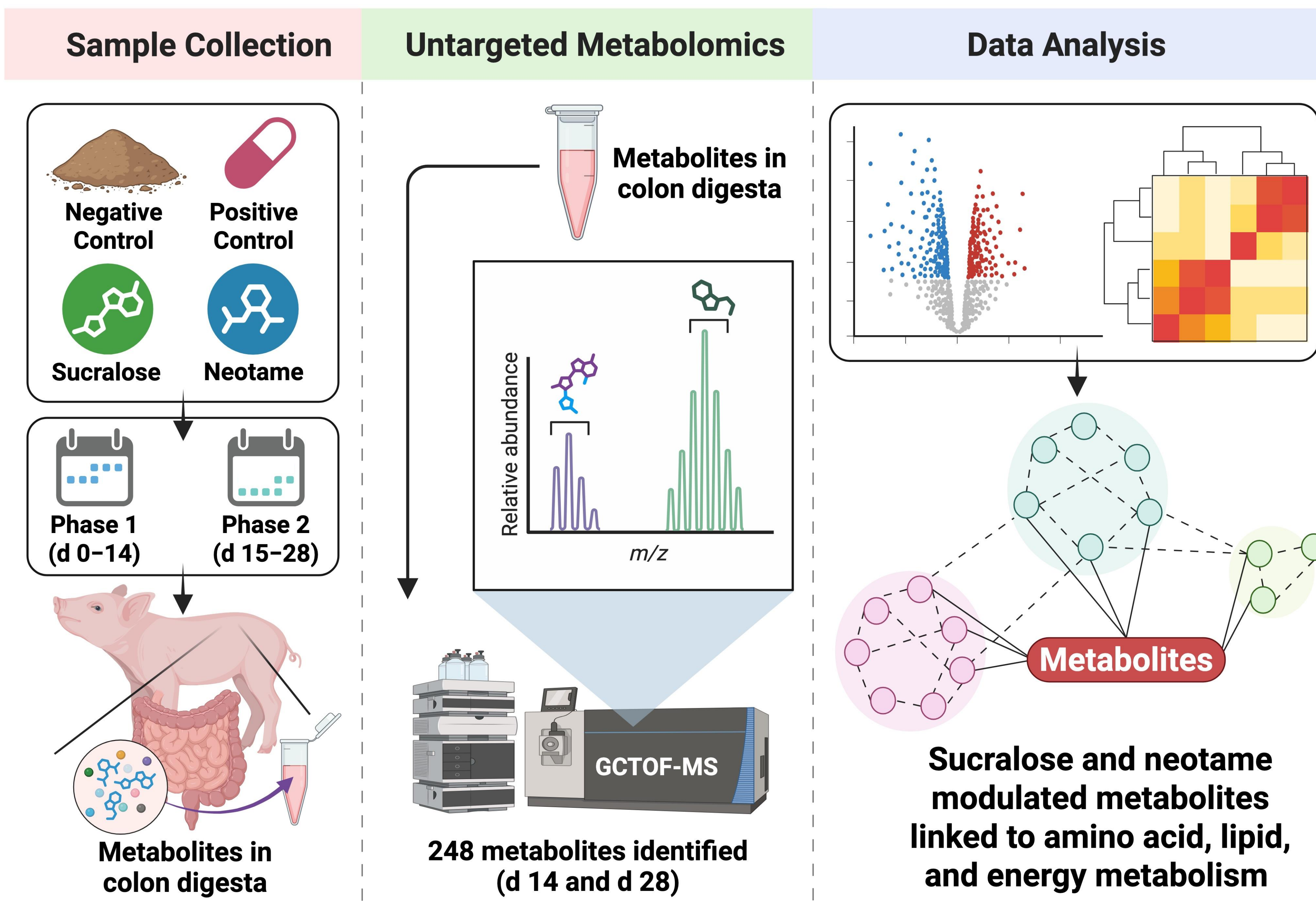


Non-Nutritive Sweeteners Induce Unique Metabolomic Changes in Weaned Pigs Compared to Antibiotic Supplementation

