

# Lactobreath: A metabolomics approach to characterize lactose malabsorption

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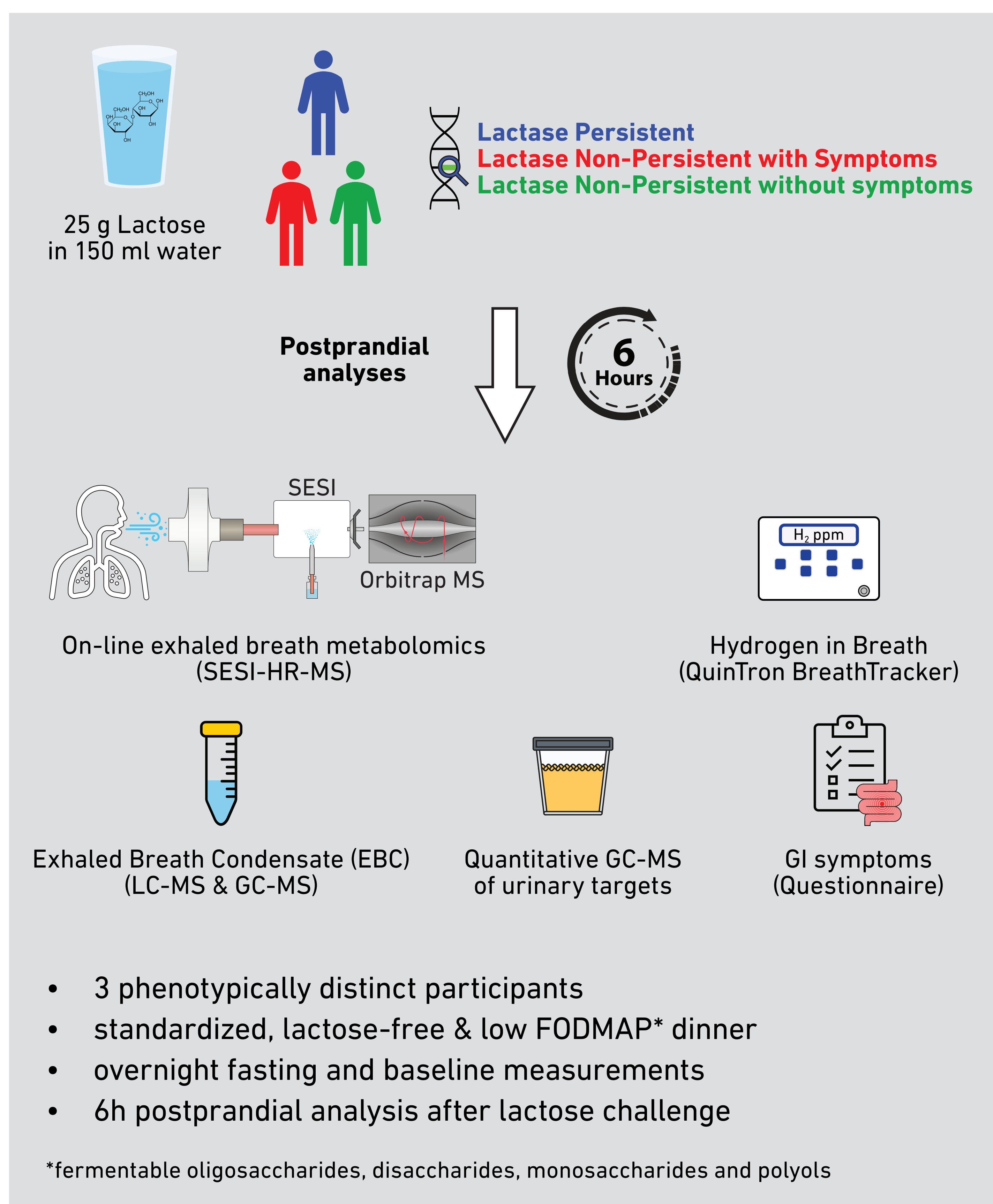
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## 1 Introduction

Up to 68% of the population has a reduced ability to digest lactose<sup>1</sup>. The currently available lactose tolerance tests have limited sensitivity and specificity for assessing lactose malabsorption (LM) symptoms<sup>2</sup>. Secondary electrospray ionization (SESI) coupled with high resolution mass spectrometry (HR-MS) is a powerful untargeted approach to detect biomarkers in exhaled breath, while the quantification of lactose-derived metabolites in urine offers a targeted way to characterise LM. Among other methods currently being piloted in a clinical study (Lactobreath)<sup>3</sup>, breath and urine metabolomics workflows were pre-tested.

