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1. BACKGROUND

- Polycystic ovary syndrome (PCOS), an androgen excess disorder of premenopausal women, frequently associates obesity and insulin resistance, and is a risk factor for type 2 diabetes.
- Obesity plays a major role on the development of metabolic abnormalities associated with PCOS
- However, androgen excess by itself might also contribute to adipose tissue dysfunction and metabolic disturbances

2. GOALS

- This preliminary work is aimed to the GC-MS metabolomics profile assessment of plasma from obese and non-obese PCOS patients as compared with non-hyperandrogenic control women.

3. MATERIALS AND METHODS

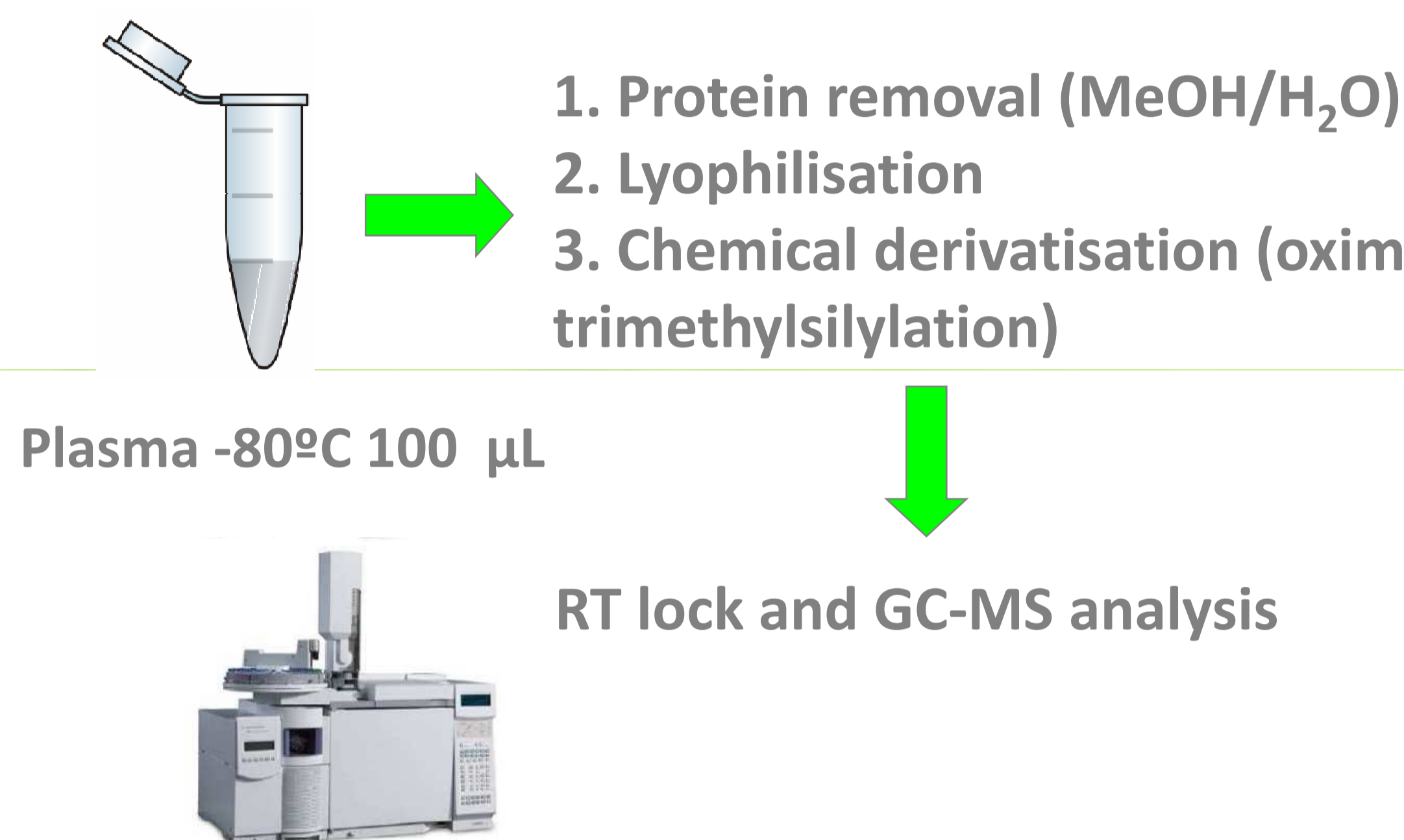
3.1 EXPERIMENTAL DESIGN

N=80 Matched for age and BMI

Table 1: Experimental design.

