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Metabolomic analysis revealed that green tea polyphenols decreased the formation of microbial metabolites of aromatic amino acids in humans

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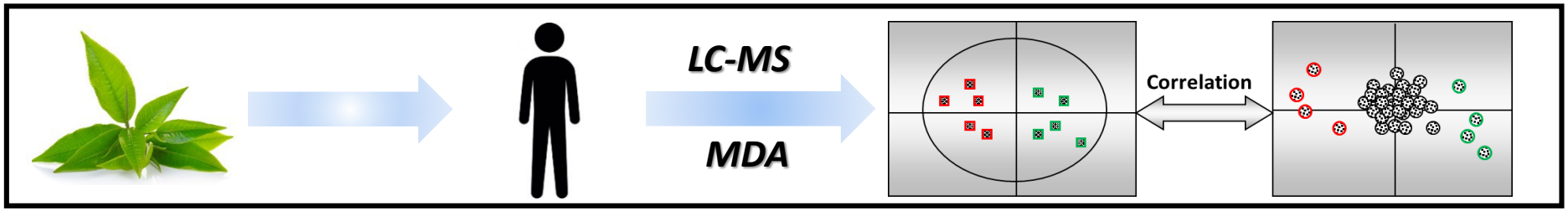
Minnesota Green Tea Trial (MGTT)

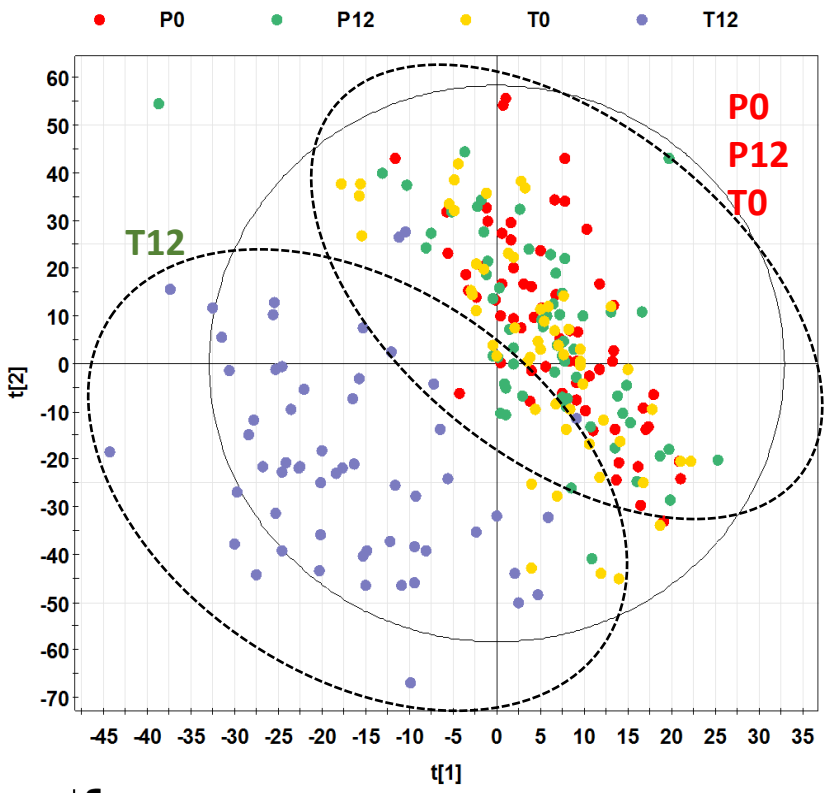
- Subjects: 120 postmenopausal women aged 50-70 years, with high mammographic density (>50% fibroglandular tissue).
- Treatment: subjects taking green tea capsules (800 mg epigallocatechin gallate (EGCg)/day) or placebo for one year.
- Sample group:
  - ---**P0**: placebo before trial
  - ---**P12**: placebo after trial
  - ---**T0**: GTPs treatment before the trial
  - ---**T12**: GTPs treatment after the trial
- Urine and fecal samples were collected and analyzed by LC-MS-based metabolomics.



