Polycystic ovary syndrome (PCOS) is a common condition connected with insulin resistance and other metabolic disorders resulting in increased morbidity. Since the biological background and mechanism are not entirely known there is still lack of a specific treatment. Recently, a novel myokine, named irisin (Ir), was identified in humans. Exogenous administration of Ir experiments showed an increase of energy expenditure, improvement of glucose tolerance and a significant weight loss via transformation of white fatty tissue into metabolically more active brown adipose depot. These results and clinical observations provided evidence that Ir mediate some of the positive effects of training. Defining the role of irisin in human may be huge practical value.

We measured Ir plasma concentration using ELISA method in well clinically and biochemically defined 46 PCOS patients as well as in 34 healthy controls. 44 subjects met the criteria of Nonalcoholic Fatty Liver Disease (NFLD). There was no difference in Ir levels between PCOS and control groups (median rate). Ir concentrations in the whole study group were correlated with parameters of a body composition (waist circumference $r = 0.239231$, $p = 0.032581$, WHR $r = 0.220302$, $p = 0.049573$) and tended to be correlated with insulin resistance (HOMA $r = 0.189676$, $p = 0.094083$, QUICKI $r = -0.210906$, $p = 0.063810$). Ir plasma levels was not related to the adipose body content. Interestingly U Mann-Whitney test revealed a significant correlation of Ir serum concentration with NFLD ($Z = -3.33165$, $p = 0.000863$). Altogether all our preliminary data suggest that Ir is a promising candidate for the studies of mechanisms of metabolic disorders linked with insulin resistance including NFLD. For the first time predominant connection of this myokine with liver damage and dysfunction was found in our study group. These observations must be confirmed in larger cohorts.