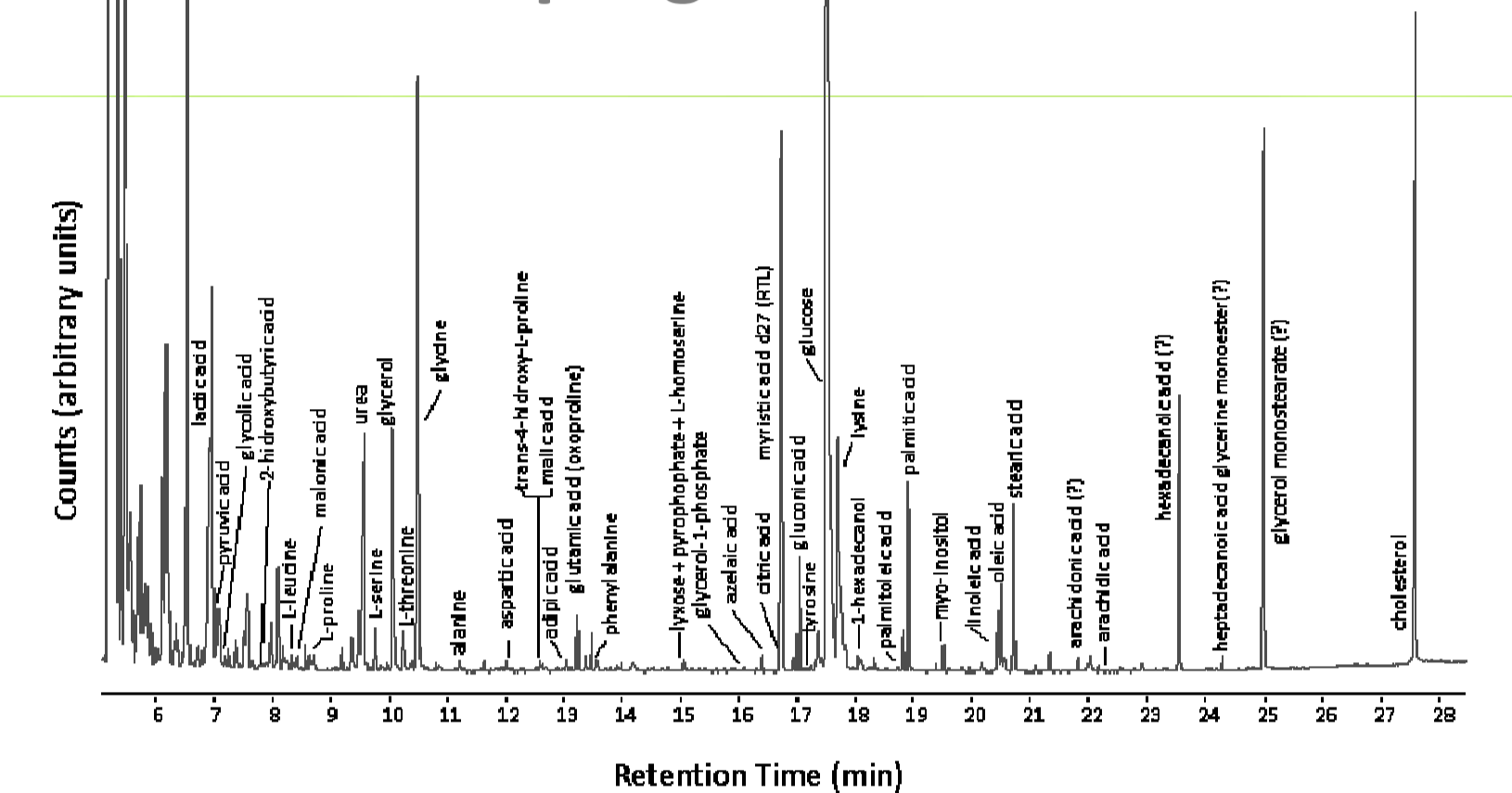
Patient	Disease	Replicates
OBESE	CONTROL	n=20
	PCOS	n=20
LEAN	CONTROL	n=20
	PCOS	n=20

