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21673 | Proteomics Characterization of Human Uterine Samples During Reproductive Ageing

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Background & Aim: Nowadays, postponing motherhood has become more common in modern societies. Such decision rises major social and health concerns, as advanced maternal age associates with low fertility, pregnancy complications and a greater need for assisted reproductive techniques. Female reproductive ageing is associated with alterations that are particularly evident in the ovaries. Yet, given the pivotal contribution of the uterus to embryo adhesion, implantation, and fetal development, we believe that age-dependent uterine changes impair fertility. Evidence in mice already reported age-associated uterine changes [1]. Also, albumin carbonylation was found increased in uterine samples from older term-pregnant women [2]. Moreover, preliminary data show changes in composition and oxidation status of uterine extracellular matrix proteins with higher maternal age. We hypothesize that the uterine proteome changes during reproductive ageing, impairing tissue structure and function. This study aims to identify age-related alterations in uterine protein composition through a complete proteomics approach. **Methods:** Uterine samples were collected during c-section from term-pregnant women and immediately fixed for paraffin-embedding or frozen for molecular analysis. Six samples were selected: three from younger and three from reproductively aged women. Paraffin-embedded samples were histologically analyzed after H+E staining. Protein lysates were obtained after sample homogenization and total protein content was determined and were then separated by SDS-PAGE, stained with Coomassie Blue, and will be subjected to a MS based proteomics study. **Results:** Histological analysis of the samples has proven their uterine origin.

SDS-PAGE results confirmed the successful protein extraction. **Conclusions:** The identification of uterine proteins differentially expressed according to maternal age will allow the development of therapeutic approaches, aiming to attenuate age-associated female fertility decline.

Keywords: Reproductive Ageing, Female Infertility, Uterine Proteome.

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