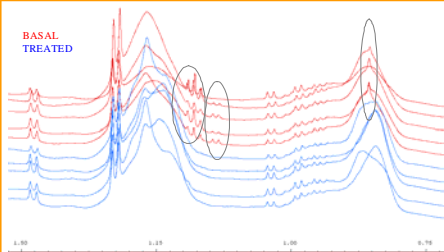


## 1. INTRODUCTION

- Polycystic ovary syndrome (PCOS) is 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 estro-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.

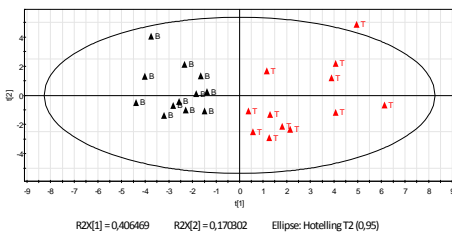
## 6. RESULTS: 1D-NOESY & DIFFUSION EDITED EXPERIMENT



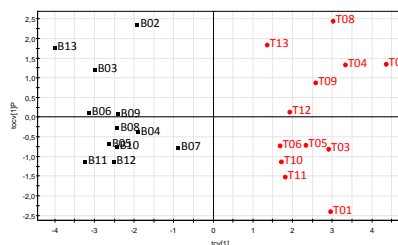
- Some peaks characterizing basal group: low molecular weight compounds since they are not present in diffusion experiments
- Basal and treated differ mainly with the different relationship between VLDL, LDL and HDL liproteins

## 7. RESULTS: CPMG EXPERIMENT

### PCA SCORES PLOT CPMG

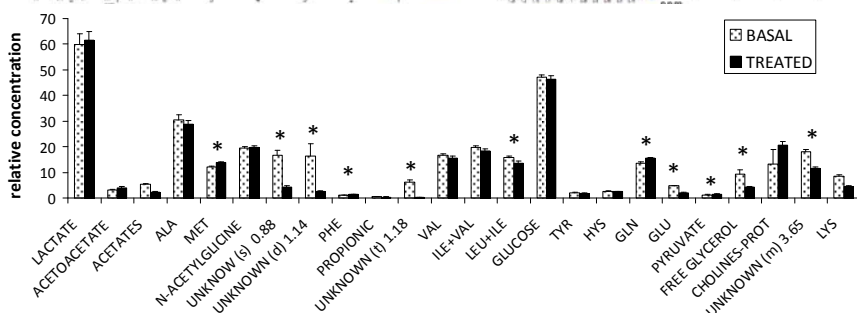
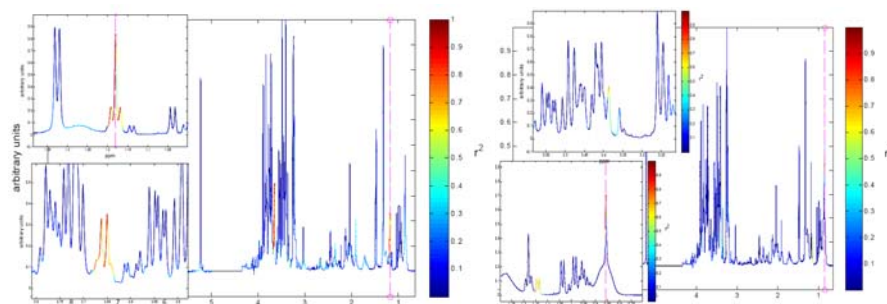


### CV O-PLSDA SCORES PLOT CPMG



1D-DTOCSY correlation of CPMG peak at 1.18(t) ppm showing a clear correlation with peak at 3.65 (d) : Ethanol??

1D-STOCSY correlation of CPMG peak at 0.85 ppm (s) showing a clear correlation with 1.14(d) and overlapped region 3.39 ppm



## 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

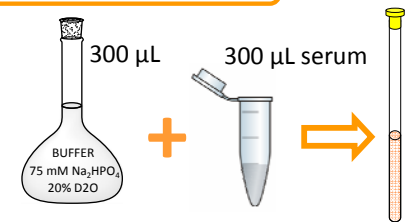
**BASAL STATE, n=14**



30 months  
Pio-Flu-Met

**TREATED, n=14**

## 4. EXPERIMENTAL



## 5. <sup>1</sup>H-NMR MEASUREMENTS

T=310K, Bruker AVIII 600 with cryoprobe

- 1D-NOESYGPPR
- CPMG
- DIFFUSION-EDITED

## 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

- Ibáñez et al, Human Reproduction Update (2006) 12 , 243–252.
- Ibáñez et al, Clinical Endocrinology (2008) 68 , 317–320

## ACKNOWLEDGEMENTS

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