3.2 SAMPLE HANDLING



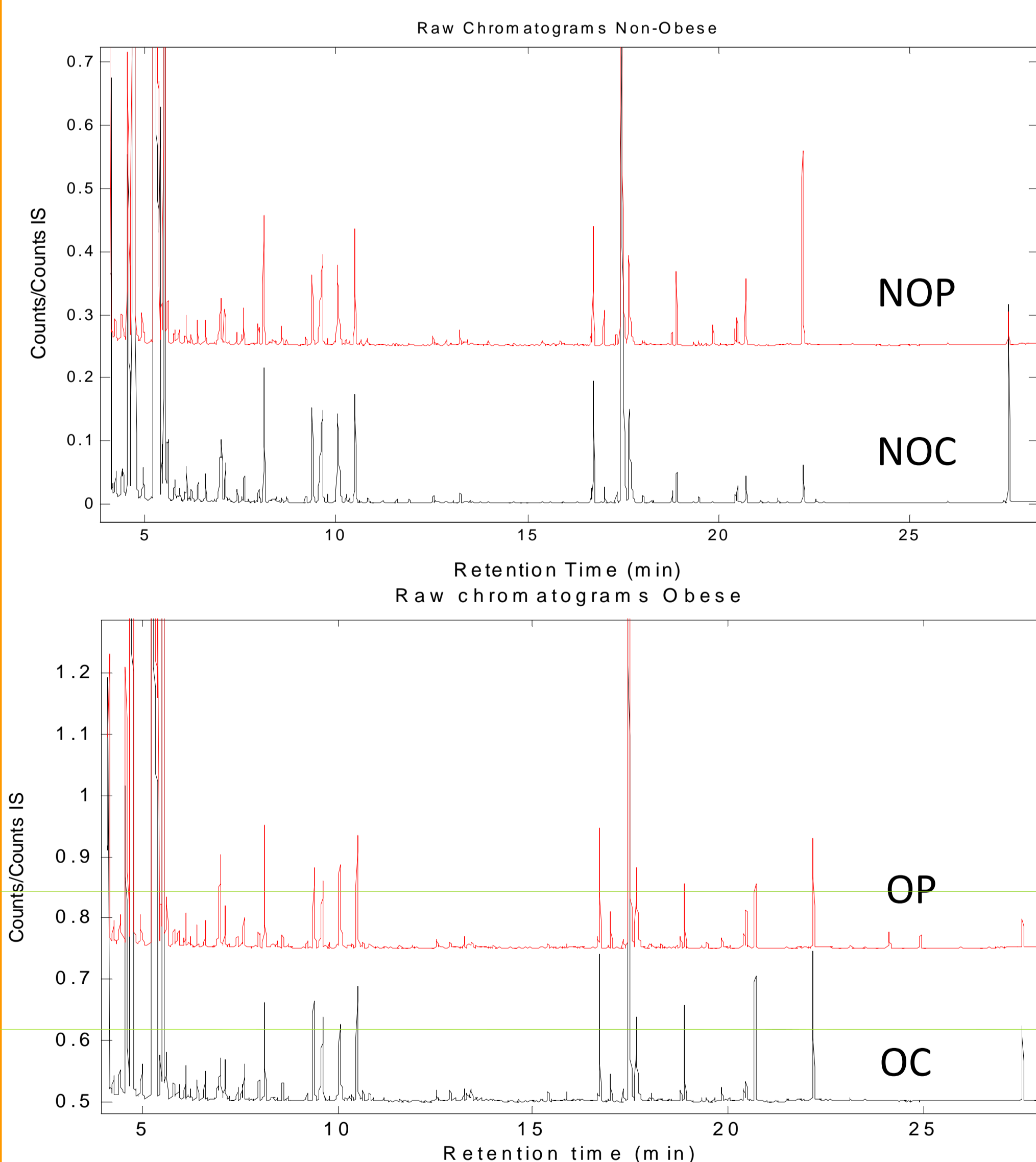
3.3 SAMPLE PRE-PROCESS

- Automatic peak detection
 - Chromatograms alignment
- XCMS software based on R program



