1. INTRODUCTION

- Polycystic ovary syndrome (PCOS) is a the most prevalent heterogeneous endocrine-metabolic disorder of adolescents and young women.
- It represents a major healthcare challenge, partly because of its co-morbidities including subfertility, dyslipidemia and cardiovascular disease.
- The PCOS aetiological mechanisms remain largely unknown and are yet to be clarified.
- Metabolomics has not still being used as a tool in PCOS research.
- Metformin plus estrogen-progestagen is a very common combination treatment often applied to non-obese women with hyperinsulinemic androgen excess [1]. In this study, low-dose pioglitazone (Pio) and flutamide (Flu) is also added to see how the global treatment affect the patients.

2. GOALS

- In this work we propose a NMR -based serum metabolomics approach to the assessment of metabolic changes induced in PCOS patients treated with low-dose Pio-Flu-Met novel polytherapy.

3. EXPERIMENTAL DESIGN

- WOMAN AGED 20-22
- BASAL STATE, n=14
- TREATED, n=14
- 30 months Pio-Flu-Met

4. EXPERIMENTAL

- 300 µL + 300 µL serum
- BUFFER 75 mM Na2HPO4 20% D.O

5. 1H-NMR MEASUREMENTS

- T=310K, Bruker AVIII 600 with cryoprobe
- 1D-NOEYGPPR
- CPMG
- DIFFUSION-EDITED

6. RESULTS: 1D-NOESY & DIFFUSION EDITED EXPERIMENT

- Some peaks characterizing basal group: low molecular weight compounds since they are not present in diffusion experiments
- Basal and treated differ mainly with the different relationship between VLDL, LDL and HDL lipoproteins

7. RESULTS: CPMG EXPERIMENT

- 1D-DTOSY correlation of CPMG peak at 1.18(t) ppm showing a clear correlation with peak at 3.65 (d) : Ethanol??
- 1D-DTOSY correlation of CPMG peak at 0.85 ppm (s) showing a clear correlation with 1.14(d) and overlapped region 3.39 ppm

8. CONCLUSIONS

- Metabolomics has proved to be a highly valuable tool helping unravel PCOS complexity and metabolic pathways involved in PCOS phenotype.
- Preliminary results suggest a rearrangement of lipoprotein profiles after treatment.
- Recent experimental evidences suggest that unknown compounds are linked to BCAA catabolism.
- Spiking and mass spectrometry experiments are currently in progress in order to ascertain these metabolites.

REFERENCES


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