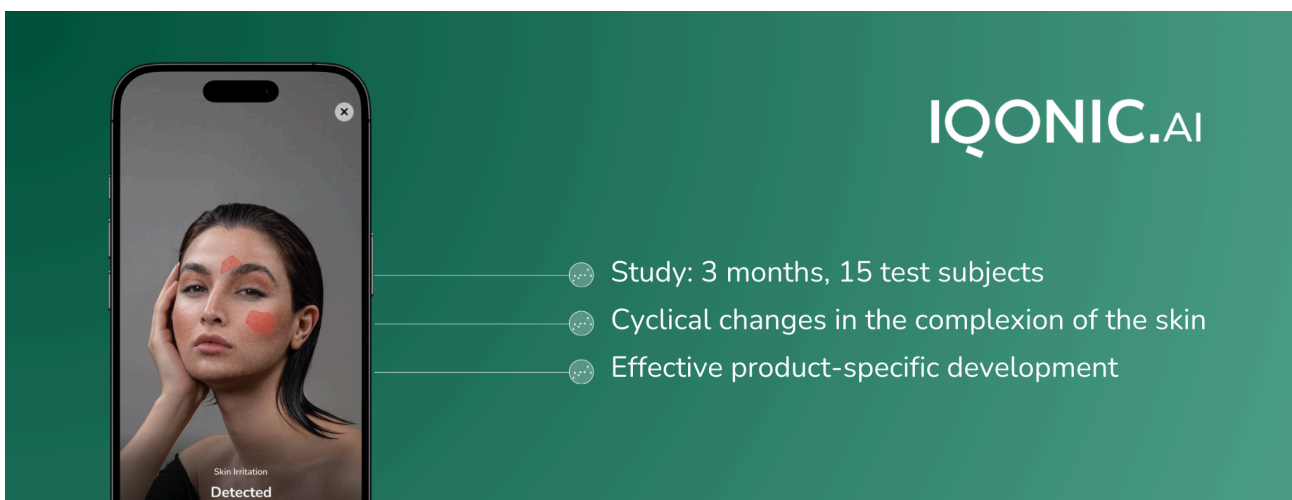


## In Rhythm with the Skin: How the Monthly Cycle Shapes Our Complexion

### Part 1: The Changes in Skin Appearance During the Monthly Cycle

The skin is the largest organ of the human body and serves as an interface between internal biological processes and external environmental influences. Many people report that their skin condition changes throughout the month – ranging from oily skin with increased blemishes to dry, flaky areas. Women, in particular, notice significant fluctuations in their skin's texture in relation to their menstrual cycle. But what biological mechanisms underlie these changes? In a study, we attempted to get to the bottom of these theories.



### The Skin's 28-Day Cycle

Skin cells renew themselves on average every 28 days. This process of skin regeneration, known as keratinization, ensures that the outermost layer of the skin (the stratum corneum) is continuously shed and replaced by new cells. At the same time, a cyclical rhythm driven by hormones, particularly in women, also plays a significant role.<sup>1</sup>

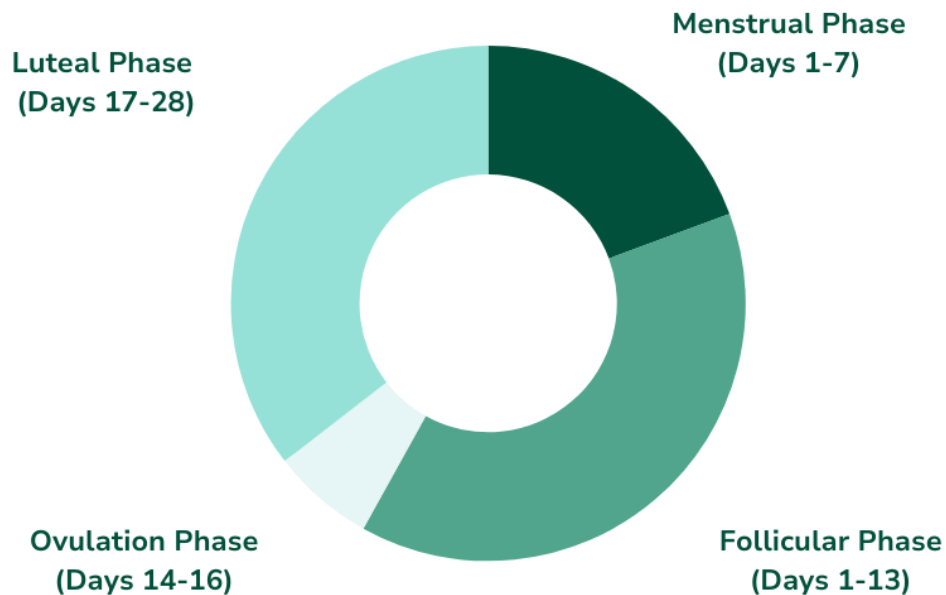
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<sup>1</sup> Vgl. Haut.de. (o. D.). Fakten zur Haut: Hauterneuerung und Follikelapparat. *(translated from german)*

