

A MULTIPLATFORM NON-TARGETED METABOLOMICS APPROACH TO INVESTIGATE INSULIN RESISTANCE ASSOCIATED TO OBESITY IN CHILDHOOD

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INTRODUCTION

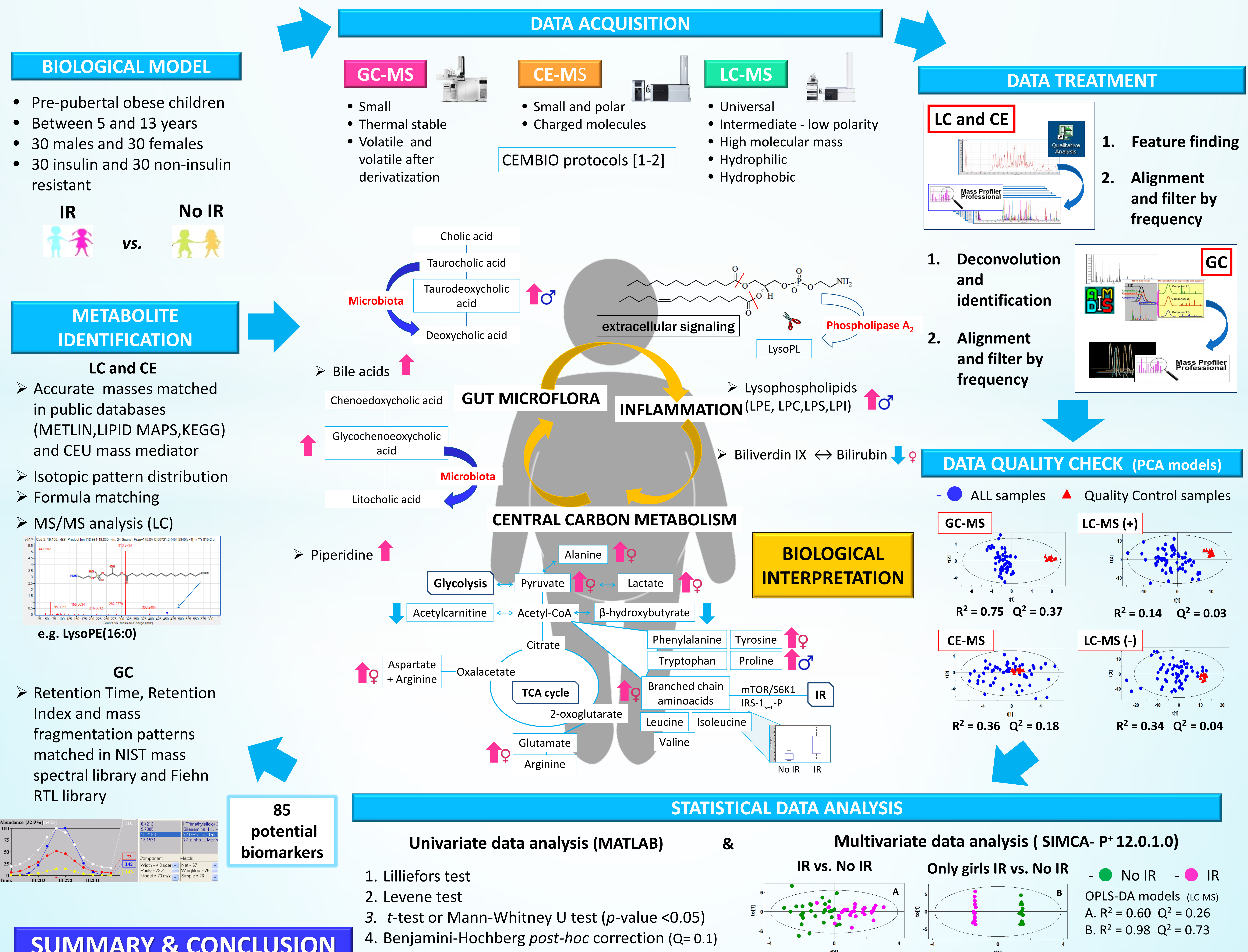
Increased fasting or post-OGTT glucose levels are used for the diagnosis of obesity-associated carbohydrate metabolism impairment in adults. However, in obese children hyperinsulinism as a consequence of insulin resistance (IR) is usually found much earlier than the rise in glycemia. In childhood obesity, huge variations in fasting and postprandial insulinemia are observed for a given BMI, even in age, sex and ethnic controlled comparisons. This suggests the existence of predisposing factors for obesity associated IR that remain unclear to date.

OBJECTIVES

•Our aim was to use a multiplatform metabolomics approach to elucidate the metabolic alterations in obese children with or without IR. In addition, we aimed to employ this revolutionary strategy to interpret the interaction of genetic and environmental factors by studying the final process of IR.

HYPOTHESIS

•The use of metabolomic techniques could be a suitable approach to investigate the relationship between obesity and IR.



SUMMARY & CONCLUSION

- Bile acids and their derivatives represented the most prominent changes indicating the great impact of the gut microbiota on the host metabolism
- Central carbon metabolism and inflammation were the most altered processes in obese children with IR
- Subtle differences were highlighted between groups; these changes were unexpectedly magnified by pre-pubertal sex differences
- Metabolomics is a powerful tool to unveil alterations in metabolic conditions even at their early stage in order to provide new information for an adequate monitoring of predisposing factors in the obesity associated IR condition.

REFERENCES

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ACKNOWLEDGEMENTS

These studies were supported by grants from Instituto Carlos III (FIS PI100747 and PI 13/021295), Centro de Investigación Biomédica en Red de Fisiopatología de la Obesidad y Nutrición (CIBEROBN) and the Ministry of Economía y Competitividad (MCIT CTQ2011-23562), the later which also supports AM.

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