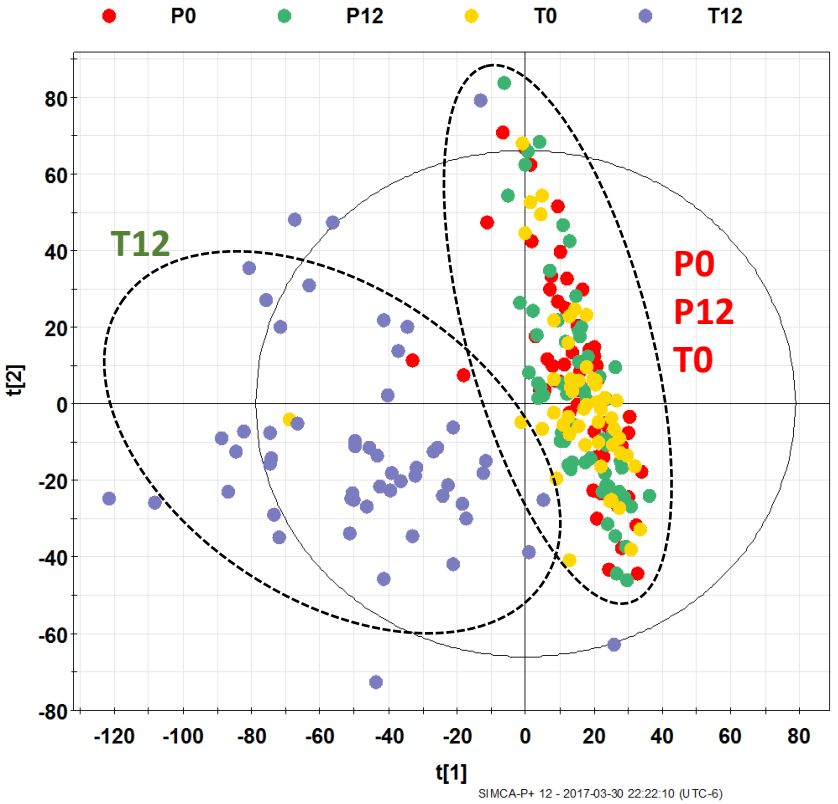
https://clinicaltrials.gov/ct2/show/NCT00917735

