

Mandom discovers that the skin of women aged 30 changes based on their menstrual cycle and is temporarily degraded during the hyperthermic phase

~Improvement in skin deterioration by phytic acid from rice milk~

Mandom Corporation (headquarters: Osaka City, President & CEO: Motonobu Nishimura; hereinafter referred to as “Mandom”), has recently been strengthening not only in the business of male cosmetic products, but also in female cosmetic products. In particular, our research and development targets women in their 20s and 30s who seek to enrich their life and pursue beauty, despite significant changes to their work and living environment.

On this occasion, we investigated the relationship between the menstrual cycle and skin condition in women age ~30 who are sexually mature and bear active hormones. The amounts of sebum secretion and transepidermal water loss were higher during the hyperthermic phase compared to the hypothermic phase. In addition, dull color of skin (darker skin color, more intense redness) was observed during the hyperthermic phase, and more emphasized pores.

Subsequently, we found out that “phytic acid” derived from “rice milk,” a recent well-known power food owing to research on ways to cope with unstable skin unique to women in this age group, helps to improve skin deterioration during the hyperthermic phase (increase in sebum secretion and transepidermal water loss, dull color of skin).

These results will be presented at the 116th Annual Meeting of the Japanese Dermatological Association (June 2 to 4, 2017).

1. Temporary deterioration of skin condition during the hyperthermic phase of the menstrual cycle

Mandom performed an investigation regarding the awareness of women in their 30s with poor skin condition. Over 90% of women had experienced an issue with their skin condition (Figure 1), with many believing factors other than aging, such as hormone imbalance, stress and lack of sleep etc. were responsible for the evident issues.(Figure 2).

A period of sexual maturity and high hormonal activity occurs in women between ages 20 and 30. Although a woman’s physical condition is known to fluctuate with her menstrual cycle, we believe skin condition is affected in a similar manner.

Mandom has therefore evaluated the menstrual cycle and the associated changes in skin condition using 22 healthy Japanese females between ages 25 and 35 years old.

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The menstrual cycle is divided into the menstrual phase, follicular phase, ovulation phase and luteal phase. Basal body temperature is known to be low during the follicular phase (hypothermic phase) and high during the luteal phase (hyperthermic phase). When skin conditions were compared between the hypothermic and hyperthermic phases, sebum secretion levels during the hyperthermic phase, regardless of the season, as well as transepidermal water loss were higher (diminished barrier function) than during the hypothermic phase (Figure 3). In addition, during the hyperthermic phase, the skin was dull color (darker skin color and more intense redness), and pores were prominent (Figures 4 and 5).

2. “Phytic acid” derived from rice milk helps to normalize conditions of the skin during the hyperthermic phase

Mandom has collaborated with the Laboratory of Dermatological Physiology at the Faculty of Pharmacy and Pharmaceutical Science at Josai University to examine materials that can suppress sebum. Through this study, we have revealed that phytic acid derived from rice milk possess high sebum-suppressing effect.

To validate the contributors to poor skin condition unique to women aged around 30, Japanese female subjects were asked to apply a model lotion containing phytic acid on one half of their face, and a model lotion without phytic acid on the other half of their face, twice a day for 6 consecutive weeks. Then the skin condition between the left and right sides were compared. The effect of suppressed sebum secretion and improved transepidermal water loss were confined on the side of the face where the phytic acid-containing lotion was applied; these events usually elevate during the hyperthermic phase (Figure 6). Dull of skin also improved (brighter skin, suppressed reddening of the skin) with this treatment (Figures 7 and 8).

Mandom considers that such temporary worsening of the skin’s condition differs from skin aging which occurs over the years as “deterioration”. Future efforts will involve the application of these findings to develop skincare products for women.

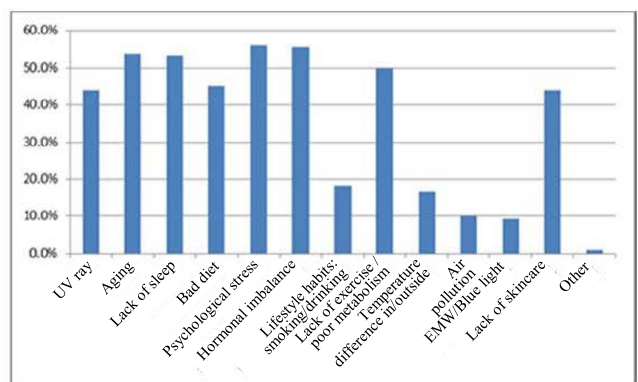
[Reference Material]

Figure 1. Awareness of poor skin condition.



