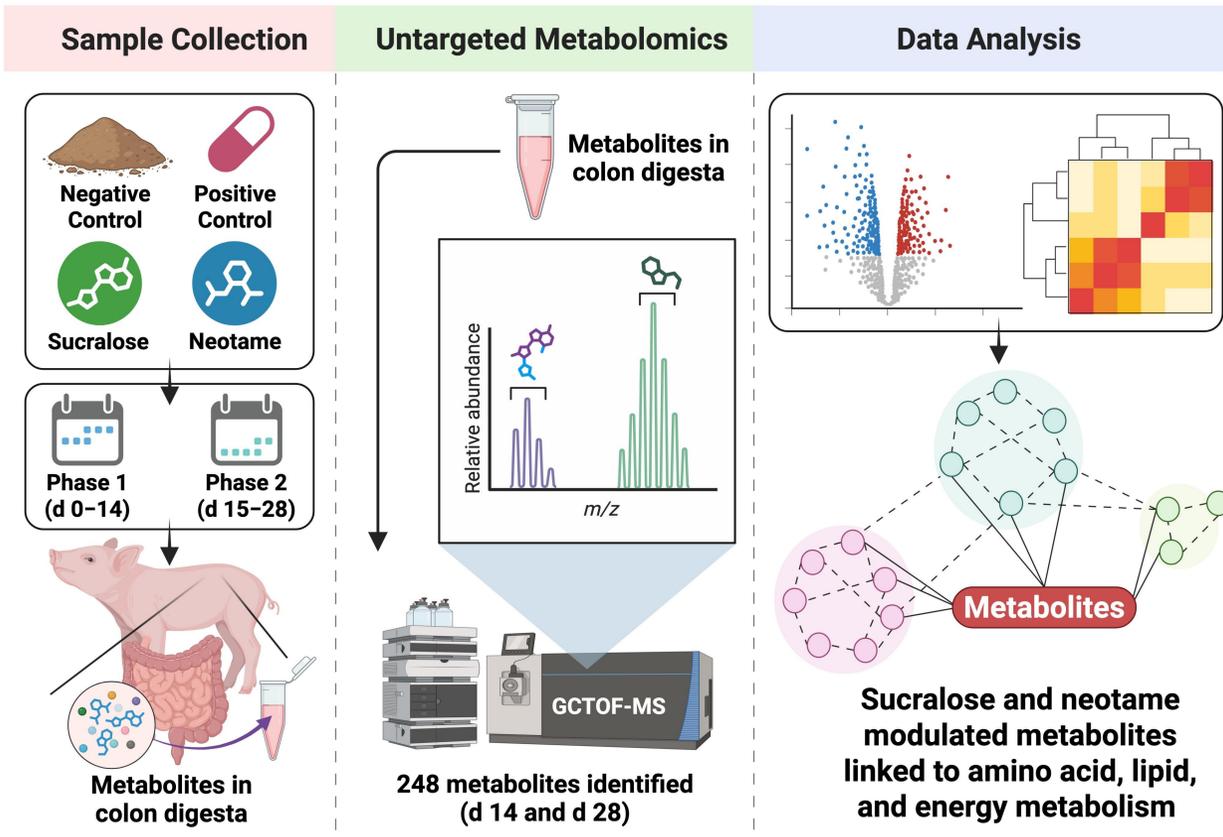


# Non-Nutritive Sweeteners Induce Unique Metabolomic Changes in Weaned Pigs Compared to Antibiotic Supplementation

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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 weaning pigs
- Average body weight:  $6.21 \pm 0.45$  kg
- Average age:  $21 \pm 1$  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)

