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**“Best Student Presentation Award” Received at the 3rd Annual Congress
of SCCJ through Collaborative Research with
Sanyo-Onoda City University
~Elucidation of Mechanisms of Structural Stability of Keratin α -Helix Dimer~**

Milbon Co., Ltd. (head office: Chuo-ku, Tokyo, President and CEO: Hidenori Sakashita), a manufacturer of salon-exclusive haircare products and cosmetics, has elucidated in detail the mechanisms of structural stability of the α -helix dimer^{*1} formed by keratin, the primary component of hair, through collaborative research with Masatoshi Saiki, Junior Associate Professor of Sanyo-Onoda City University.

The results of this research were presented at the 3rd Annual Congress of the Society of Cosmetic Chemists of Japan (SCCJ) and received the “Best Student Presentation Award” in the poster category. This Annual Congress, hosted by the SCCJ, is one of Japan’s largest academic events for cosmetic technology. It serves as a forum for discussing the latest research results that contribute to the advancement of cosmetic science. The “Student Presentation Award” is given for research that received a particularly high evaluation among student presentations.

[Award Overview]

Academic conference: 3rd Annual Congress of SCCJ

Title of presentation: Structural mechanism of α -helical dimers formed by Type I and Type II Keratin proteins

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[Research Overview]

Over 80% of hair is composed of a protein called keratin. It is known that chemical treatments such as perming and coloring alter the structure of keratin’s α -helix dimer, leading to a decrease in hair strength. Although the stability of this structure is crucial for maintaining healthy hair, the mechanisms responsible for its formation and stability have not been elucidated in detail yet.

This research elucidated in detail at the molecular level the mechanisms underlying the stability of the α -helix dimer structure formed by keratin proteins. This was achieved by combining computational simulation analysis, localized peptide synthesis^{*2}, and structural evaluation by CD spectroscopy measurement^{*3}.

[Future Vision]

Based on these results, we will investigate new approaches for maintaining the structural stability of hair and advance the development of care technologies that can preserve hair’s suppleness and strength after

perming and coloring. We will also deepen our research to further elucidate the molecular mechanisms of structural changes and systematize hair science.

《Terminology》

*1 α -helix dimer

A pair of helical structures formed by keratin proteins within the hair shaft that play a crucial role in maintaining hair strength.

*2 Localized peptide synthesis

A method for artificially synthesizing short peptides that mimic specific regions of keratin proteins.

*3 CD (Circular Dichroism) spectroscopy measurement

A method for obtaining information on the secondary structure of biomolecules such as proteins.

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