4. RESULTS

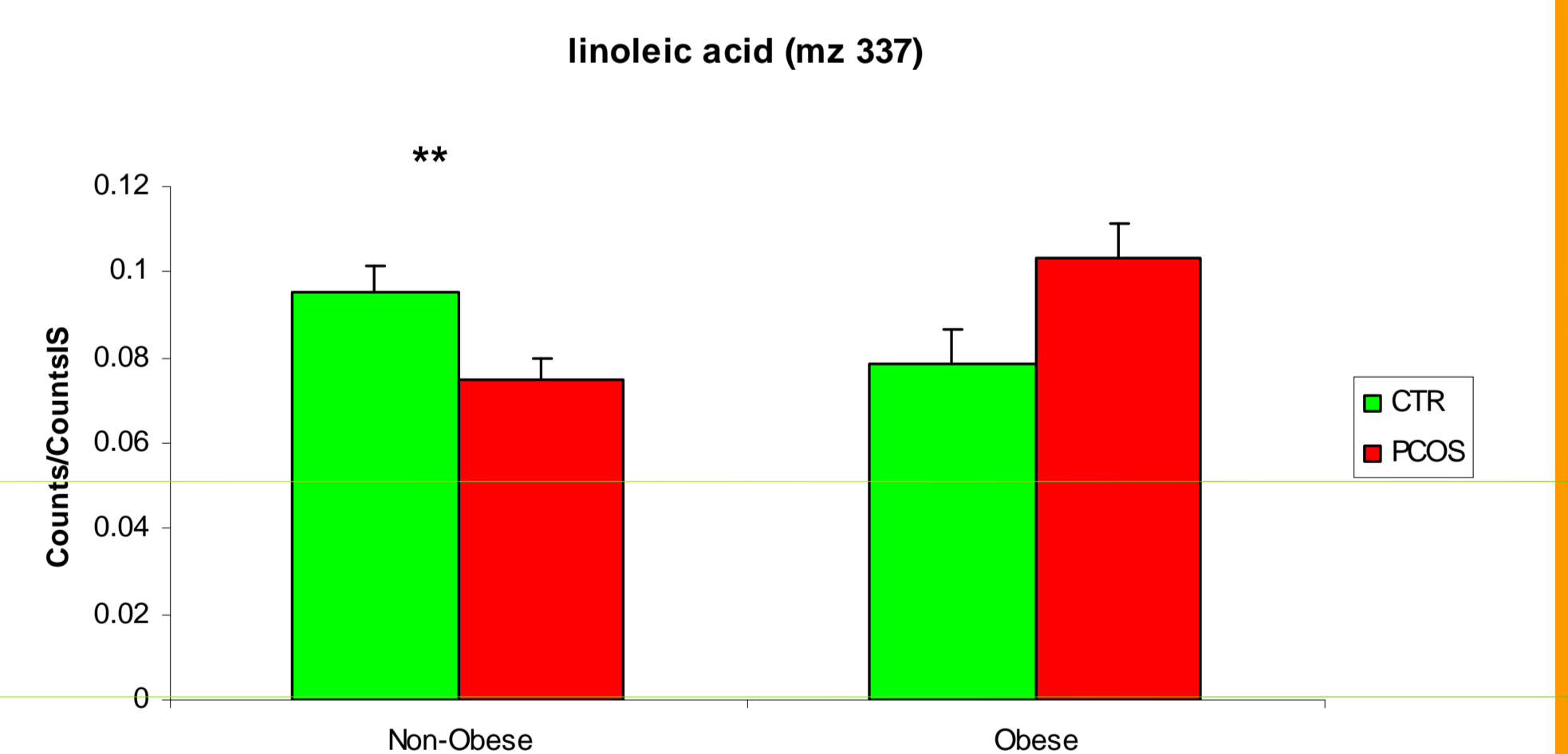