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GRAPHICAL ABSTRACT



OBJECTIVE

Previous results showed that non-nutritive sweeteners (NNS) improved growth and reduced diarrhea in weaned pigs. This study further investigated their effects on colon digesta metabolomic profiles compared to in-feed antibiotics

MATERIALS & METHODS

Experimental Design

- Randomized complete block design
- Blocks: Initial body weight and sex
- 288 weanling pigs
- Average body weight: 6.21 ± 0.45 kg
- Average age: 21 ± 1 day old
- 4 dietary treatment groups
- 6 pigs/pen; 12 replicates
- Phase 1: d 0–14; Phase 2: d 15–28

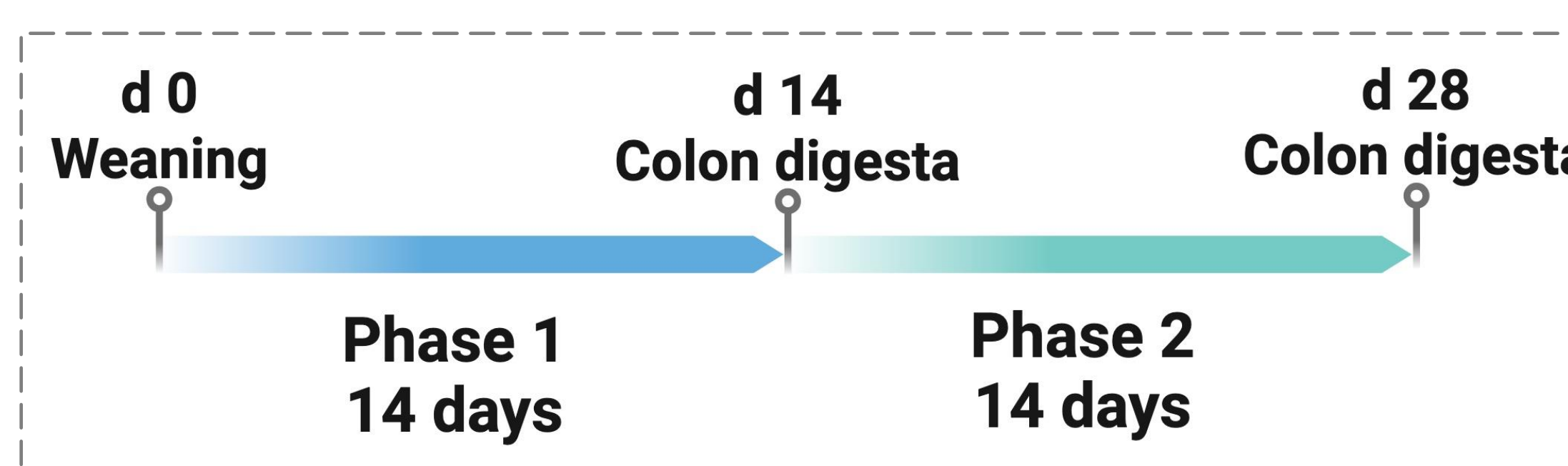
Measurements

- Colon digesta collection: d 14 and 28
- Gas chromatography time of flight-mass spectrometer (GCTOF-MS)
- Data analyzed using MetaboAnalyst (<https://www.metaboanalyst.ca>)
- Fold change > 2.0
- P value < 0.05

Dietary Treatment

Negative Control (NC)
Basal nursery diet
Positive Control (PC)
NC + 50 mg/kg carbadox
Sucralose (SCL)
NC + 150 mg/kg of Sucralose
Neotame (NEO)
NC + 30 mg/kg of Neotame (NEO)