Subjects: 536 female subjects in their 30s
 Period: May 2016
 Method: Internet-based questionnaire

Figure 2. Plausible causes of poor skin condition.



Subjects: 485 female subjects in their 30s using subjects who responded “I feel it” in Figure 1.
 Period: May 2016
 Method: Internet-based questionnaire

Figure 3. Influence of menstrual cycle on sebum level and transepidermal water loss.

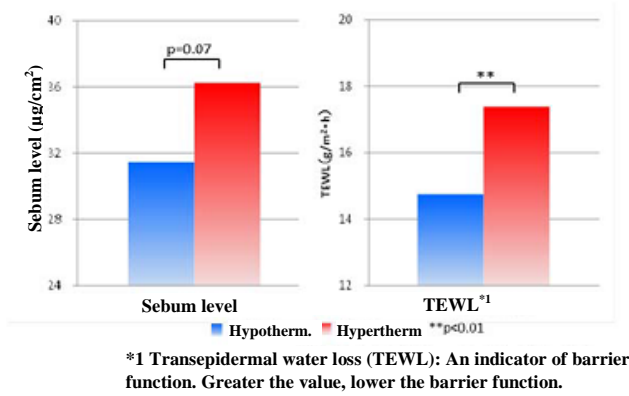


Figure 4. Influence of menstrual cycle on skin color.

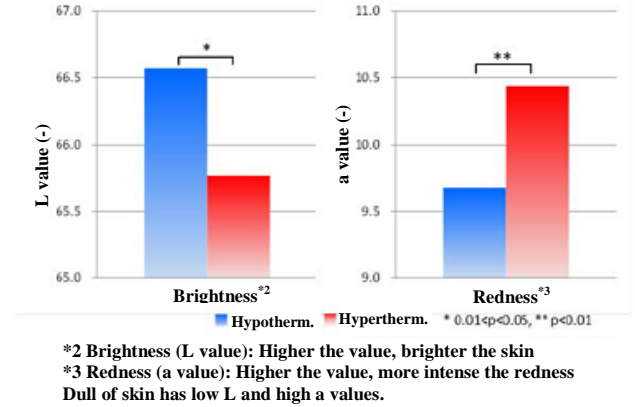


Figure 5. Influence of menstrual cycle on pores (Comparison of the same site on the same person).

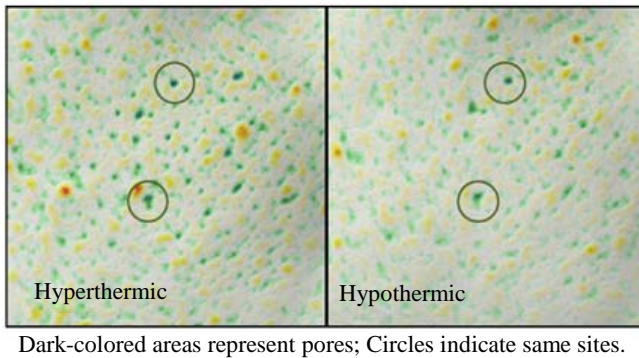


Figure 6. Phytic acid suppresses sebum secretion and transepidermal water loss during the hyperthermic phase.

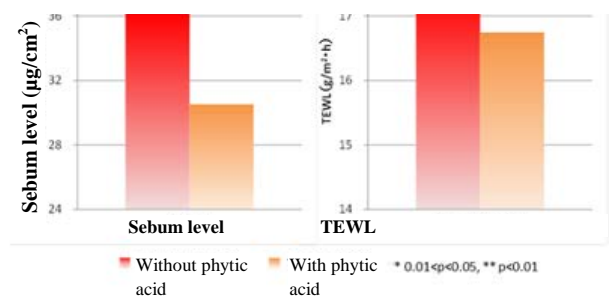


Figure 7. Influence of phytic acid on skin color during the hyperthermic phase.

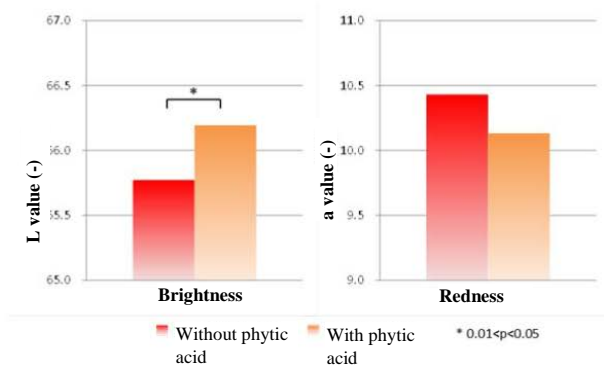


Figure 8. Image of skin during hyperthermic phase (Left: Without phytic acid, Right: With phytic acid).

