BOOK OF ABSTRACTS

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22064 | Addressing the role of maternal age on the metabolic profile of the placenta

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Background & Aim: After the age of 35, during pregnancy, there is an increased risk of impaired placentation. Changes in uterine redox balance seem to play a role in deficient placentation (1). We hypothesized that this local redox dysregulation has a negative impact on the placenta metabolic profile. Thus, we aimed to study the placenta metabolic profile during reproductive aging and the effect of antioxidant supplementation. **Methods:** Placentas were collected from pregnant women aged between 22 and 41 years, and from mice of different ages (3 or 9 months). Additionally, 9-month-old mice were treated with apocynin (5 mM) in the drinking water (3 weeks prior to and during pregnancy). Semi-quantitative real-time PCR was carried out to assess the expression of glucose and fatty acid transporters. Quantitative results are presented with standard error of the mean (SEM). In the human study, Spearman's correlation was used for the comparative analysis of the variables studied. In the animal model, Student's t-test was used for comparative analysis of the variables studied. A p-value of less than 0.05 was considered statistically significant. **Results:** Concerning glucose transport, the results show that the expression of glucose transporter 1 is strongly negatively correlated with maternal age ($r = -0.710$; $p = 0.0121$). Regarding lipid metabolism, there is a strong negative correlation between the fatty acid transporter 4 expression and maternal age ($r = -0.6865$, $p = 0.0233$). In mice, the expression of glucose transporter 1 was also decreased in 9-month-old females ($p = 0.0329$, when compared to the 3-month-old females group). No differences were observed between the reproductively aged females treated with apocynin and the young females ($p = 0.1990$). **Conclusions:** The results of this study show that reproductive aging is linked with changes in the placenta metabolic profile. In the mice study model, antioxidant supplementation attenuated the changes observed in nutrient transport in the placenta.

Keywords: Placenta, Reproductive Aging, Metabolism, Nutrient Transporters.

References:

[1] Mendes S *et al.* (2020). *Free Radical Biology and Medicine*; 152: 313-322.