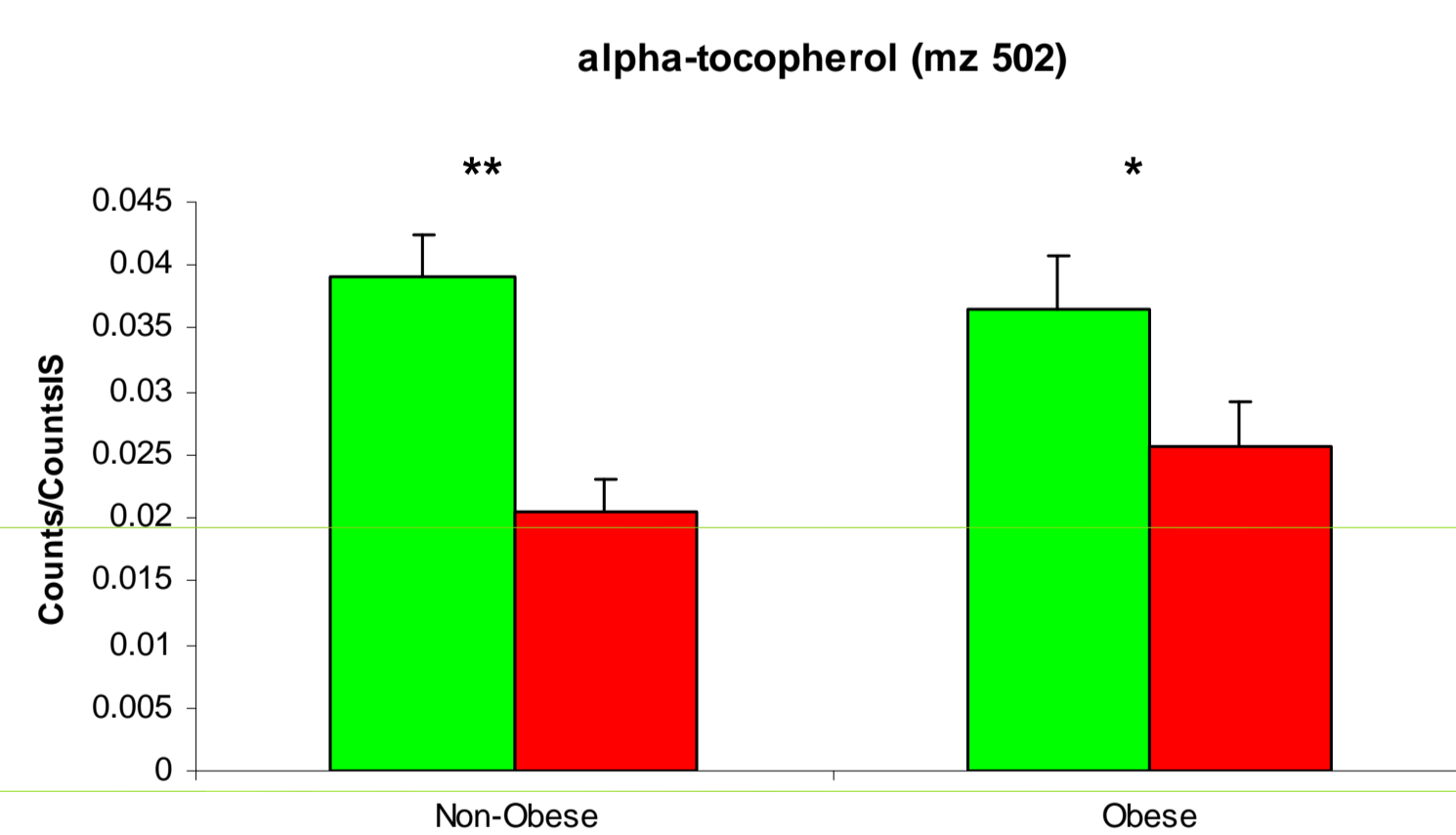
