Abstract

Background/aims: Risk factors for cardiovascular disease (CVD) have been proven to be associated with an increased oxidative stress. Several studies have considered cholesterol oxidation products (COPs) as specific in vivo markers of oxidative stress. The aim of this study was to investigate the association between the levels of COPs derived from autoxidation processes and established cardiovascular risk factors, comparing the levels of serum COPs in subjects with or without showing values out of the reference ranges. Methods: It was a cross-sectional study in which 88 subjects were recruited and individual and total COPs from autoxidation origin was analyzed in serum by GCMS. The simultaneous correlation of COPs with different CVD risk factors have been analyzed. Results and discussion: A great variability of total COPs concentrations were found. Subjects presented total COPs values from 0.091 to 2.052 g/mL. Total COPs were significantly higher (p < 0.05) in patients with hypertriglycerolemia, hypertension, diabetes and overweight/obesity status compared to those subjects who did not present those CVD risk factors. Moreover, 7 and 7 hydroxycholesterol and 7-ketocholesterol were significantly higher (p < 0.05) in patients with hypertension and diabetes. No significant differences in total COPs were found between patients with and without hypercholesterolemia. Conclusions: The obtained results showed that the analyzed COPs correlate well with at least 4 out of 6 risk factors of development of CVD.

Keywords

Oxidation, Hypertriglyceridemia, Hypertension, Diabetes, Obesity, Atherosclerosis, GC-MS.