Modeling of fecal and urine samples

Fecal samples

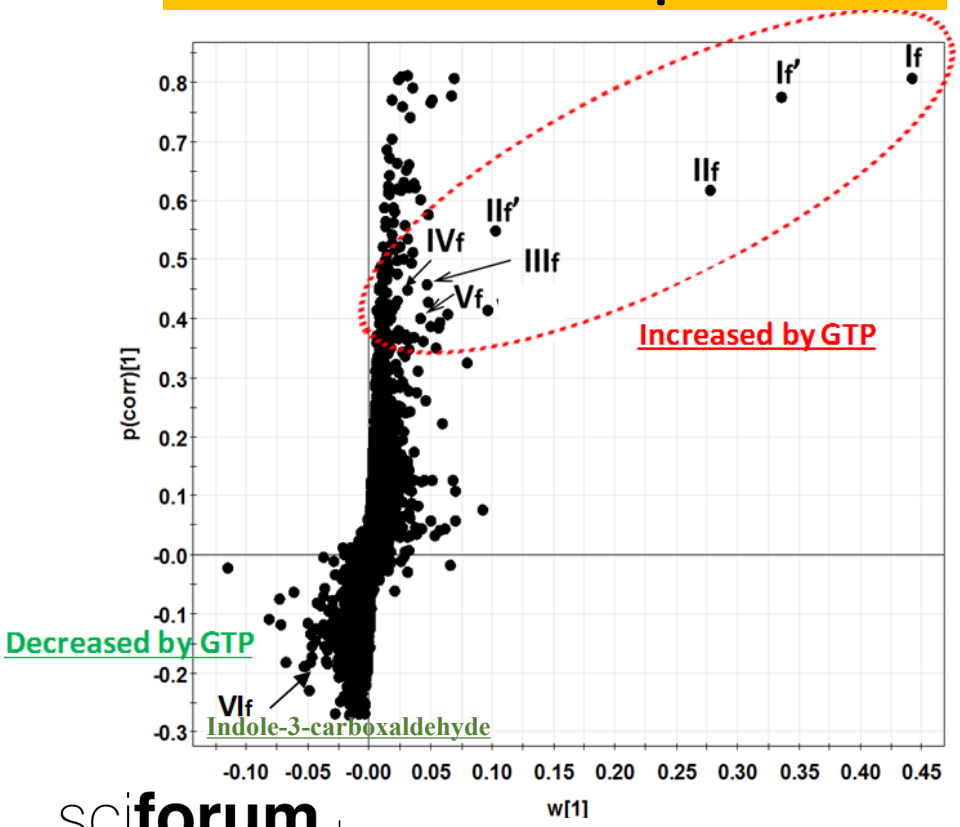


Urine samples

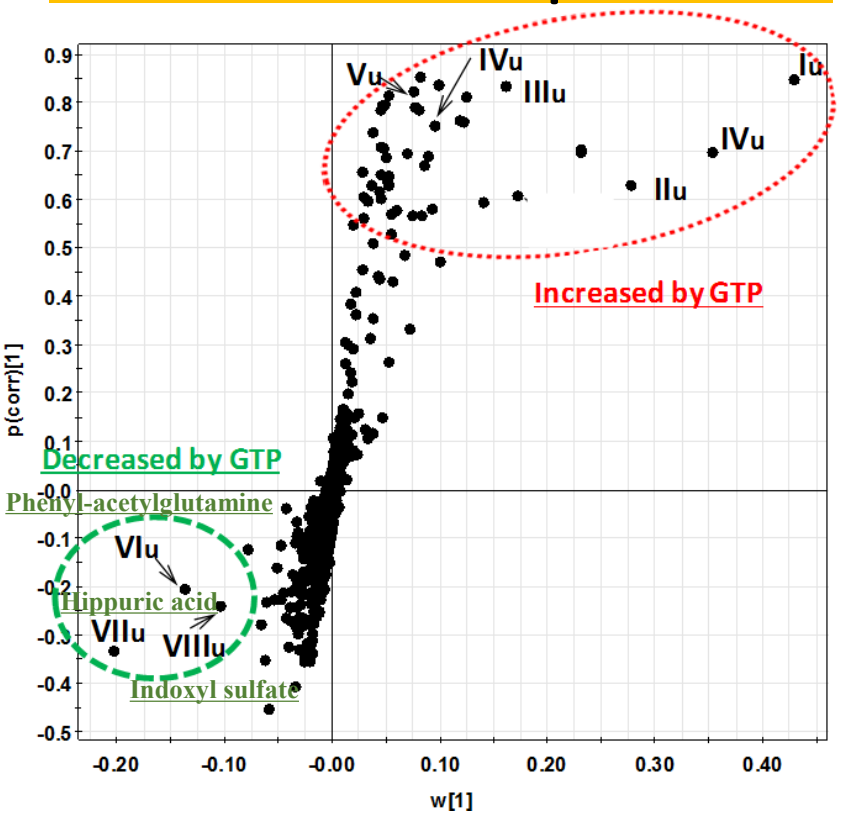


Identification of GTP-responsive markers

Fecal samples

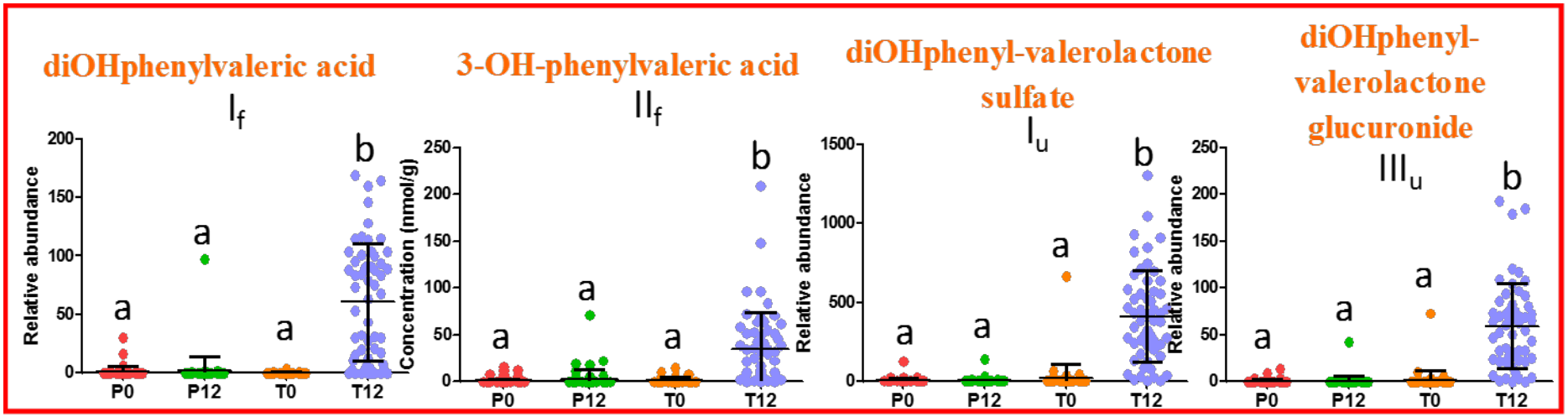


Urine samples



