

## Summary

The level of estradiol and dehydroepiandrosterone sulphate in the blood was tested on the 5th and 25th day of the cycle in women in 4 age groups (from 16 to 50 years of age), with simultaneous assessment of skin parameters such as: moisture, smoothness, pore width, intensity of discoloration, as well as oiling the skin in the T zone parameters, assessing how fluctuations in selected steroid hormones (E2 and DHEAS) in the course of the menstrual cycle, affect the above-mentioned features of the facial skin in women in different age groups.

The analysis of skin features was performed with the Aramo-SG Aram Huvis device, consisting of from the camera, lenses with different magnification, moisture sensor and sebum sensor with test discs for sebum measurement. The study of the dependencies of variables - their correlation (whether changes in one variable predictably affect changes in the other variable) was carried out on the basis of the analysis of the correlation coefficient  $r$  (Pearson's coefficient).

Based on the analysis of the obtained results, it can be concluded that:

- on the 25th day of the cycle, in the group of 40-50-year-old group, a different reaction of skin moisture to increasing E2 concentration was observed ( $r = - 0.766$ ),
- on the 25th day of the cycle, in the 30-39-year-old group, a strong positive correlation was observed ( $r = 0.831$ ), and in the 40-50-year-old group a weak negative correlation ( $r = - 0.495$ ) between the concentration of E2 and the smoothness of the skin,
- on the 25th day of the cycle, in the 40-50-year-old group, a positive correlation ( $r = 0.409$ ) was observed between DHEAS concentration and skin smoothness,
- on the 25th day of the cycle, in the 30-39-year-old group, a negative correlation ( $r = - 0.654$ ) was observed between the concentration of E2 and skin discoloration, and only in this group, on both days of the cycle, reduction of redness was observed with increasing E2,
- on the 25th day of the cycle, in the 30-39-year-old group, a negative correlation ( $r = - 0.833$ ) was observed between DHEAS concentration and skin discoloration.

The presented results may indicate a relationship between the tested skin parameters and the concentration of selected steroid hormones, and the 25th day of the cycle is characterized by the greatest fluctuations in these parameters, most often in the 30-39-year-old group.

The above observations show that when developing cosmetic formulas, especially anti-aging ones, should be taken into account changes in some parameters characterizing the condition of the skin depending on the concentration of steroid hormones, and therefore on the phases of the menstrual cycle.