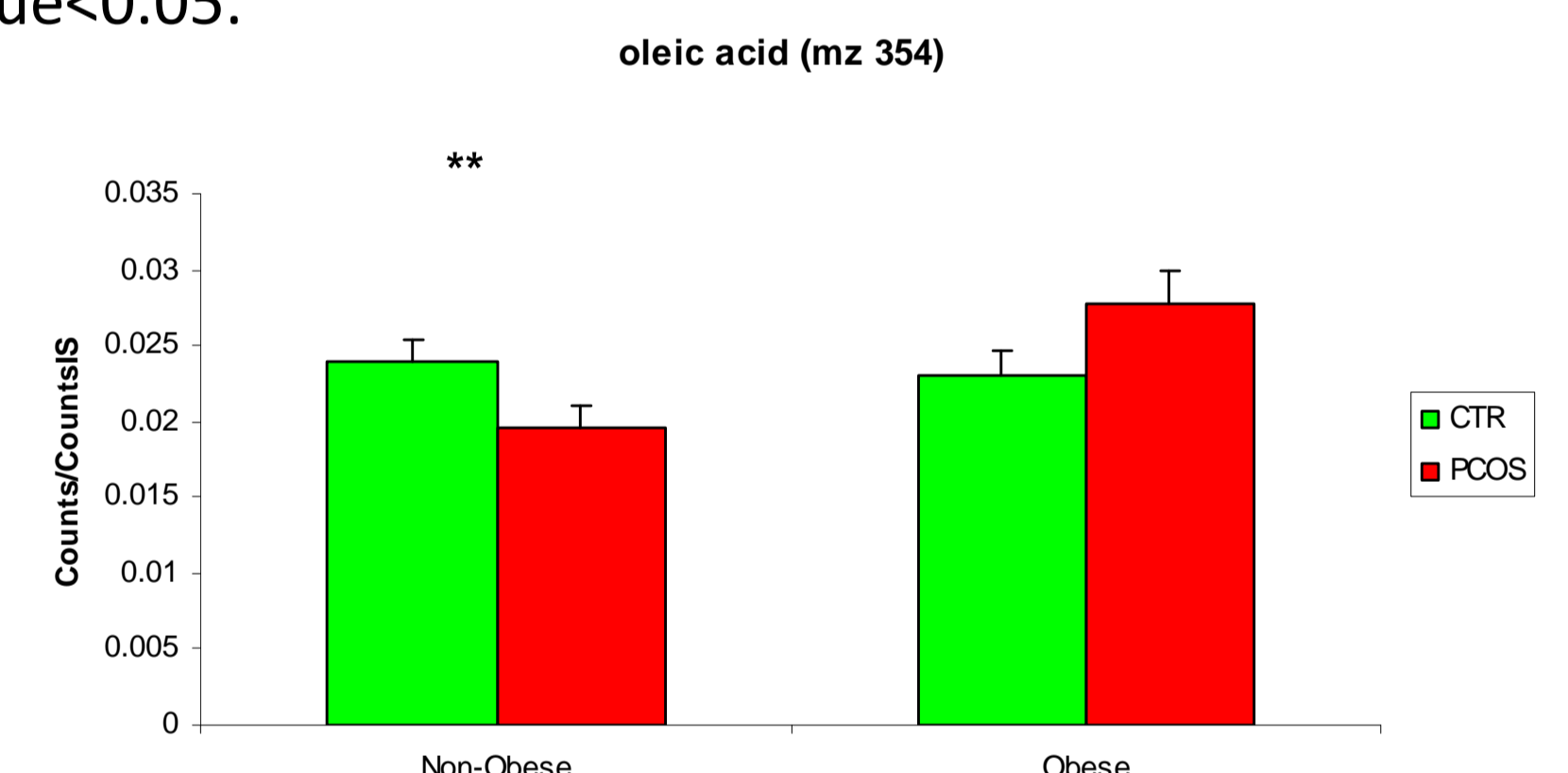
4.1 Raw chromatograms