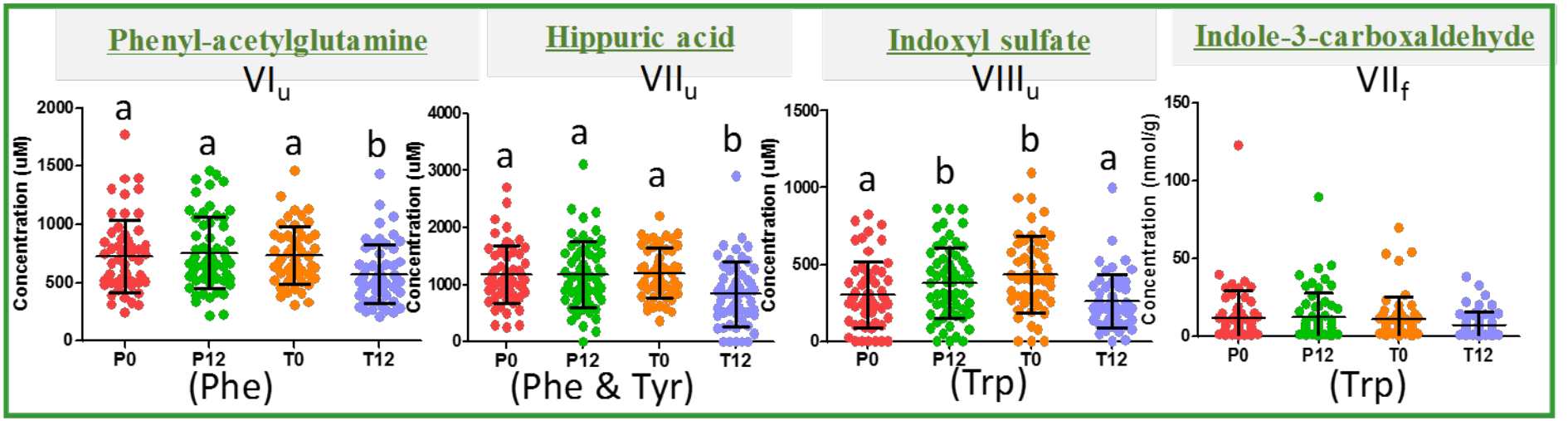
Identification of GTP microbial metabolite markers

- A group of phenolic acids derived from microbial metabolism of GTPs were identified as the robust exposure markers.
- Major GTPs were not found in significant amounts in feces.

