APOPTOTIC CELL DEATH IN DOXORUBICIN-INDUCED CARDIOMYOPATHY: ROLE OF PEROXYNITRITE AND LOX-1 RECEPTOR MODULATION

Francesca Sculco[1], Carolina Muscoli[1,2], Ernesto Palma[1], Iolanda Sacco[1], Valeria Visalli[1], Nicola Costa[1], Domenicantonio Rotiroti[1], Francesco Romeo[3] and Vincenzo Mollace[1,2]

[1]Faculty of Pharmacy, University "Magna Graecia" of Catanzaro, Italy; [2]San Raffaele Pisana IRCCS, Rome, Italy; [3]Chair of Cardiology, University of Rome "Tor Vergata", Rome, Italy; [4]Faculty of Pharmacy, University of Messina, Italy

Lectin-like ox-LDL receptor-1 (LOX-1), the receptor for oxydized LDL, has recently been suggested to be involved in smooth muscle cell (SMC) proliferation and neointima formation in injured blood vessels, an effect mediated by free radical generation. Here we evaluated the effect of the non volatile fraction (NVF), the antioxidant component of Bergamot essential oil (BEO), on LOX-1 expression and free radicals generation in a model of rat angioplasty (PTCA). In animals undergoing balloon injury a significant restenosis with neointima formation occurred, an effect accompanied by increased expression of LOX-1 receptor and nitrotyrosine staining. Pre-treatment of rats with BEO-NVF reduced the neointima formation, LOX-1 expression and nitrotyrosine staining. Thus, BEO-NVF possesses antioxidant properties in vivo, reducing oxidative stress which triggers both neointima formation and LOX-1 expression. These results suggest that natural antioxidants may be relevant in the treatment of vascular disorders in which proliferation of SMCs and ox-LDL-related endothelial cell dysfunction are involved.