



Integrative multi-layer bioinformatics of transcriptomic data for elucidating molecular mechanisms of action of polyphenol-rich extract on cardiometabolic health



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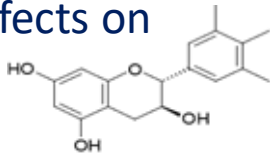
**Plants for
Human Health**

I N S T I T U T E

Prof. Dragan Milenkovic, PhD

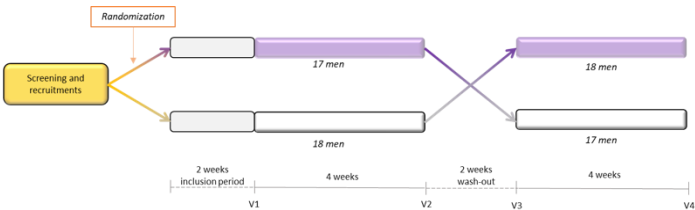
North Carolina State University, USA

Introduction: Polyphenols are bioactive compounds of plant origin, associated with beneficial effects on cardiometabolic health in humans.



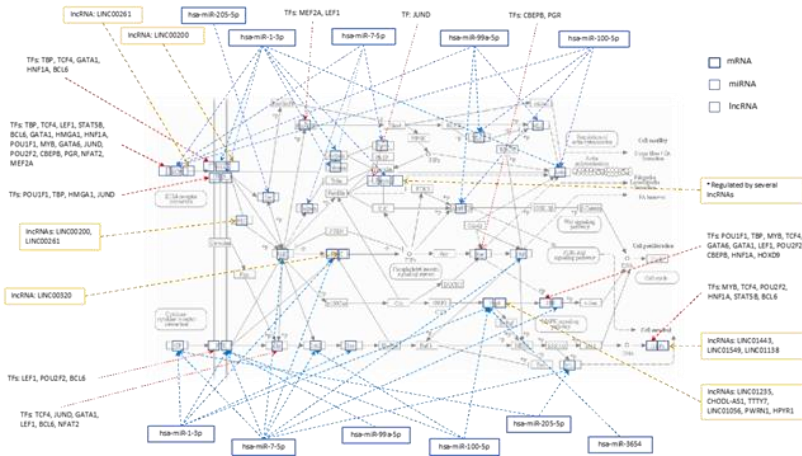
The molecular mechanisms underlying these effects are not completely understood. Often conflicting data from RCTs, and interindividual variability.

Materials and methods: RCT with a polyphenol-rich extract from *Ilex paraguariensis* A. St.-Hil. (mate), and global transcriptomics in PBMCs.

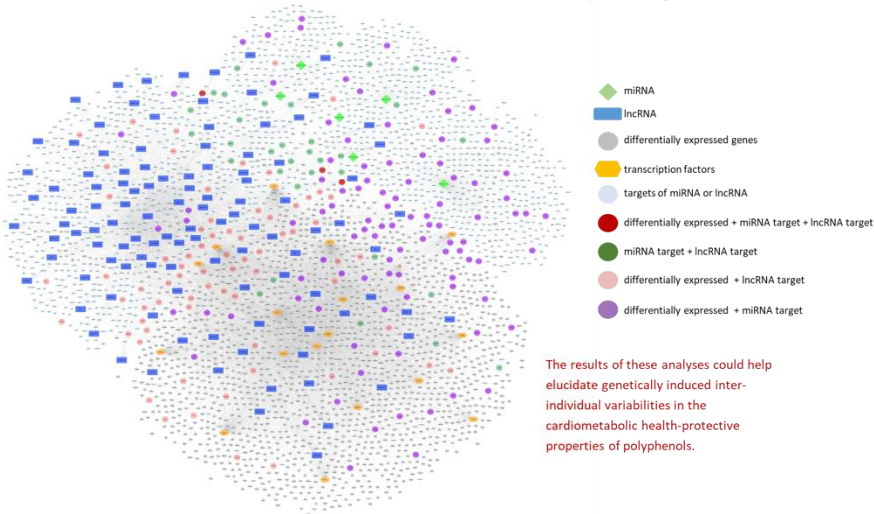


Gebara *et al.*,
Nutrients, 2021

Results: Mild clinical effects (HDL-c, fasting glucose, IL6).
Modulations in global gene expression in PBMCs, more than 2000 protein-coding genes, six miRNAs, and more than 200 lncRNAs.



Focal adhesion: multi-layer regulation



The results of these analyses could help elucidate genetically induced inter-individual variabilities in the cardiometabolic health-protective properties of polyphenols.

Comprehensive integrative network of all molecular targets of mate

Conclusion: Integrative multi-layer bioinformatics of transcriptomic data has the capacity to provide evidence for key molecular targets underlying the beneficial health effects of polyphenols.