Epidemiological studies of last decade describing the different protective mechanisms of herbal ingredients which able to inhibit oxidative stress and improve nitric oxide production, are responsible for protective effects of cardiovascular system. Aim of this study was to compare different types of herbal formulations characterized with antioxidant activity on their effects to inhibit generation of reactive oxygen species (ROS) and on in vivo circulating NO concentrations.

22 healthy in the age of 40±10 years old volunteers consumed single dose of different herbal formulations with different content of biologically active ingredients such EGCG, quercetin, anthocyanins, proanthocyanins and vitamin C. Antioxidative capacities of herbal formulations were characterized by ORAC-5 assay. Formation of ROS was performed in capillary blood of volunteers before and 1, 2, 3h after of single dose herbal formulations administration. Electron spin resonance spectrometer E-SCAN analysis of bioavailable NO concentration and TNF-alpha dependent inflammatory response assay have been used.

In this study we found the different capacity of formulated herbal blends to inhibit in vivo generation of ROS, to elevate circulating NO concentration and to inhibit inflammatory response of human blood cells due to the different mechanism of action of their bioactive ingredients. The possible interaction between brain-derived neurotrophic factor (BDNF) and oxidative stress markers (OSM) has not been investigated enough. This study aimed to provide phytochemical composition, antiradical activity and perform to assess the effect of whole coffee fruits extract (WCFE) on blood levels of BDNF in healthy humans. A single dose of WCFE significantly decreased a cellular and mitochondrial ROS formation, inhibited generation of extracellular NADPH oxidase-dependent superoxide (O2-) and peroxidase-dependent hydrogen peroxide (H2O2). WCFE increased BDNF plasma level in patients by an average of 137% with respect to baseline (range 65-222%; P=0.001 v. placebo). WCFE could be used to inhibit ROS formation and other oxidative stress markers and for modulation of BDNF-depend health conditions to support an optimal health in humans.