

## Antioxidant-Enriched Diet on Oxidative Stress and Inflammation Gene Expression: A Randomized Controlled Trial

Paola Gualtieri<sup>1,\*†</sup>, Marco Marchetti<sup>2,†</sup>, Giulia Frank<sup>3</sup>, Antonella Smeriglio<sup>4</sup>, Domenico Trombetta<sup>4</sup>, Carmela Colica<sup>5</sup>, Antonio Cerasa<sup>5</sup>, Domenico Bosco<sup>5,6</sup>, Rossella Cianci<sup>7</sup>, Antonino De Lorenzo<sup>1</sup>, Laura Di Renzo<sup>1</sup>

*1 Section of Clinical Nutrition and Nutrigenomics, Department of Biomedicine and Prevention, University of Tor Vergata, Via Montpellier 1, 00133 Rome, Italy*

*2 School of Specialization in Food Science, University of Rome Tor Vergata, Via Montpellier 1, 00133 Rome, Italy*

*3 Ph.D. School of Applied Medical-Surgical Sciences, University of Rome Tor Vergata, Via Montpellier 1, 00133 Rome, Italy*

*4 Department of Chemical, Biological, Pharmaceutical and Environmental Science, University of Messina, Viale Ferdinando Stagno d'Alcontres 31, 98166 Messina, Italy*

*5 CNR, IBSBC, Via T. Campanella 115, 88100 Catanzaro, Italy*

*6 Institute of Neurology, Department of Neurosciences, Presidio Ospedaliero "Pugliese", AOU "Renato Dulbecco", viale Pio X 83, 88100 Catanzaro, Italy*

*7 Department of Translational Medicine and Surgery, Catholic University of the Sacred Heart, Fondazione Policlinico Universitario A. Gemelli, IRCCS, 00168 Rome, Italy*

\* Correspondence: [paola.gualtieri@uniroma2.it](mailto:paola.gualtieri@uniroma2.it)

† These authors contributed equally to this work.

### Background:

Typical foods of the Mediterranean diet (MedDiet) contain natural bioactive compounds that contributes to the reduction in chronic non-communicable diseases (CNCDs)<sup>1</sup>, cardiovascular mortality, and weight management, also through gene modulation. In the present study, the effects of mixed apple juice (Aj) and bergamot juice (Bj) (MABj) were examined.

### Methods and Results:

A randomized, parallel, controlled study was conducted, for 2 weeks, on 24 subjects, divided into 2 groups (MedDiet and MedDiet+MABj), to evaluate the effect on lipid and glycemic blood profiles, and inflammasome and oxidative stress – by assessing changes in activity of some related genes – of supplementation with MABj<sup>2</sup>, respect to MedDiet. Body composition<sup>3</sup>, biochemical profile, and oxidative and inflammatory gene expression<sup>4</sup> were measured at the beginning and at the end of the treatment. Body composition evaluation<sup>5</sup> showed greater gain in lean mass and reduction in total cholesterol/HDL index. Gene analysis highlighted an increase in some anti-inflammatory genes expression.

### Conclusions and Significance:

Aj and Bj work together for certain anti-inflammatory and antioxidant markers, most likely as a result of their distinct polyphenol compositions. Bj is crucial for lipid-lowering indicators. Our preliminary study indicates that adding MABj to MedDiet may help lower the risks of CNCDs from a nutrigenomics standpoint.

### Keywords:

Mediterranean Diet; chronic non-communicable diseases; nutrigenomics; gene expression; polyphenols.

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