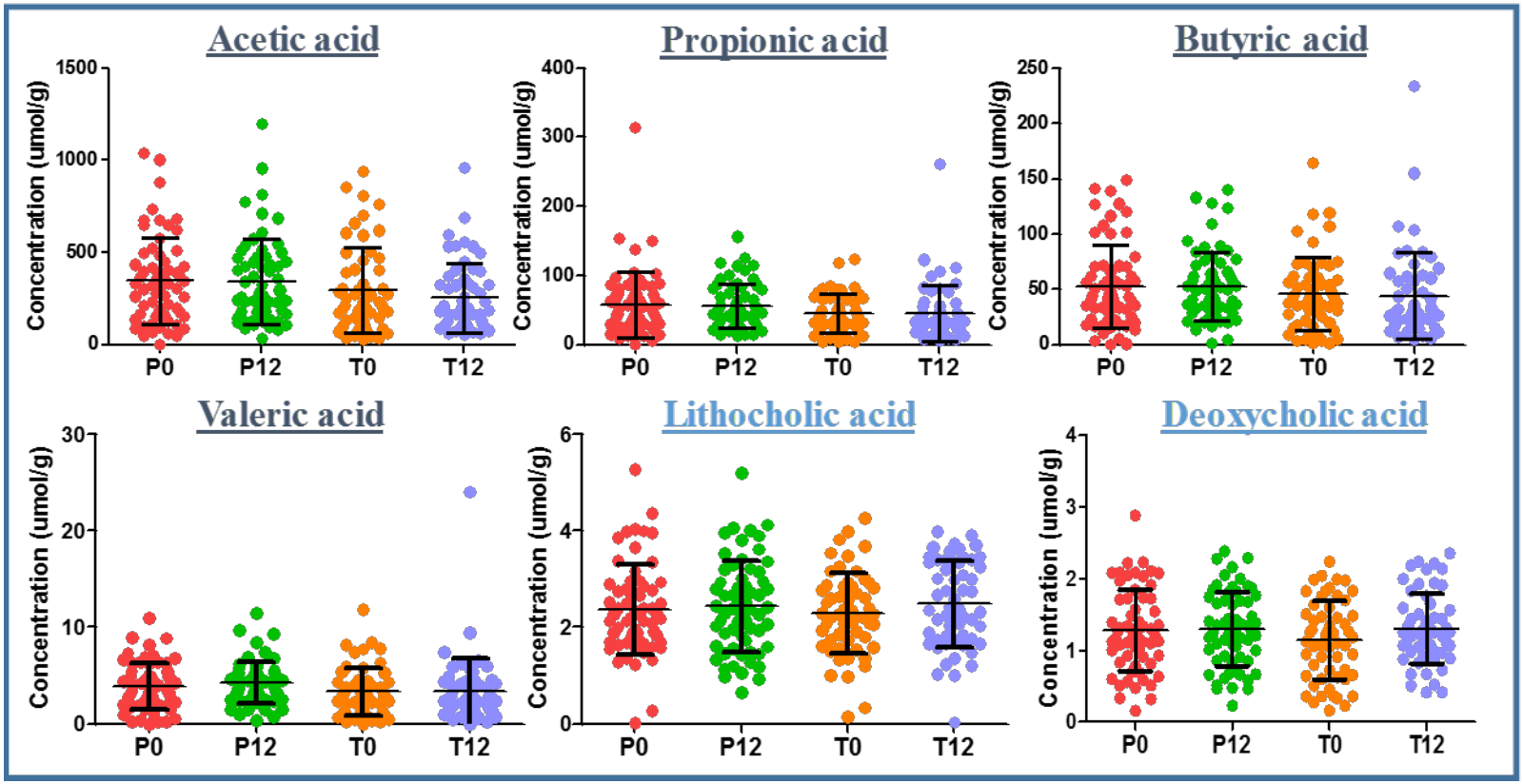


Identification of GTP-responsive markers

- Chronic GTPs treatment decreased the levels of microbial metabolites of aromatic amino acids in urine and feces.