## Hormonal Influences on the Skin

During the menstrual cycle, the body undergoes significant hormonal fluctuations, particularly in the levels of estrogen, progesterone, and testosterone. These hormones directly affect sebum production, skin circulation, and the skin's ability to retain moisture.<sup>2</sup>

## Skin and Hormones Throughout the Cycle



- **Menstrual Phase (Days 1-7):** Hormone levels drop, causing the skin to become drier and less elastic.
- **Follicular Phase (Days 1-13):** Estrogen levels rise, providing anti-inflammatory effects and improving skin elasticity. The skin appears smoother and more supple.
- **Ovulation Phase (Days 14-16):** Estrogen peaks, giving the skin a radiant glow. A slight increase in testosterone may boost sebum production.
- **Luteal Phase (Days 17-28):** Progesterone stimulates sebum production, making the skin oilier and prone to clogged pores. Water retention may cause the skin to appear puffy.<sup>3</sup>

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<sup>2</sup> Vgl. Haut.de, o. D. (translated from german)

<sup>3</sup> Vgl. Clue. (o. D.). Die Haut und der Zyklus: Wie beeinflussen Hormone deine Haut? (translated from german)

## Different Cycles in Men

Men do not have a monthly hormonal rhythm, but their skin is still influenced by hormones such as testosterone. This hormonal effect is particularly significant because testosterone directly impacts the activity of the sebaceous glands. It increases sebum production, which is why men's skin is often oilier than women's skin.

Unlike women, who experience a 28-day hormonal cycle, men have a daily hormonal cycle. Testosterone levels fluctuate significantly within a 24-hour period. They peak in the morning, leading to increased sebum production and more noticeable skin shine. Over the course of the day, testosterone levels decrease, which helps stabilize the skin. By evening, the levels are at their lowest point.<sup>4</sup>

Testosterone plays a key role in sebum production, making men's skin more prone to oiliness, acne, blackheads, and enlarged pores, particularly during puberty. From the age of 40 onwards, testosterone levels gradually decline, resulting in drier and less elastic skin. To slow this process, targeted skincare is essential to regulate oil levels and combat skin aging.<sup>5</sup>

## Part 2: Cosnova Beauty x IQONIC.AI Study

The skin is a dynamic organ that constantly adapts to internal and external influences. Based on the theory that hormonal fluctuations and the skin's 28-day cycle affect its condition, we at IQONIC.AI conducted a study to examine these changes in more detail. The goal was to determine how the complexion evolves through daily observation over several weeks and whether cyclical patterns can be identified. These insights aim to lay the foundation for personalized skincare products tailored to the different phases of the monthly cycle.

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<sup>4</sup> Vgl. Knappschafft. (o. D.). Der Hormon-Zyklus: Die Hormone des Mannes: Wie funktioniert der männliche Zyklus? *(translated from german)*

<sup>5</sup> Vgl. Herbsom. (o. D.). Wie Hormone unser Hautbild beeinflussen: Der Einfluss von Hormonen auf Männerhaut. *(translated from german)*

## Study Design and Methodology

Our study spanned three months and included daily photographic recordings of the skin of 15 participants under standardized conditions. The participants consisted of both men and women with various skin types (dry, oily, combination skin).

### The study examined the following aspects:

- **Daily Fluctuations in Skin Condition:** Analysis of skin age, skin type, wrinkles, and skin impurities.
- **Long-Term Trends:** Observation of cyclical patterns and recurring changes.
- **Correlations:** Relationships between skin type and specific skin conditions, such as acne.

