

〈原 著〉

パーマメントウェーブ液による毛髪損傷の要因

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Main Factors of Hair Damage by Permanent Wave Lotion

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Permanent wave lotion is chemically active and tends to damage hair. The purpose of our research was to analyse the main factors of the damage and to obtain data that would justify a safe application of permanent wave lotion.

Non-permanented hair of a 23 year old woman was used as samples. The samples of three different conditions (straight, ordinary winding and 20% elongated winding) were immersed in two acidic lotions, and two alkaline, for different times and at different temperatures. The surface of the samples were monitored with a scanning electron microscope, and their tension strength was determined by TENSILON-UTM-II 20. The results are as follows:

1. The decrease of tension strength and the surface damage are comparable to the degree of winding. Such influence was not found in 4% thioglycollic acid lotion. Almost no damage was seen on the samples immersed in the lotion for 30 min. at 50°C.
2. Immersion time and temperature in particular is closely related to the damage, however, almost no damage was found in the case of lotion A.
3. Among the ingredients of the lotion, thioglycollic acid and especially alkalinity were the limiting factors.

Damage was slight in the acidic lotion. Decrease of the tension strength of the sample immersed in acidic lotion B for 30 min. at 50°C was less than that treated in alkaline lotion D for 5 min. at room temperature.

4. Alkali had a strong effect upon wave formation. Acidic lotion forms no waves when applied for 15 min. at room temperature, and does so for 30 min. at 50°C. Under this condition lotion B was found to have good wave formation. Lotion B contains 7% thioglycollic acid in the standard of cold bi-lotion system. The result seems to suggest that, considering the fact stated in (3), we can safely increase the concentration of thioglycollic acid from 5% to 7% in acidic warm bi-lotion system.

1. 要 約

パーマメントウェーブ液は化学的活性に富み、毛髪を損傷する傾向が強い。著者等は損傷の要因を分析し、安全に施術するための資料を得ることを目的として研

究を行なった。

毛髪試料は23才女子のバージンヘアを用い、これを直毛、通常のwinding、20%伸ばしてのwindingの3種の状態とし、これらの試料を内容組成の異なる酸性パーマ液2種、アルカリ性パーマ液2種計4種の製品に時間および温度を変化させて浸漬した。これらの条件を与えて処理した毛髪を走査型電子顕微鏡による表面変化の観察、TENSILON-UTM-II-20による引張り強度の測定により毛髪の損傷に関し次の知見を得た。

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