UTERINE FLUID LIPIDOMIC AS AN ENDOMETRIAL RECEPTIVITY PREDICTIVE TOOL

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INTRODUCTION

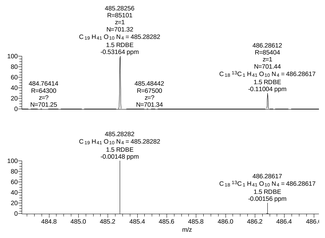
The embryo implantation depends on three critical events: (i) proper embryo development, (ii) the acquisition of a receptive endometrium, and (iii) the proper dialogue between them. In fact animal models have demonstrated that developmental synchrony between the embryo and endometrium is essential for successful implantation and hence for establishment of pregnancy. Markers of endometrium receptivity are urgently needed to improve the success rate of IVF, and ultimately to treat infertility of endometrial origin. In the post-genomic era, many “omics” efforts are being focused with the aim to increase our understanding of the relationships between the genome, DNA transcripts, proteins, metabolites and phenotypes in cells and organisms .

OBJECTIVE

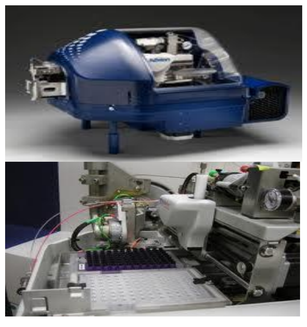
To make use of the analytical power of mass spectrometry to identify lipids differentially represented in the receptive endometrium, when compared with lipids represented in non-receptive endometria.

MATERIALS AND METHODS

Lipid extraction Bligh & Dyer 1959



Spectra acquisition



Ionization Source

Linear Ion Trap

Spectra normalization

PCA / Pls Da

VIP scores

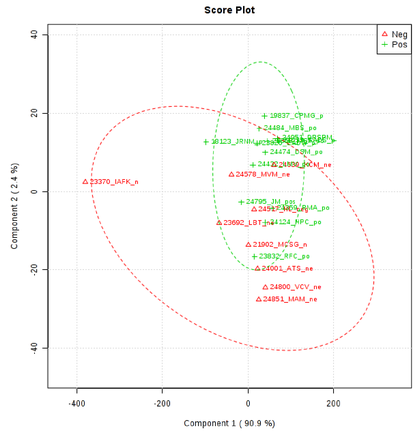
40 samples

Positive Pregnancy (N=20)

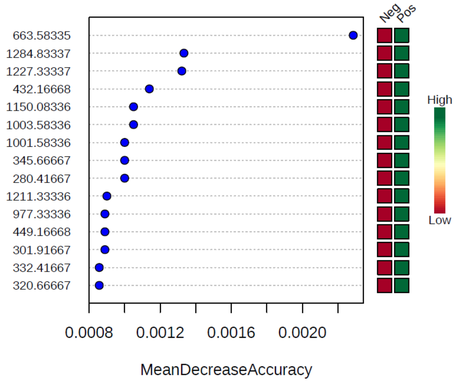
Negative Pregnancy (N=20)

RESULTS

Pls-Da



VIP



11 lipids differentially represented among the groups → 7 hiperrepresented in the Positive Group → 4 in the Negative Group

Lipid Maps database → Phosphatidic acid (PA) (Positive Group) → Ceramide (Negative Group)

CONCLUSION

Possible biomarkers of endometrial receptivity or endometrial receptivity failure were suggested. Ceramide, hiperrepresented in non-receptive endometria may point to a possible temporal displacement on the window of implantation. This information may be especially important for patients with repeated implantation failure, who may benefit of a personalized embryo transfer.