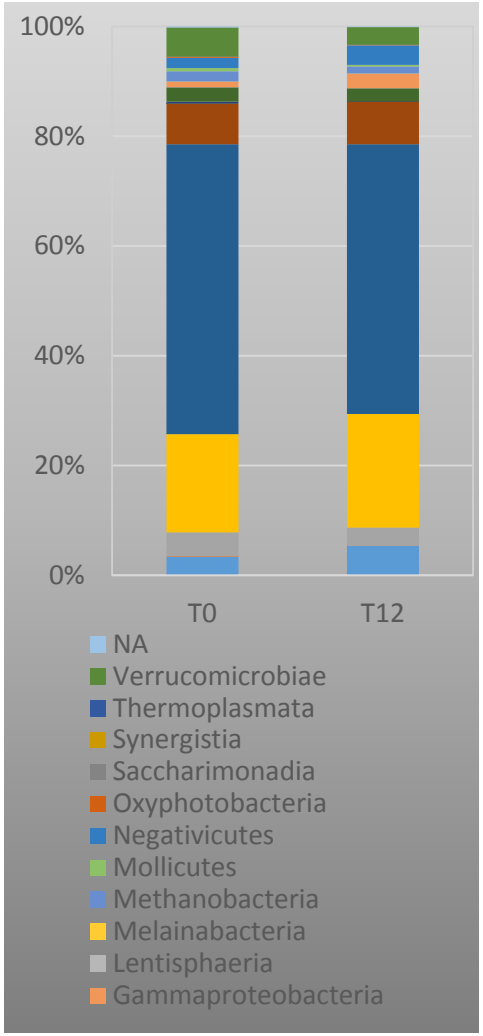


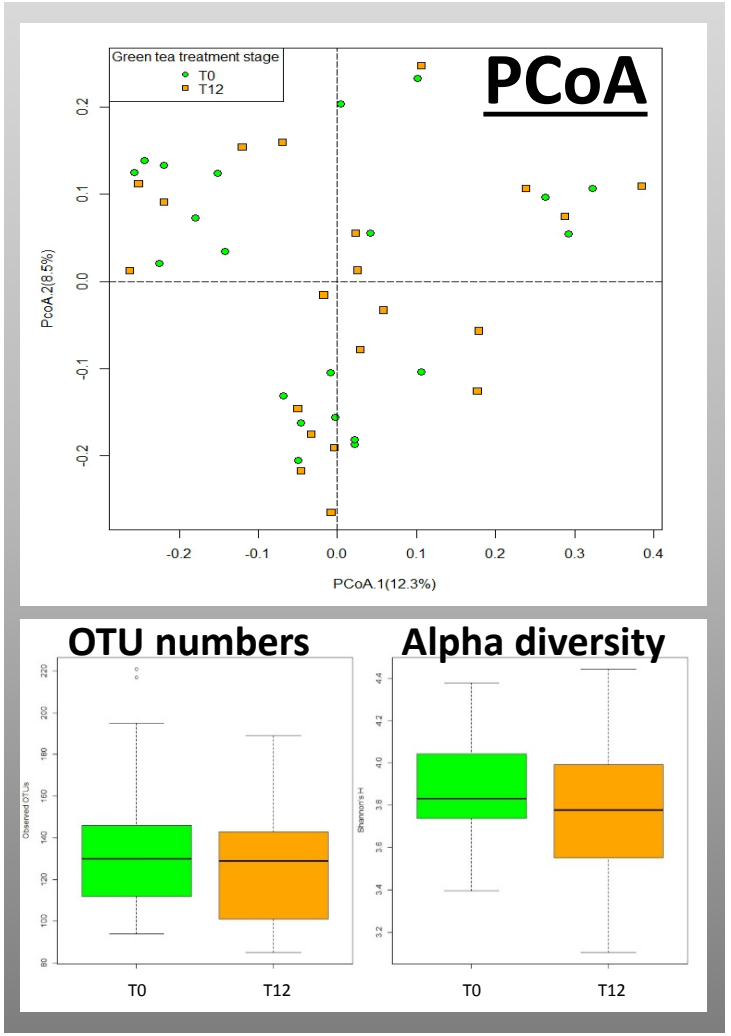
- However, GTP treatment did not significantly affect the levels of short chain fatty acids and secondary bile acids, two other major groups of microbial metabolites.



