MILBON

News Release

January 8, 2015

A New Discovery in the Volume of Lipids between Grey Hair and Black Hair in Japanese Women

~ New Research into Grey Hair ~

The Milbon Co., Ltd. (President and CEO: Ryuji Sato) Central Research Institute has conducted an analysis into the lipid components contained in the grey hair and black hair obtained from the same subjects (Japanese women). The results were a first for the field: the discovery of a difference in the volume of lipids between the grey hair and black hair. There is still a lot that is unknown about the difference between grey hair and black hair. This "difference in lipids between grey hair and black hair" that has now been discovered is something else that wasn't previously fully understood. We are intending to use this new knowledge in the development of future products, applying it in future. We have announced these research results externally as follows.

[External Release]

Released At: The 87th Annual Meeting of the Japanese Biochemical Society

Release Title: Differences in lipid composition between gray hair and black hair

Released By: Keiko Nagami, Yoichi Nagano

Released On: October 18, 2014

[Research Background]

With the advance into old age of the baby boomers and the junior baby boomers now coming into their 40s, the competition to develop anti-aging products becomes heated in Japan. This has led to each cosmetics manufacturer adopting a variety of basic scientific approaches to understanding the changes that occur in the skin and hair as a result of aging.

Grey hair is the most well known effect that aging has upon the hair. Its causes have been reported as being differences in the action of oxidation dye due to the presence or absence of the melanin pigment, the differences in the diameters of grey hair and black hair, and differences in growth speed. Many things remain unclear, however, and the development of further research is still desired.

The lipids in hair contain a variety of different compounds. It is believed that the differences in composition and volume of these lipid components effect factors such as the luster and feeling of the hair. Numerous reports have been released in the past concerning the lipid components of hair, but no detailed reports have been made concerning different hair taken from a single individual. This is what led Milbon to research the differences in composition and volume of lipid components in the grey hair and black hair taken from the same Japanese woman.

[Research Results]

~Examination of Method for Analysis of Lipid Components in Hair~

Hair collected from a sample of Japanese women was divided into grey and black hairs, and then tested (fig.1). The variety of lipid components contained in the hair was extracted using a solvent. Tests were then performed to determine the quantity of cholesterol[*1], squalene[*2], wax ester[*3], triglyceride[*4] and fatty acids[*5] contained in the hair.

~Clear Differences between Grey and Black Hair in the Determinate Quantity of Lipid Components~

Due to gray hair being resistant to coloring, it has been postulated in the past that it contains a larger volume of lipids. However, the results of this new analysis indicate that the total volume of lipids is lower in grey hair than it is in black hair, (fig. 2). In particular, it was discovered that grey hair has significantly less squalene (fig. 3). In regard to other lipid components, there were found to be less of all of them, aside from cholesterol, in grey hair rather than black, (fig. 4, 5).

This research has revealed for the first time the differences in the volume of lipids in the grey and black hair of the same Japanese person. We will continue to research the relationship between this and the luster and feeling of hair, hoping to link them to the development of higher quality hair cosmetic products.

<Reference Materials>

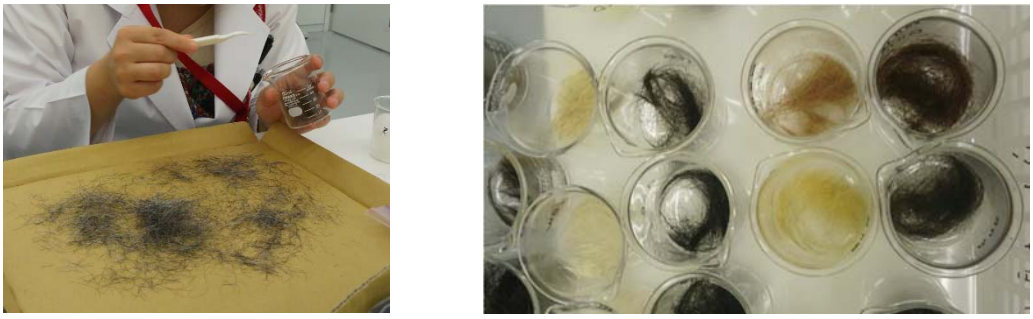

Fig.1 The grey hairs being sorted, and sorted grey and black hair

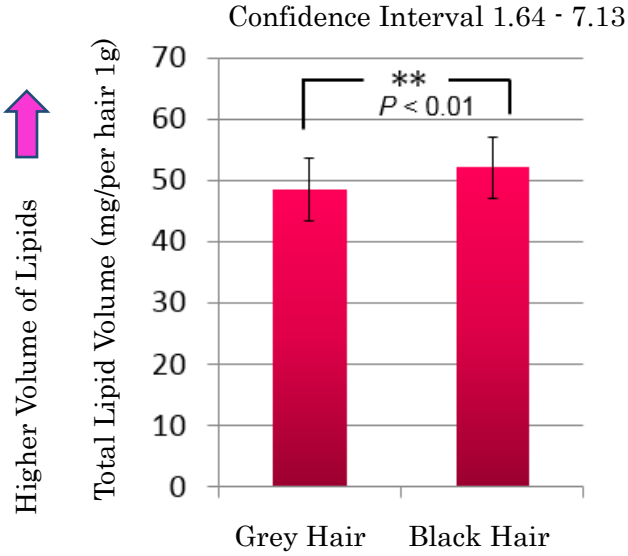

Fig. 2 Total Lipid Volume for Grey Hair and Black Hair

Grey hair showed a tendency for less total lipid volume than black hair (fig. 2)

