# Selenium concentration and other markers of oxidative and antioxidative system in pregnant women with intrauterine growth restriction

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# Objective

The aim of the study was to examine selenium concentration, glutathione peroxidase activity and thiobarbituric acid reactive substances (TBARS) concentration in serum and erythrocytes of pregnant women with IUGR, compared to healthy pregnants with uncomplicated pregnancies and healthy nonpregnant women.

### Methods

The study included 134 women treated at the Gynecology-Obstetrics Outpatients, Pregnancy Pathology Outpatients and at Obstetrics and Pregnancy Pathology Unit at the Clinic of Obstetrics, Gynecology and Oncological Gynecology at Dr J. Biziel Memorial University Hospital No. 2 in Bydgoszcz, between 2012-2014. The patients were divided into three groups. Group I comprised of 40 pregnant women with IUGR. Group II included 44 healthy pregnants with uncomplicated pregnancies. Group III consisted of 50 healthy nonpregnants. Selenium concentrations were determined in plasma by the use of Watkinsons' fluorometric method. Activity of glutathione peroxidase was determined in erythrocytes (GSH-Px 1) and plasma (GSH-Px 3) using the method of Paglia and Valentine. TBARS in patients' plasma was measured with Wąsowicz at all. optimised method. Statistical analysis was conducted with PQStat ver. 1. 6.

### Results

Selenium concentration was 0, 057 microg/l in the nonpregnant women, 0, 051 microg/l in uncomplicated pregnants and only 0, 044 microg/l in IUGR group. The lowest glutathione peroxidase activity in plasma and erythrocytes was found in IUGR patients (median level 0, 136 u/gHb and 21, 05 u/ml, respectively), as well as the highest thiobarbituric acid reactive substances concentration (medium 2, 23 nmol/ml). The highest glutathione peroxidase activity in erythrocytes was demonstrated in uncomplicated pregnancies (24, 36 u/gHb). The results were statistically significant. The statistical analysis also revealed positive correlation between selenium concentration and GSH-Px activities in plasma and erythrocytes and between both GSH-Px activities in all groups. There was also statistically significant (p <0, 05) negative correlation, either between Se and TBARS concentration or plasma GSH-Px activity and TBARS concentration in nonpregnant patients.

# Conclusion

Our study suggests that selenium plays an important role in the pathophysiology of IUGR and insufficient antioxidant defense can be one of the causes of IUGR. Results of our study suggest also, that in pregnancies complicated by IUGR, selenium requirement is higher and probably it is used not only for elevating antioxidant potential. The examination of selenium status and antioxidant defense parameters in pregnant women in antenatal screening can be useful to establish the group of patients under the risk of IUGR development.