

Mandom Discovers Stress Negatively Affects the Hair and Scalp

Mandom Corporation (Headquarters: Osaka; CEO: Motonobu Nishimura; hereinafter, “Mandom”) conducted a study of the scalp of Japanese men in collaboration with Ayako Ito, Director of the Medical Corporation Xanadu Ayako Ito Clinic, with the aim of improving the functionality of cosmetic products (quasi-pharmaceuticals).

In previous studies, Mandom showed that men in their 30s and 40s with thinning hair have harder scalps than other men of the same age and also discovered components that soften hard scalps. In the present study, the relationship between the male scalp condition and stress was further explored, yielding the finding that as the stress index increases, the occipital hair diameter becomes thinner, the number of hairs per hair follicle decreases, and the condition of the scalp becomes harder.

These results will be presented at the 39th Annual Meeting of the Japan society of Aesthetic Plastic Surgery (10/24-10/25/2016) and the 29th Congress of the International Federation of Societies of Cosmetic Chemists (IFSCC) in the Orland, Florida, USA (10/30 to 11/2/2016).

1. Relationship between cortisol and hair

Stress is said to negatively affect the skin, scalp, and hair in general, but the causal relationships and detailed mechanisms had not been revealed.

Therefore, Mandom conducted a study on the effect of stress on the scalp.

Cortisol is a type of hormone that is secreted in response to stress (stress hormone). The concentration of cortisol in the saliva can be used as an index of stress. This study investigated the relationship between salivary cortisol concentration and hair in 24 Japanese men in their 30s and 40s and revealed that the occipital hair diameter decreases in persons with higher concentrations of cortisol (Figure 1).

2. Relationship between stress and serum uric acid concentration

Salivary cortisol concentration is one index that is generally used to assess the presence (intensity) of stress, but the concentration of cortisol shows circadian and daily variation, making stable measurements difficult.

Therefore, Mandom studied other stress indexes to find one that might be a simple and stable indicator of stress. When the concentration of various components in the blood was measured in 24 men in their 30s and 40s, the results showed that serum uric acid concentration exhibited a negative correlation with salivary concentration of dehydroepiandrosterone (DHEA), a hormone with an antagonistic action* to cortisol. From the results of the present study and past studies on the increase in serum uric acid levels due to stress, serum uric acid was found to be usable as a new indicator of stress (Figure 2).

*Antagonistic action: opposite action, canceling effect

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3. Relationship between serum uric acid and the hair and scalp

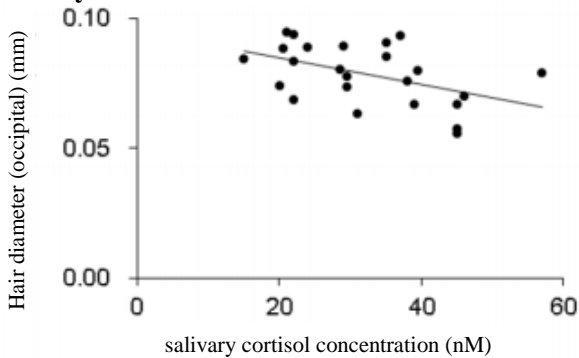
The relationship between hair and this new stress indicator, serum uric acid levels, was investigated in 24 Japanese men in their 30s and 40s, and the results showed fewer hairs per hair follicle for occipital hair in persons with higher levels of serum uric acid (Figure 3). In addition, the hardness value of the scalp is higher in groups with higher levels of serum uric acid.

From previous research, Mandom considers that maintaining the softness of the scalp is important for mitigating the negative effects of stress on the scalp and hair (Figure 4).

Mandom will continue to strive to reveal the factors affecting the hair and scalp and further explore components that improve the condition of the scalp, in order to develop products appropriate for the scalp and hair of Japanese men.

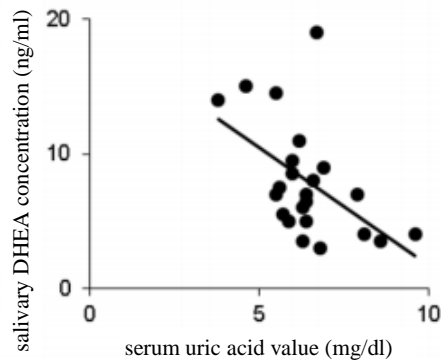
<References>

Figure 1. The relationship between salivary cortisol concentration and hair



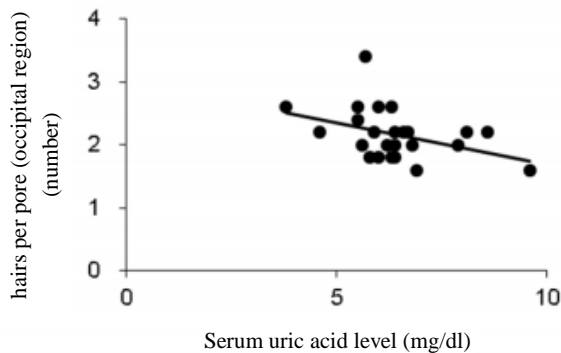
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p value:0.02 (Pearson's correlation factor test)

Figure 2. Relationship between serum uric acid and salivary DHEA concentration



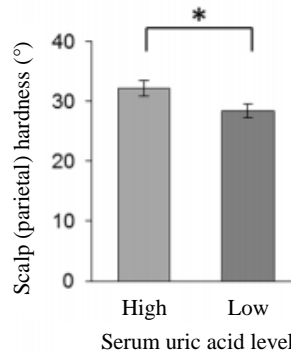
Correlation factor: -0.51
p value:0.01 (Pearson's correlation factor test)

Figure 3. Relationship between serum uric acid and the hair and scalp



Correlation factor: -0.44
p value:0.03 (Pearson's correlation factor test)

Figure 4. Relationship between uric acid levels and scalp hardness



*:p<0.05 (Student T test)

〈Reference News Releases〉

- ① Mandom reveals the actual state of the easily damaged male scalp and the improvement effect of scalp lotion (12/14/2015 News Release)
- ② Mandom Discovers the Scalp-Softening Effect of Keratinocyte Growth-Factor- Mimicking Peptides (8/31/2016 News Release)

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