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ASSOCIATION BETWEEN IRISIN CONCENTRATION AND FASTING IN OVERWEIGHT WOMEN

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Background and aim. Irisin is a cytokine that is produced by muscle cells and is thought to play a role in regulating lipid metabolism. While there is some evidence to suggest that irisin levels may be influenced by fasting, the relationship between irisin levels and fasting is not yet fully understood. The aim of the study was to investigate the association between the irisin concentration and five days fasting in overweight women.

Materials and methods. 11 female volunteers, aged from 27 to 64 years, were investigated. They were given a fasting diet for five days under the supervision of health professionals. The study protocol was approved by the Vilnius Regional Bioethics Committee No. 2021/11-1393-866. All participants provided written informed consent to participate in the study. While the weight of the participants varied, all individuals were classified as overweight based on their body mass index (BMI) of ≥ 25 . Throughout the fasting phase, anthropometric measurements were collected for all participants on days 1, 3, and 5 by using an ACCUNIQ BC300 scale. All the measurements were coded, documented, and archived. Blood samples for irisin testing were collected containing a clotting activator and separating gel on the first and last day of the fasting program. The blood samples were transported to the Vilnius University Hospital (VUL) Santaros Klinikos on the same day in an upright position at 4°C temperature. Upon arrival, the samples were centrifuged at 1000g at 4°C for 10 minutes, aspirated into tubes with identifying codes, and subsequently frozen at -20°C until the start of laboratory analysis. The tests were performed in the Research Laboratory of the Centre for Laboratory Medicine of VUL Santaros Klinikos. Irisin levels were measured using appropriate Elabscience ELISA detection kits. A Thermo Scientific™ Multiskan SkyHigh Microplate Spectrophotometer was used for incubation, shaking, and reading of the plates.

Results. A total of 11 (n=11) overweight women with a median age of 52 years were tested for irisin concentration in blood (ng/ml) before and after the fasting period of five days. The median of the BMI before fasting was higher (median=32.60) than the median of the BMI after the five days fasting period (median=31.20). Furthermore, the median of the concentration of irisin before fasting was higher (median=10.782) than the median of the concentration of irisin after the five days fasting period (me-

dian=5.879). To calculate if there is an association between irisin secretion and five days fasting, non-parametric Wilcoxon test with paired samples was used (p-value=0.00293). This indicates a significant decrease in the irisin levels of overweight women after five days of fasting. Although the p-value of 0.00293 indicates strong evidence of a significant difference in irisin secretion, it is important to note that statistical significance does not necessarily imply clinical significance, and further research would be required to understand the potential implications for health. Additionally, other factors such as age, sex, physical activity, and baseline levels of irisin secretion could also affect the results.

Conclusions. An association between irisin levels and five days fasting in overweight women (BMI \geq 25) was found. There is a significant decrease of the irisin concentration during five days of fasting. More research should be conducted to determine its clinical significance.

Keywords. Cytokines; Irisin; Fasting; Overweight; Women.