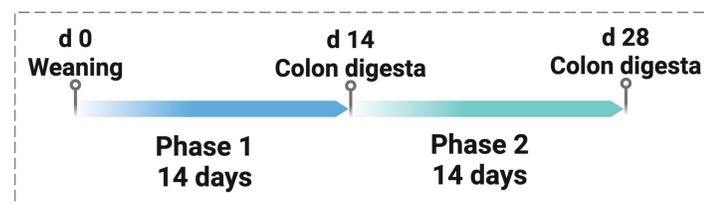
### Full Abstract



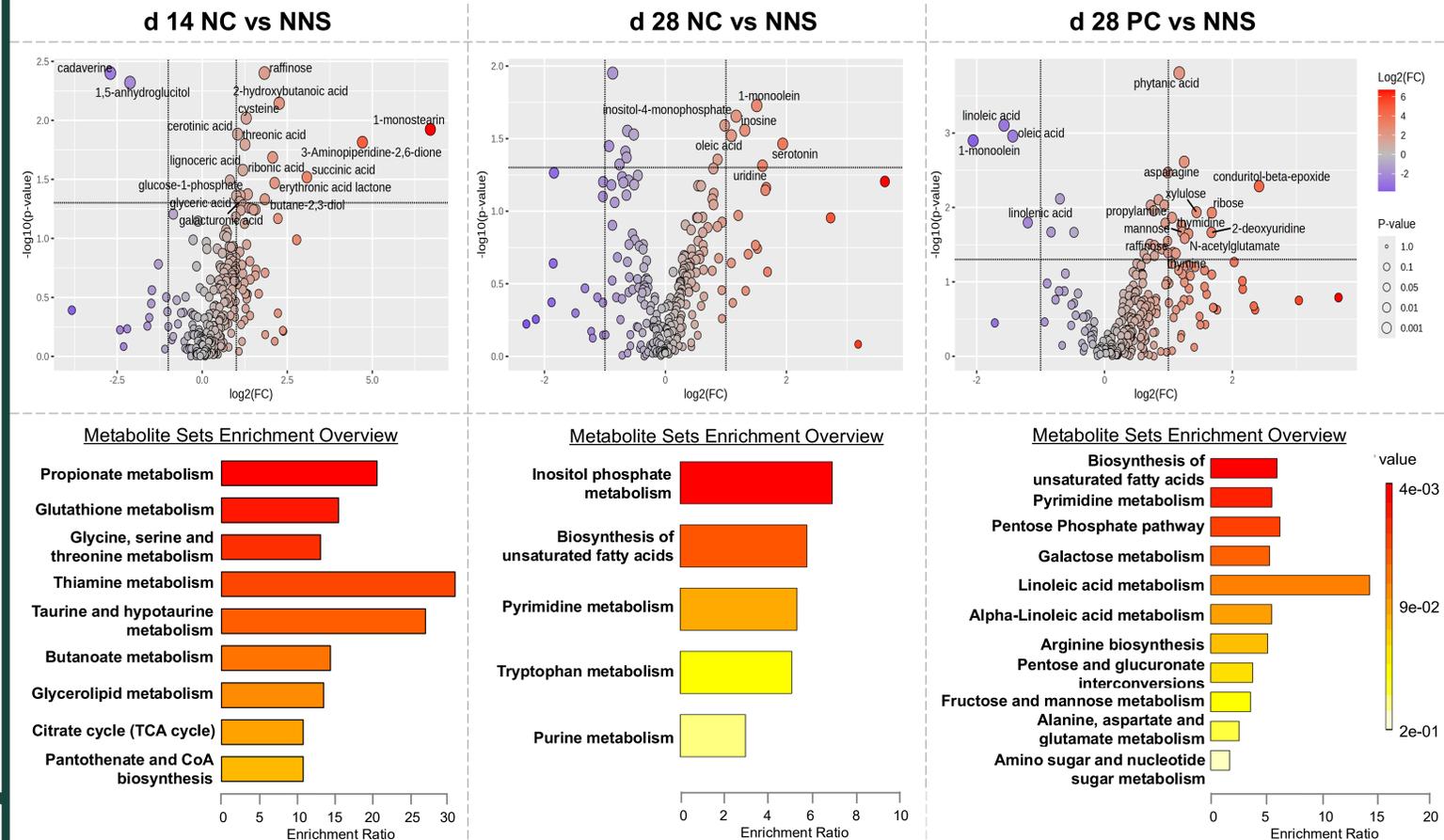
### Previous Results



### Timeline



## 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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