Timeline



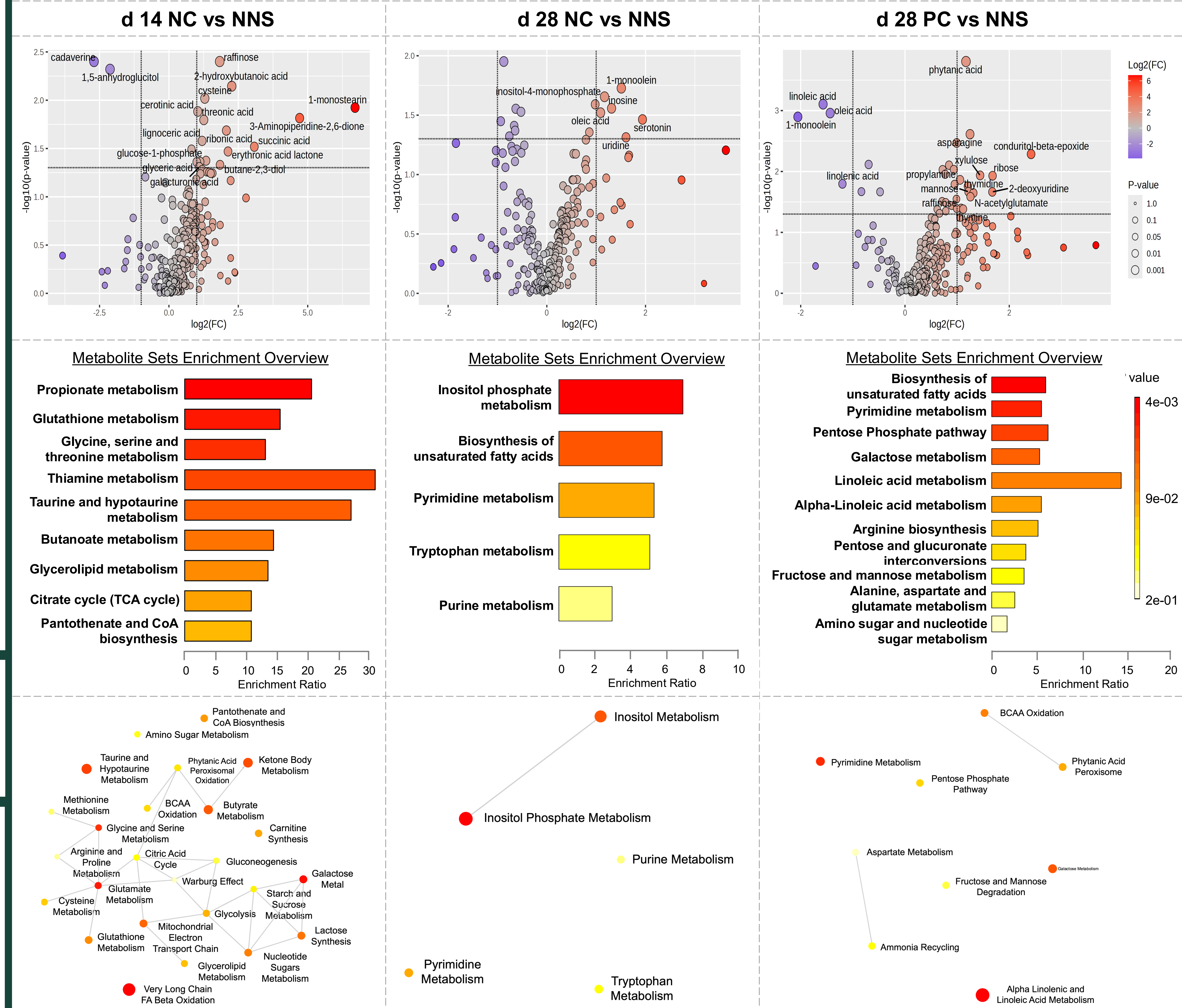
Full Abstract



Previous Results



RESULTS



DISCUSSION & CONCLUSIONS

- Non-nutritive sweeteners modulated the colon digesta metabolome in weaned pigs, supporting their potential to enhance growth and gut health through mechanisms distinct from those of antibiotics
- The distinct metabolomic shifts induced by non-nutritive sweeteners may reflect changes in gut microbial or host metabolism, particularly those linked to major nutrient pathways
- Future studies are warranted to elucidate targeted metabolic pathways and microbial interactions influenced by non-nutritive sweeteners in the pig gut

ACKNOWLEDGEMENTS

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