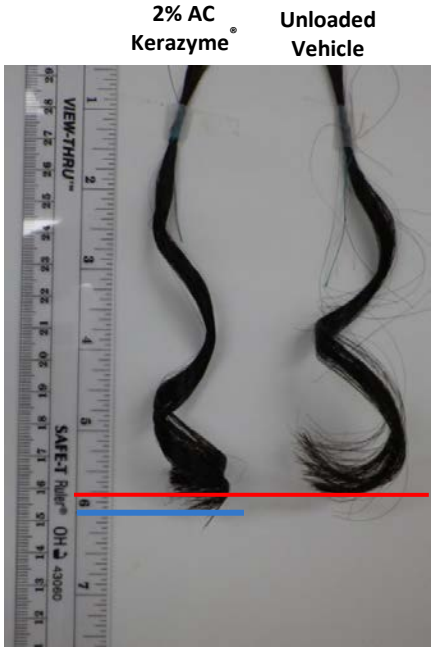

Figure 1. Hair swatches immediately after curling

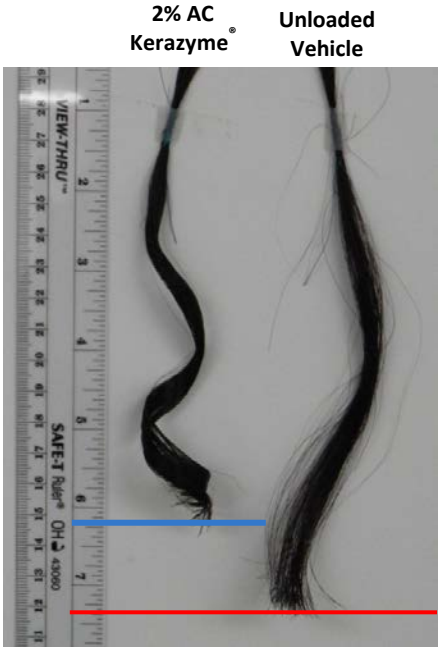

Figure 2. Hair swatches 4 hours after curling

Version#4/06-26-15

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Percent (%) Curl Retention	
2.0% AC Kerazyme®	96.0%
Unloaded Vehicle	72.0%

Figure 3. Percent Curl Retention of **AC Kerazyme®** and the unloaded vehicle.

Discussion

Based on the results, it is clear from viewing the swatches that **AC Kerazyme®** is capable of retaining curls better than the unloaded vehicle seen in swatch 2. In fact, 2% **AC Kerazyme®** retained curls by 96% whereas the unloaded vehicle only retained them by 72% after four hours. For this reason, we can conclude that **AC Kerazyme®** is an ideal ingredient to add to hair care applications designed to provide curl retention over a longer period of time.