4.3 Metabolite identification in lean women and comparasion

Table 3: Statistically significant metabolite in non-obese women q-value<0.05.

	Features statistically significant	m/z quantification
Cholesterol	150	458
Alpha-tocopherol	6	502
Oleic acid	43	354
Linoleic acid	8	337
Serine	2	234

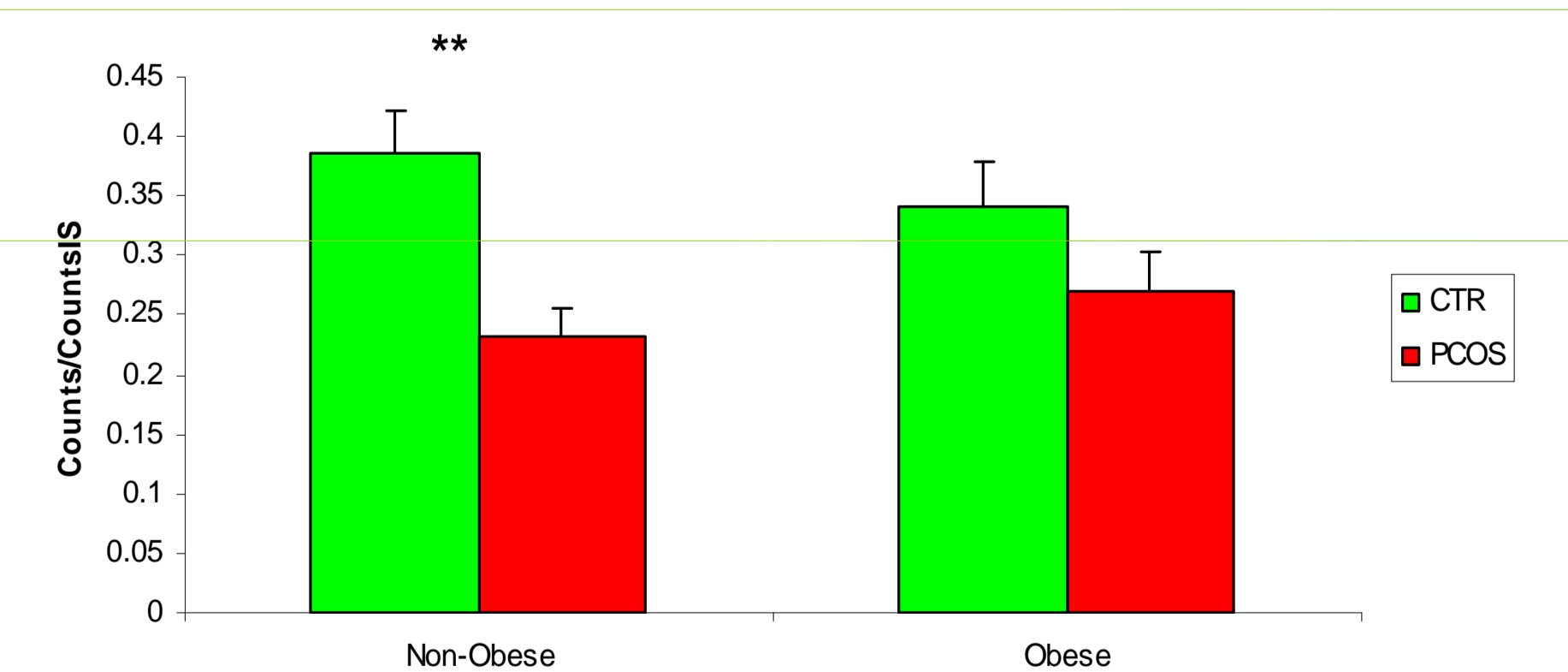
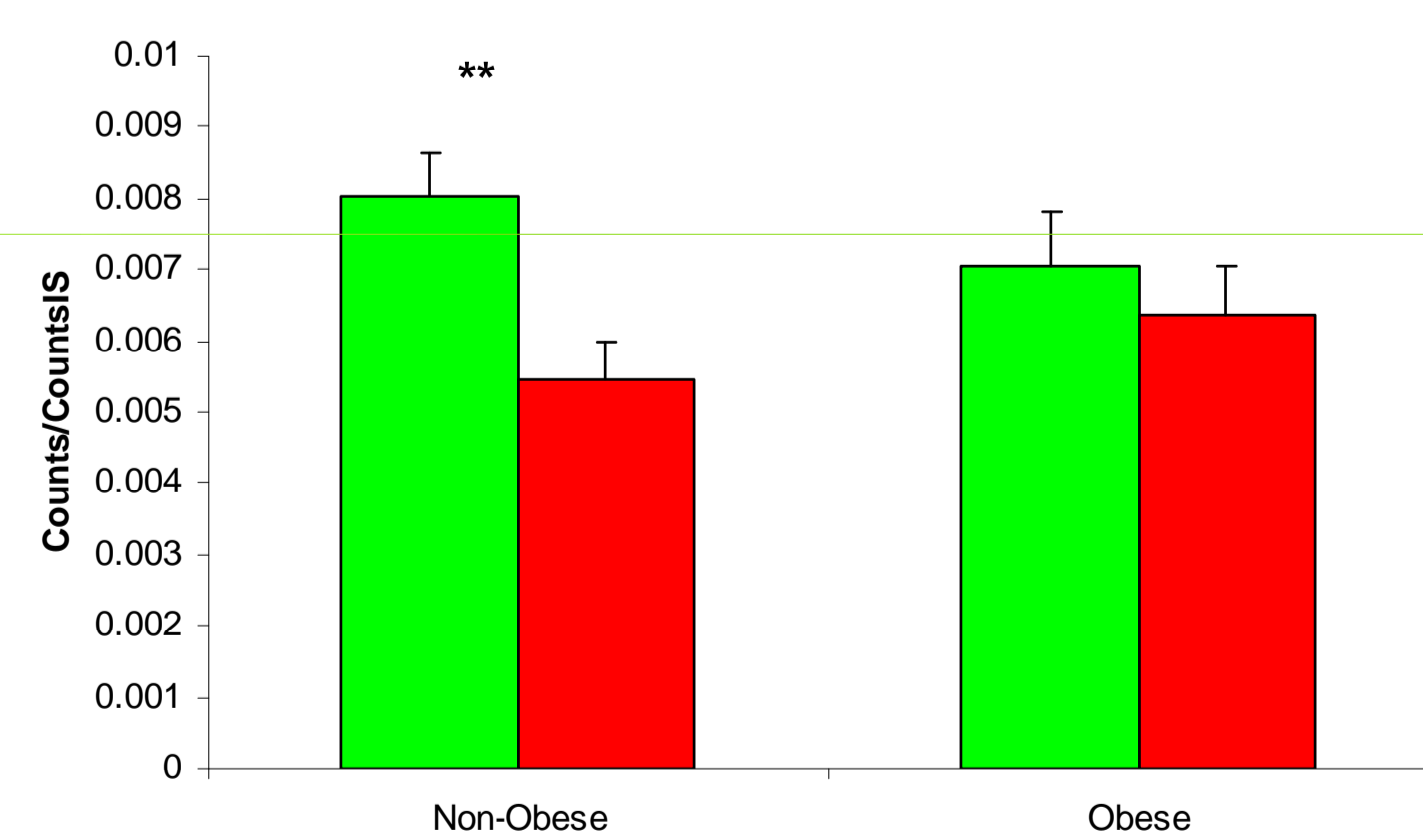


