ABSTRACT

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Podium Title: *Sensory Property of Hair and Technologies to Enhance It*

Background information (Short introduction)

Sensory benefits in hair are considered the key benefits by a third of global female consumers, as the increasing use of touch screen technology subconsciously places greater sensory expectations on all aspects of personal care applications. However, methodical studies of how hair care products modify hair surface to enhance sensory attributes are still lacking. In this study, multiple methodologies are employed to evaluate the sensory modification effect of various hair care ingredients.

Objective

The objective of this research is to study how common hair care conditioning ingredients affect the sensory properties of the treated hair, and if the sensory benefits perceived by the consumers can be in correlation with the instrumental measurable parameters after various cosmetic applications. The aim of the study is to use the discoveries to steer the innovation of more new high-performance products to meet the unmet need of the consumers.

Methodology

The instrumental methodologies in this study include measuring hair dry friction force for surface smoothness after single and multiple applications, and wet and dry combing force for conditioning efficacy with Dia-Stron MTT175 Unit; hair bending force change after cosmetic treatment to evaluate the hair softness with Texture Analyzer; and Scanning Electron Microscope to examine the surface condition of the hair fiber. Consumer perception and professional salon evaluation on the sensory attributes of different hair type were performed after various conditioning treatments versus placebo formulation, correlations between scientific measurements and consumer perceptible benefits were detected. Rinse-off and leave-on hair conditioners containing dry state conditioning ingredients were studied on European, Asian and African hair.

Results

Experimental data suggest that by combining specific chemical structural elements such as branching and chain length, emollient esters can be developed to offer non-silicone technology to enhance sensory property of the hair. When tested on European damaged hair from rinse-off treatment, in comparison to the placebo, treated hair resulted in 10% enhancement in dry surface smoothness, 25% and 30% more force reduction in dry and wet combing respectively,

and 25% improvement in hair softness, the instrumental results are well correlated with Salon studies on consumer perceivable hair sensory.

Conclusion

Sensory property of hair can be enhanced through proper modification of hair surface, emollient ester chemistry can be tailored to offer a non-silicone technology to deliver significant hair dry sensory benefit.

The study confirmed that sensory effect of hair care product can be accurately measured through instrumental method. Dry and wet combing force, dry friction and bending force can precisely reflect the sensory elements of the hair in scientific terminology.

Correlation of instrumental measurement and consumer perception can be achieved when hair surface was appropriately modified to have the sensory attributes that consumers desire.

Why is this important to the industry?

Audiences will learn the firsthand knowledge on hair sensory attributes and technologies to enhance it. This research is among the earliest to explore sensory attributes of hair, study sensory benefits of hair care products with multiple instrumental measurements, consumer panelist ranking, and salon evaluations. New non-silicone technologies on enhancing hair sensory were discovered, correlations between scientific measurements and consumer perceivable sensory impacts of hair were explored.

Dr. Yingxia He is the Applications Team Leader of Product Validation and Claims Substantiation (PVCS) group at Croda Inc. Ying is responsible for leading the PVCS team to innovate new hair care product and support product claims for internal and external customers. Prior to joining Croda, Ying worked for DuPont, Ciba and Inolex in polymer design and synthesis, pigment research and applications, hair and skin care product applications, and preservatives. Ying obtained her B.S. and M.S. in organic chemistry from Heilongjiang University, Harbin, China, and her Ph.D. in inorganic chemistry from Simon Fraser University, Burnaby, BC Canada. Ying is a member of Committee on Scientific Affairs for the Society of Cosmetic Chemists, she has numerous publications and patents, and has been active in cosmetic industry for more than ten years.