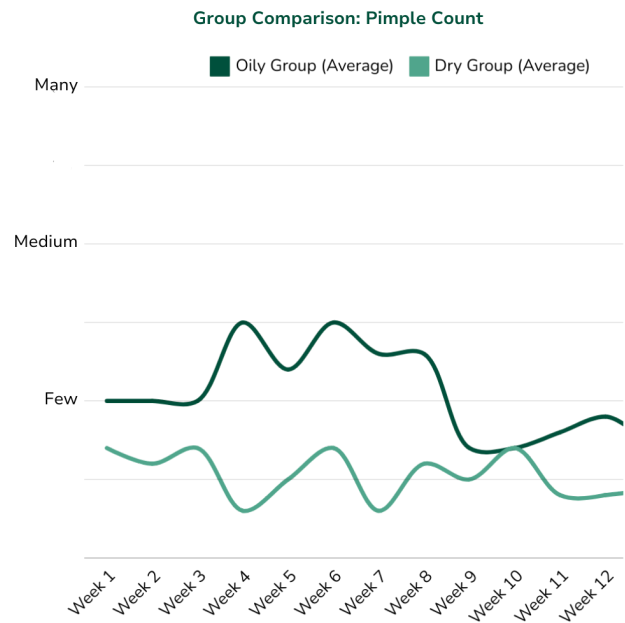
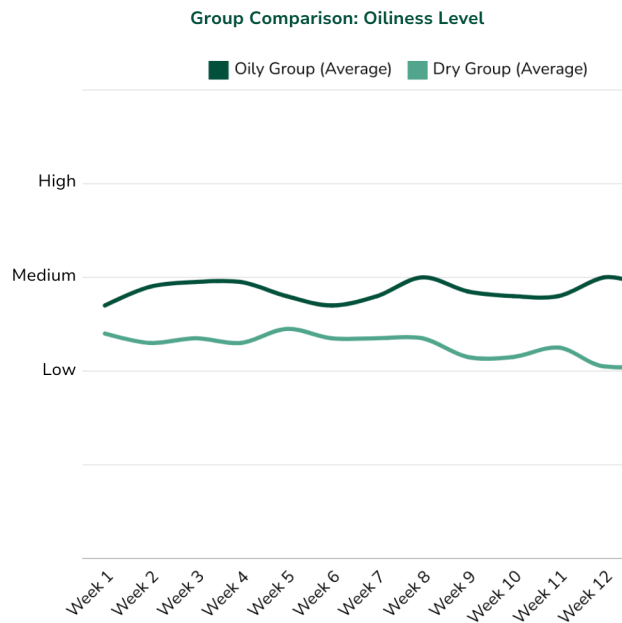
### Results: Daily Fluctuations

The daily skin measurements revealed that the skin exhibited slight variations in its condition over the observation period. However, these fluctuations were generally subtle and did not show drastic changes from one day to the next. The following trends were observed:

- **Oily Skin:** Values fluctuated between 75% and 100% oil content.
- **Dry Skin:** Values ranged between 0% and 25% moisture.

No clear correlation was identified between the daily fluctuations and skin conditions such as acne or rosacea.

A clear correlation between skin type and acne was observed: individuals with oily skin demonstrated a higher tendency for blemishes, particularly during phases of increased oiliness. In contrast, individuals with dry skin showed significantly fewer blemishes, with oil levels consistently remaining at a low to moderate range.



### Cyclical Patterns

In female participants, slight cyclical tendencies were observed that correlated with the menstrual cycle:

- **Increase in Acne:** Some participants reported more frequent blemishes during the second week of the cycle. This aligns with the theory that the rise in estrogen and testosterone increases sebum production.
- **Skin Texture:** No significant changes in texture or the overall appearance of the skin were noted throughout the entire cycle.

### Discussion: No Extreme Variations

For all participants – regardless of gender or skin type – no extreme fluctuations in skin condition were observed. This suggests that while the skin is dynamic, it operates within a relatively stable framework.

In female participants, however, slight cyclical tendencies were noted, corresponding to hormonal fluctuations during the menstrual cycle. The increased susceptibility to acne in the second week of the cycle highlights the influence of estrogen and testosterone on sebum production. These findings align with the theoretical discussion on the effects of hormones on the skin.

The results emphasize a clear correlation between skin type and acne. Oily skin is more prone to acne, demonstrating the need for targeted, sebum-regulating care. In contrast, dry skin benefits from hydrating products. These insights provide a foundation for the development of personalized skincare products tailored to the specific needs of different skin types.

### **Conclusion and Implications**

The study demonstrates that cyclical changes in skin condition are real, albeit subtle. Hormonal fluctuations, particularly in women, have a measurable impact. The most prominent finding was the correlation between skin type and the occurrence of blemishes.

The skin is a dynamic organ influenced by both internal and external factors. These findings provide a foundation for the development of innovative skincare strategies, such as products tailored to the different weeks of the menstrual cycle. Such concepts could offer significant benefits, especially during acne-prone phases.

The results open new opportunities for the cosmetics industry to create personalized products that address the needs of various skin types and the hormonal fluctuations of the monthly cycle. While targeted care concepts for specific phases can provide added value, general skincare products remain a reliable foundation for most users.

### **About the Company**

The company is a German cosmetics brand founded over 20 years ago. It is renowned for its affordable yet high-quality cosmetic products, offered under various brands. The company places great emphasis on innovation, sustainability, and trend-conscious design. Its products are available in over 90 countries worldwide, reaching a broad audience. Additionally, the company is committed to social responsibility, focusing on sustainable production and packaging solutions.

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