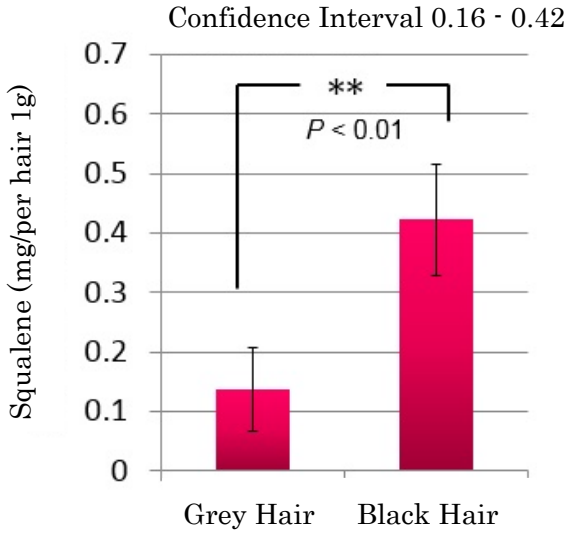

Fig. 3 Volume of Squalene in Grey Hair and Black Hair

The volume of squalene (fig. 3) was shown to be lower in grey hair than in black hair, and that the difference is much larger than for other compounds.

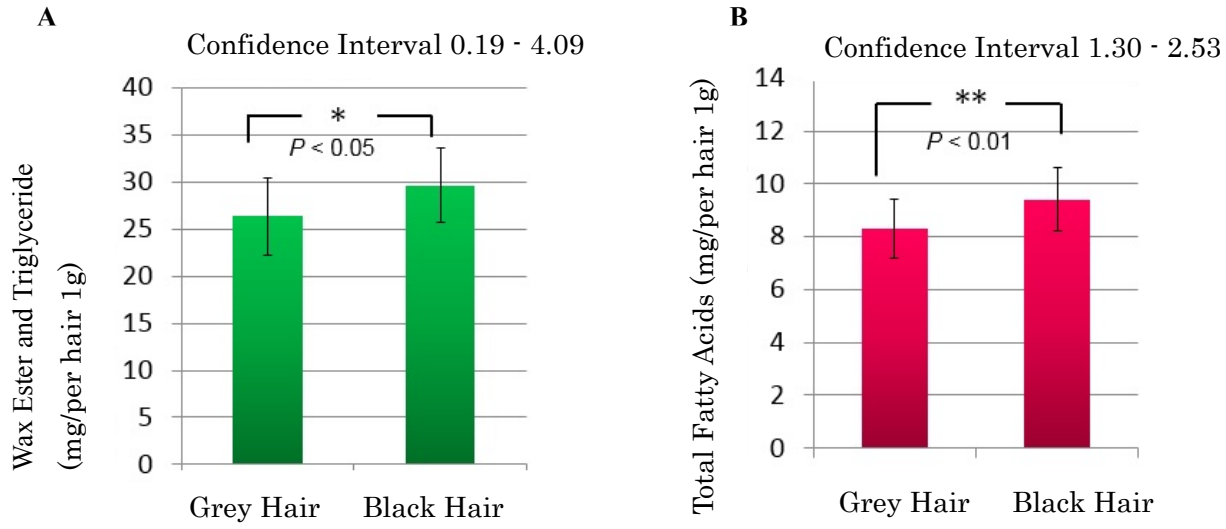

Fig. 4 Total Volume of Wax Ester and Triglyceride in Grey Hair and Black Hair (A) and Total Volume of Fatty Acids in Grey Hair and Black Hair (B)

The total volume of wax ester and triglyceride (Fig. 4-A) and total volume of fatty acids (fig. 4-B) show a trend to be lower in grey hair than black hair.

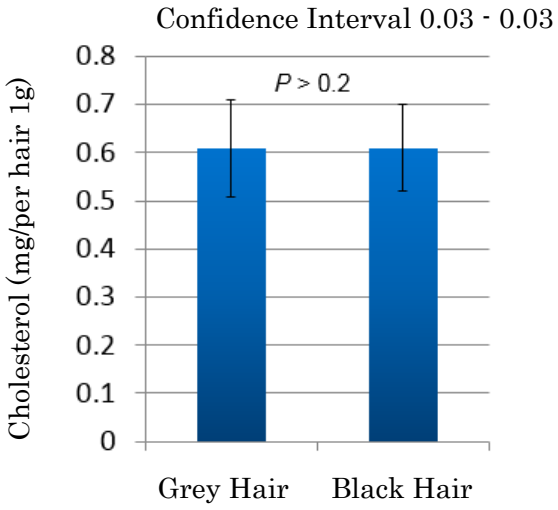

Fig. 5 Volume of Cholesterol in Grey Hair and Black Hair

No meaningful difference between the volumes of cholesterol in grey hair and black hair were seen (fig. 5)

<Terminology>

*1 Cholesterol

Solid lipid component widely distributed throughout the body, including in cell membranes

*2 Squalene

Fluid lipid component widely distributed throughout the body, including in cell membranes

*3 Wax ester

Lipid component with ester structure, like that found in wax

*4 Triglyceride

Lipid component found in large volumes in human sebum, also called a neutral lipid

*5 Fatty acids

Lipid component produced by dissolving triglycerides

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