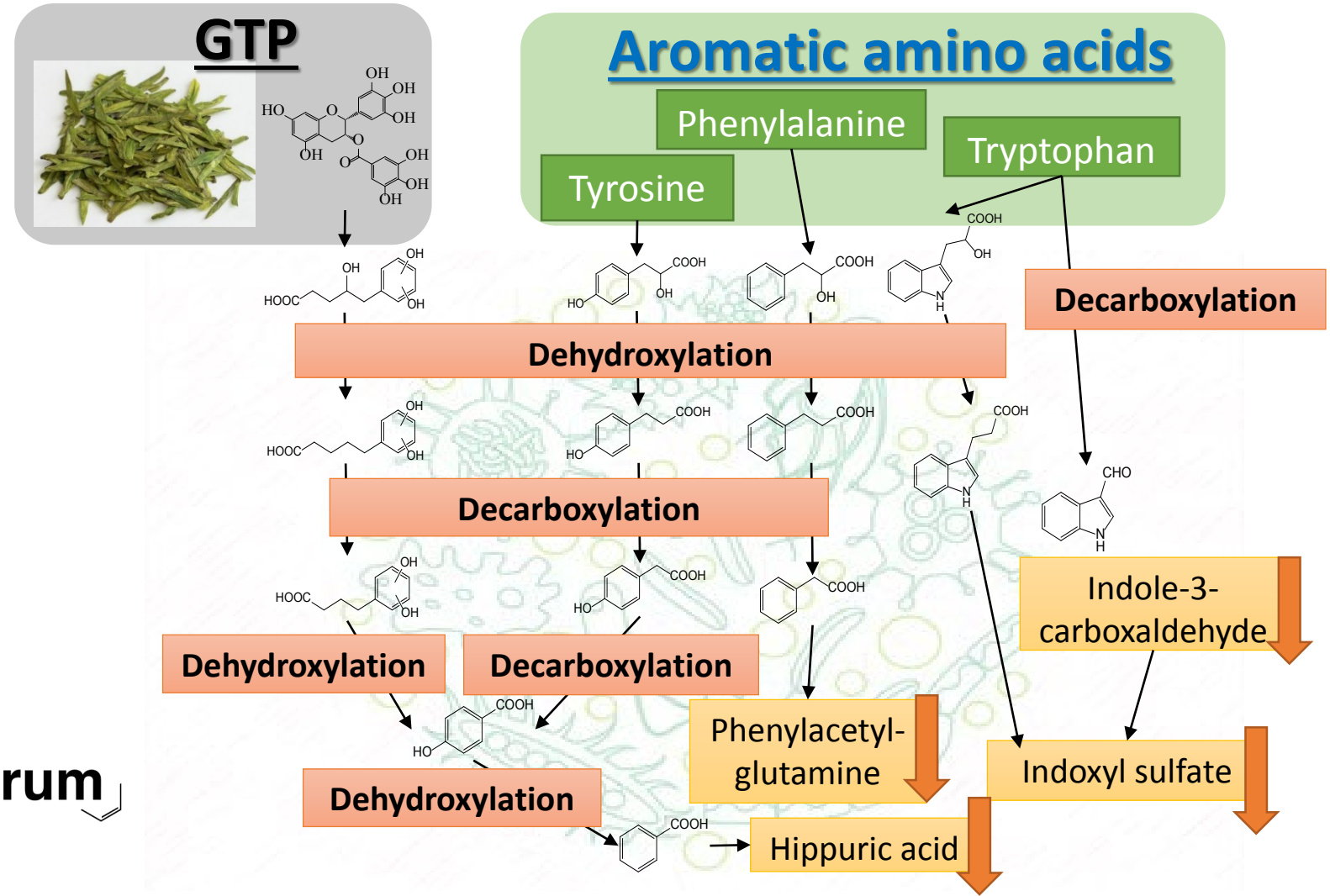
Microbiome analysis (16S)

- Chronic GTP did not change the microbial composition.





Potential competitive inhibitions between microbial metabolism of GTPs and aromatic amino acids



Conflict of interests

The authors declare no conflict of interests.

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Any questions, please email me.

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