## 2 Methods



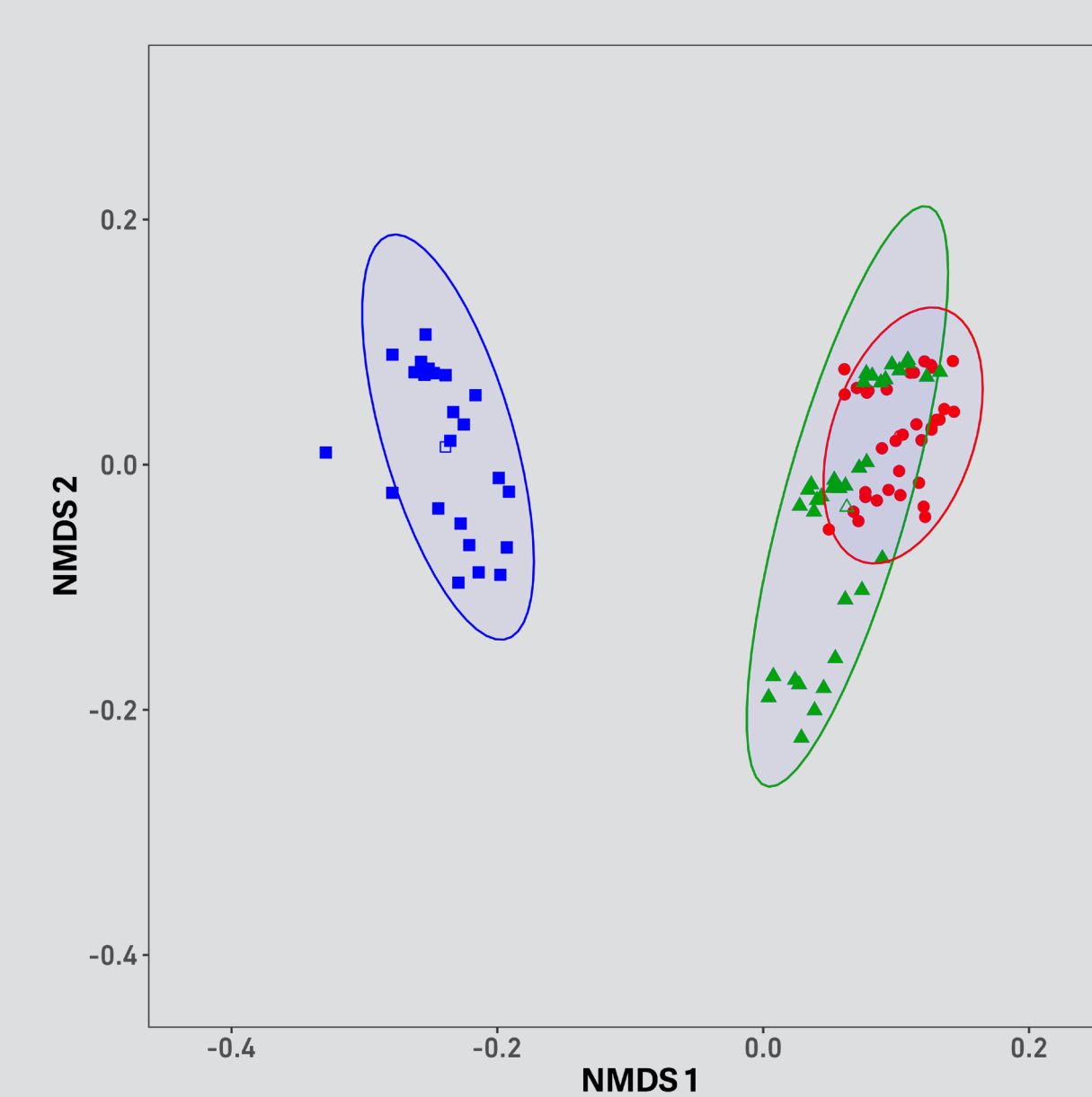
## References

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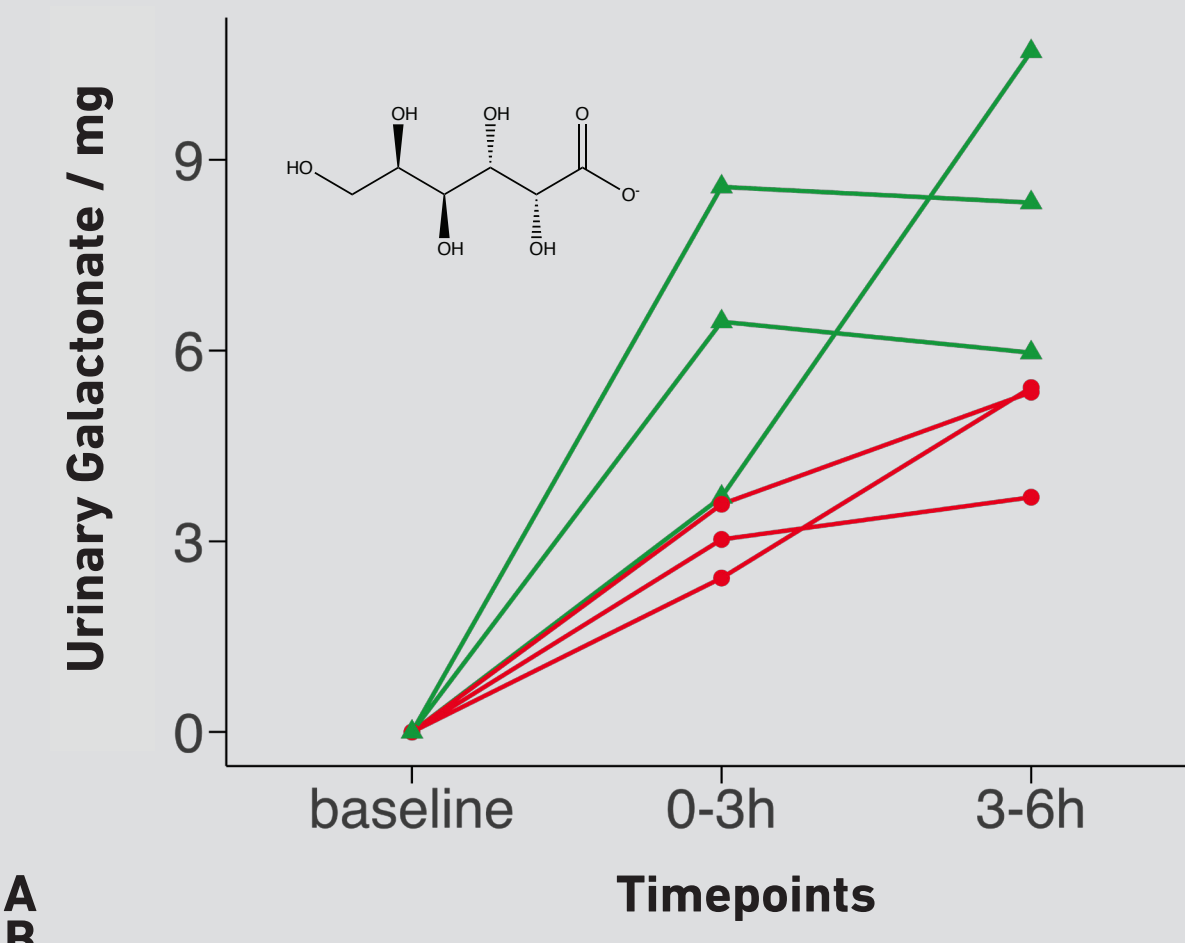
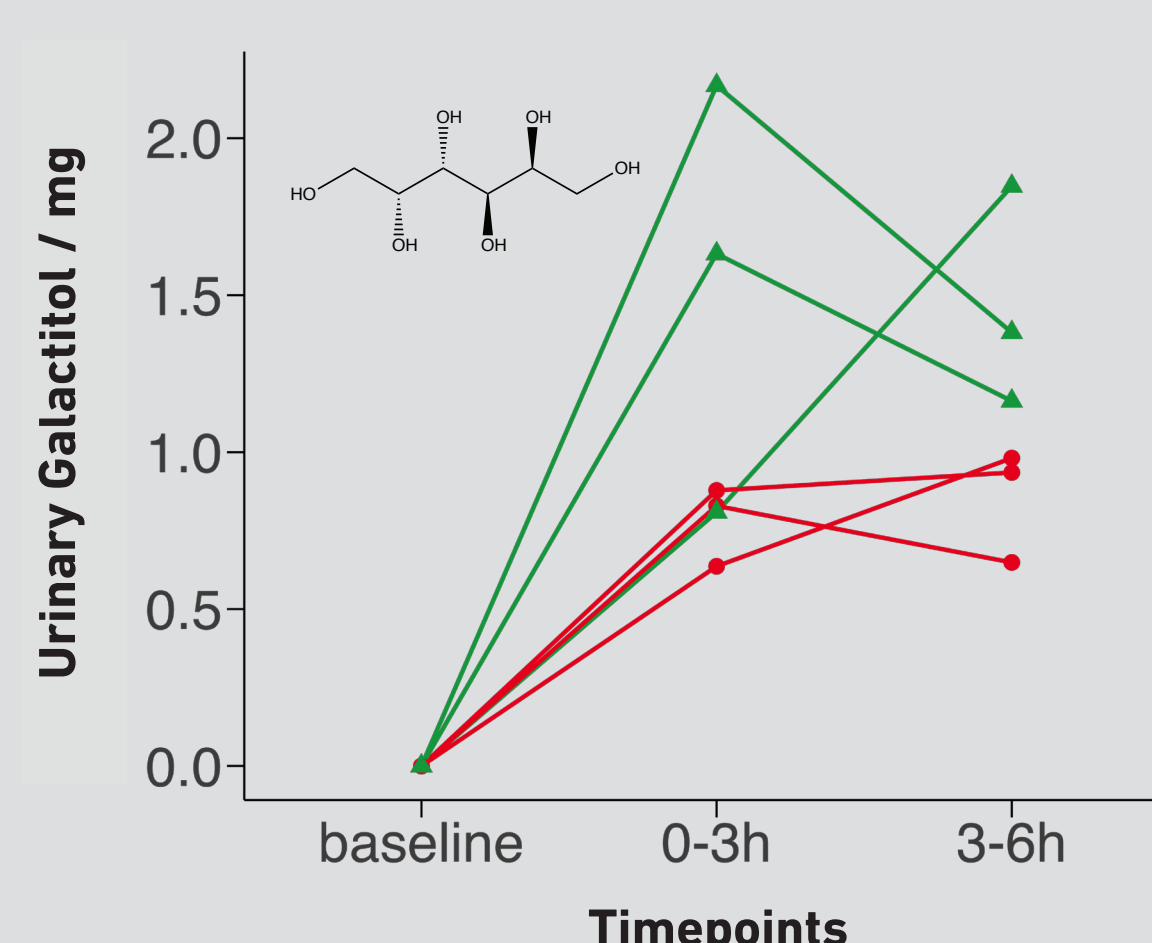
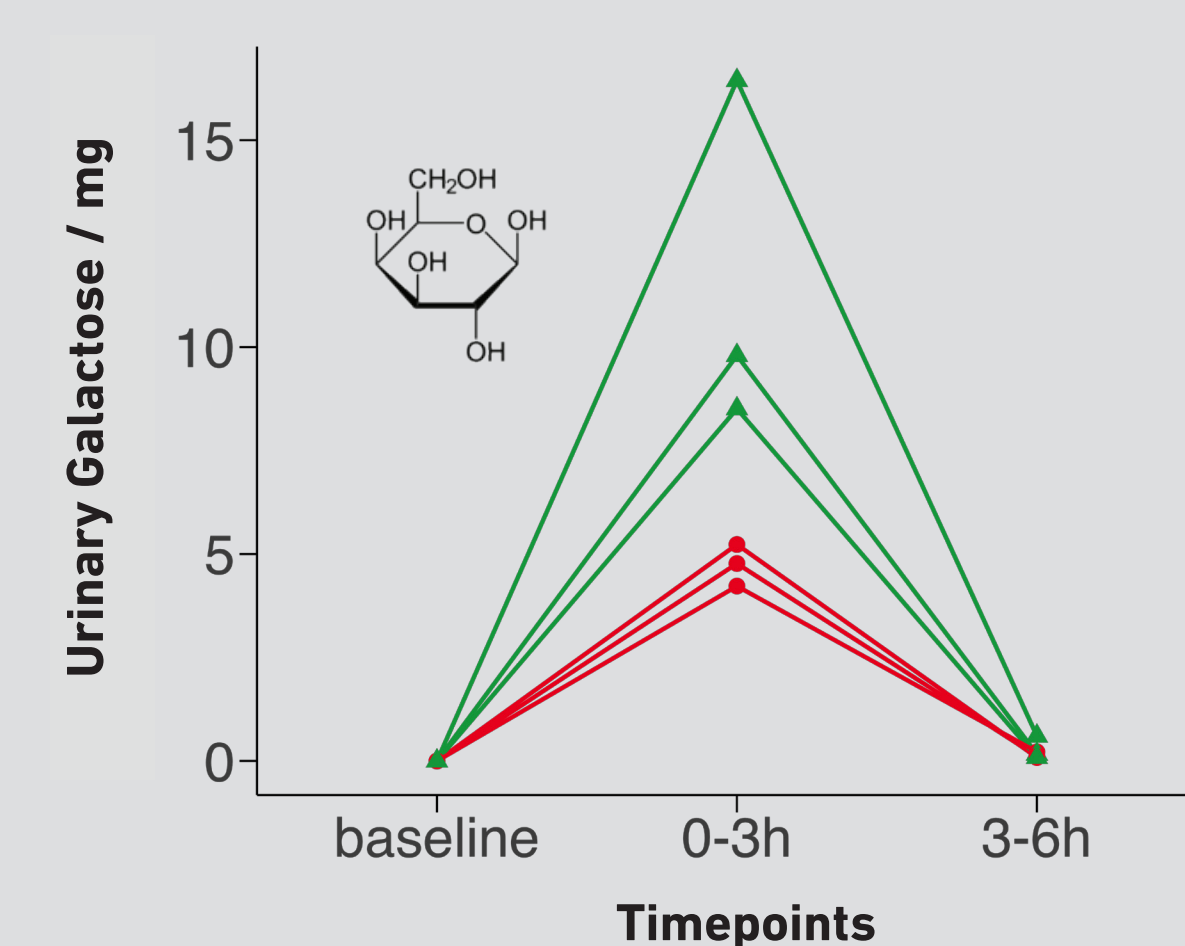
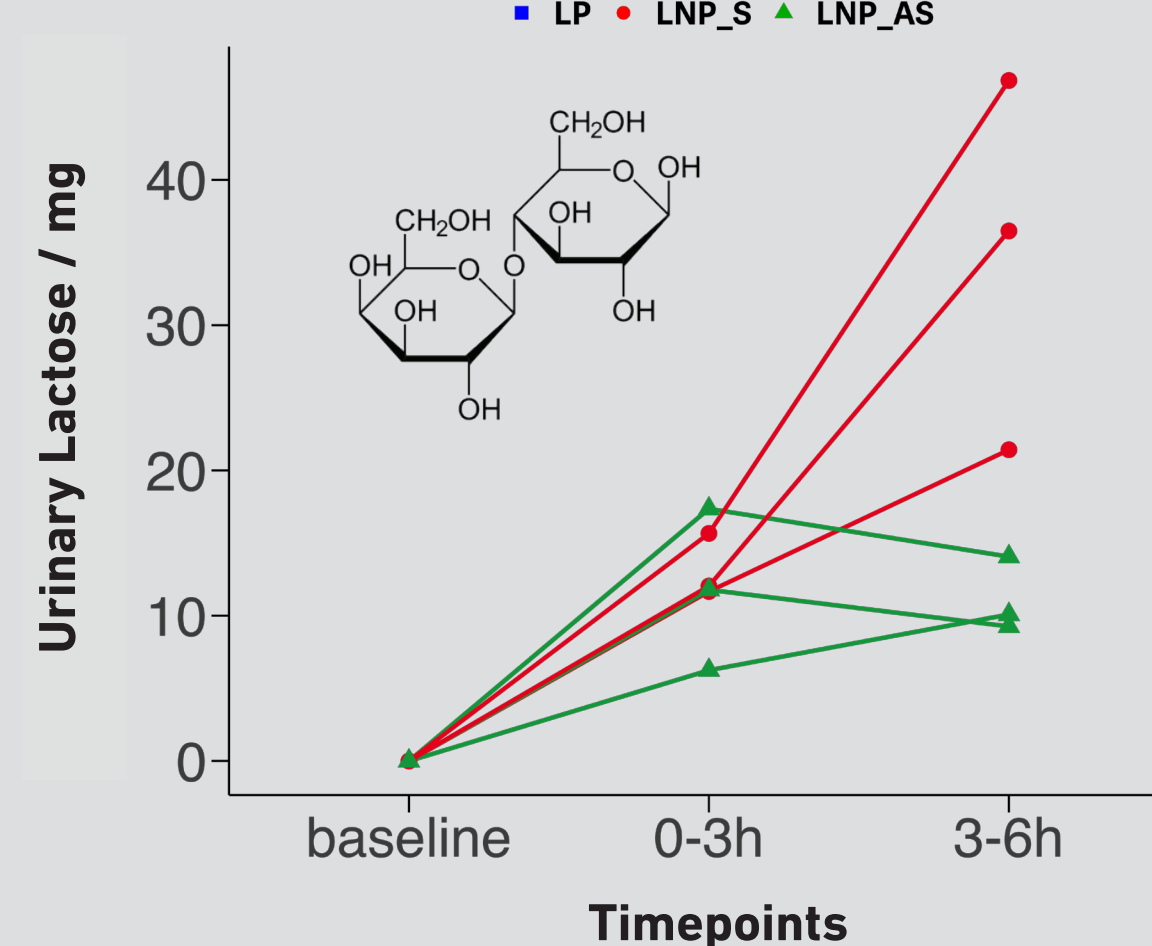
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## 3 Results & Discussion



- Non-metric Multidimensional Scaling (NMS2) of on-line breath analysis reveals 3 clusters
- Clear difference between Lactase Persistent and Lactase Non-Persistent (**symptomatic** and **asymptomatic**)



- Higher lactose and lower lactose-derived urine metabolite levels in **symptomatic** individual compared to **asymptomatic** individual
- Consistent trend despite intra-individual variation

## 4 Conclusions & Outlook

- Postprandial on-line breath analysis following a lactose intervention can generate distinguishable breath profiles
- Quantification of urinary metabolites can enhance our understanding of differentially active pathways within lactose malabsorbers
- ➔ These preliminary results will aid a larger, ongoing clinical study aimed at finding non-invasive biomarkers for lactose intolerance diagnostics
- ➔ This is a step towards personalized health & nutrition, helping to manage digestive disorders and tailor consumption patterns to individual dietary needs (SGD 3 & 12)