4.2 Statistical analysis

Table 2: Statistically significant features (mz/RT) obtained from Kruskal-Wallis test (p<0.05) and FDR test (q<0.05).

	p<0.05	q<0.05
Non-obese	576	264
Obese	453	0

The biological variability in obese women is higher than the biological variability in lean women. This influence in statistical analysis.



Graphics: mean±sem * p<0.05 **q<0.05

8. CONCLUSIONS

Our results confirm that lean control and PCOS patients present with different lipid profiles (oleic, linoleic and cholesterol). The most striking result of our preliminary study demonstrates that circulating alpha-tocopherol is significantly decreased in non-obese PCOS patients when compared to their control counterparts. The same trend is also observed in obese PCOS despite the lack of statistical significance. It is well known the role of alpha tocopherol as a potent antioxidant and its relation to infertility. From these results it can be derived that lean PCOS accounts for a higher level of oxidative stress which has been recently implicated in such syndrome ¹ and also in diabetes ².

REFERENCES

- San Millán et al. *Hum Reprod.* 2006, 21,3157-3161.
- Nourooz Zadeh, J.; Rahimi, A.; TajaddiniSarmadi, J.; Tritschler, H.; Rosen, P.; Halliwell, B.; Betteridge, D. J. *Diabetologia* 1997, 40, 647-653.

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