Bergamot polyphenolic fraction potentiates Rosuvastatin induced effect on LDL-cholesterol, LOX-1 expression and protein kinase B phosphorylation in patients with hyperlipidemia

M. Gliozzi[1,2,3], V. Musolino[1,2,3], C. Carresi[1,2,3], F. Oppedisano[1,2], F. Casale[1,2], M. Iannone[1,4], C. Muscoli[1,2,3], E. Palma[1,2], V. Russo[1,2,3], S. Muscoli[5], A. Romeo[1,2], F. Romeo[5], R. Walker[6], V. Mollace[1,2,3]

1. Interregional Research Center for Food Safety & Health - IRC_FSH, Catanzaro, Italy
2. Dept. Health Sciences, University of Catanzaro Magna Graecia, Catanzaro, Italy
3. Centro del farmaco - IRCCS San Raffaele Pisana, Rome, Italy
4. ARPACal-Catanzaro, Italy
5. Dept. of Cardiology, Tor Vergata University, Rome, Italy
6. Lindfield Cardiology, Lindfield, Sydney, NSW Australia

Statins are the most commonly prescribed drugs to treat lipid disorders and reduce cardiometabolic risk. However, the use of natural compounds may represent a valid support for statin-intolerant patients. We aimed to assess the effect of bergamot-derived polyphenolic fraction (BPF) in modulating serum cholesterol and biomarkers of vascular oxidative stress in patients with mixed hyperlipidemia either untreated or treated with rosuvastatin.

A prospective, open-label, parallel group, placebo-controlled study on 77 patients with elevated serum LDL-C and triglycerides was designed. Patients were randomly assigned to a control group receiving placebo (n= 15) , two groups receiving orally rosuvastatin (10 and 20
mg/daily for 30 days n= 16 for each group), a group receiving BPF alone orally (1000 mg/daily for 30 days; n=15) and a group receiving BPF (1000 mg /daily given orally) plus rosuvastatin (10 mg/daily for 30 days; n=15).

Both doses of rosuvastatin and BPF reduced total cholesterol, LDL-C, the LDL-C/ HDL-C ratio and urinary mevalonate in hyperlipidemic patients, compared to control group. The cholesterol lowering effect was accompanied by reductions of malondialdehyde, oxyLDL receptor LOX-1 and phosphoPKB, which are all biomarkers of oxidative vascular damage, in peripheral polymorphonuclear cells.

Addition of BPF to rosuvastatin significantly enhanced rosuvastatin-induced effect on serum lipemic profile compared to rosuvastatin alone, an effect associated to significant reductions of biomarkers used for detecting oxidative vascular damage, suggesting a multiaction synergistic potential for BPF in statin-taking patients. BPF may be an alternative therapeutic strategy for hyperlipidemia in patients with statin-induced side effects.