

## Effects of red wine and different doses of polyphenols from dealcoholised red wine on endothelial function in subjects with metabolic syndrome

Sasot G<sup>1,2\*</sup>, Creus-Cuadros A<sup>1,2</sup>, Mercader-Martí M<sup>4</sup>, Lamuela-Raventós RM<sup>1,2</sup>, Estruch R<sup>2,3</sup>

<sup>1</sup>Department of Nutrition, Food Science and Gastronomy, School of Pharmacy and Food Sciences, University of Barcelona, Av. Joan XXIII 27-31, Barcelona, Spain; Nutrition and Food Safety Research Institute (INSA·UB), University of Barcelona (UB).

<sup>2</sup>CIBER Physiopathology of obesity and nutrition (CIBEROBN). Institute of Health Carlos III, Spain.

<sup>3</sup>Department of Internal Medicine, Hospital Clinic, Institute of Biomedical Investigation August Pi i Sunyer (IDIBAPS), University of Barcelona, Spain.

<sup>4</sup>Miguel Torres, Vilafranca del Penedés, Barcelona, Spain

\*Presenting author

### ***Background and objectives:***

Cardiovascular disease (CVD) is the leading cause of death in the developed world. Several studies pointed out that mortality and risk from CVD are higher in subjects with Metabolic Syndrome (MetS), which is considered as a cluster of risk factors. Epidemiological studies and intervention clinical trials have shown that dealcoholised red wine (DRW) and moderate consumption of red wine (RW) are inversely associated with cardiovascular risk factors. Indicating a possible additional protective effect due to the non-alcoholic fraction of RW.

### ***Methodology:***

A randomised, open, prospective and controlled clinical trial, running in parallel was performed in 72 subjects with metabolic syndrome; 130 or 260 mL/day of RW for women and men, respectively, 375 mL/day of DRW, dealcoholized red wine with grape extract (DRWEx) or water were administered during three months.

Peripheral blood mononuclear cells were isolated by Ficoll density-gradient centrifugation and, a FACS Calibur Flow Cytometer and CellQuest software were used to analyse levels of endothelial progenitor cells (EPC) and circulating endothelial cells (CEC).

### ***Results and conclusions:***

After the DRW interventions, the number of CEC significantly decreased, while after RW, it shows a noticeable decrease. There is a significant increase in the number of EPC after the RW intervention and, just a low increase in the DRWEx intervention.

The non-alcoholic fraction of wine, rich in polyphenols, may reduce CEC, known marker of severity of cardiovascular disease, and increase EPC, a marker of endothelial regeneration, in a population at high cardiovascular disease risk. These features might explain why DRW and moderate RW consumption suggest an improvement in the condition of the vascular endothelium and possibly contribute to delay the development of atherosclerotic plaques.

***Acknowledgements:***

This work was supported by the INNPRONTA project, in part by CICYT (AGL2013-C3-1-R and AGL2016-79113-R), the Instituto de Salud Carlos III, ISCIII (CIBEROBN) from the Ministerio de Economía y Competitividad (MEC) (AEI/FEDER, UE) and the Generalitat de Catalunya (GC) 2014 SGR 773.