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Phenotype of paraoxonase 1, oxidative stress biomarkers and the risk of cardiovascular diseases development in healthy, diabetic, and hemodialysis patients

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Paraoxonase1 (PON1) expressed in the Islets of Langerhans is an antioxidant high density lipoprotein bound enzyme. We investigate the Paraoxonase 1 phenotype distribution and we measure oxidative stress biomarkers (Vitamin E/CT, MDA) in healthy, diabetic and hemodialysis patients. Three hundred subjects (healthy, diabetic and chronic renal failure patients) aged between 40 and 80 years were recruited for the study (divided in three groups of 100 subjects each). Total MDA content in plasma was measured by HPLC with thiobarbituric acid (TBA) and with fluorescence detection. Vitamin E (α-tocopherol) as the principal plasma antioxidant was also measured by HPLC with electrochemical detection. We observe that, Vitamin E-Tot. Chol ratio increases significantly with age in diabetic patients ($r= 0.30$; $p <0.01$). The plasma Vitamin E - Total Cholesterol ratio decreases significantly with age in hemodialysis patients ($r = -0.17$; $p<0.05$) and in healthy subjects ($r = -0.15$; $p=0.44$). Plasma MDA concentration increases with age in diabetic patients ($r = 0.09$; $p=0.15$). The distribution of PON 1 phenotype in healthy, diabetic and hemodialysis patients was as follows: AA 79.31%, 75.00% and 69.31%; AB 14.94%, 19.04% and 20.45%; BB 5.74%, 5.95% and 10.22%. Adjusted odds ratio comparing the AA variant with the BB variant were 1.97 [95% confidence interval (CI): 0.63-6.21] in hemodialysis patients. In diabetic patients, the adjusted odds ratio comparing the AA variant with the AB variant of PON1 were 1.37 [95% CI: 0.62-3.04]. Our studies show that PON1 phenotype distribution and oxidative stress markers are associated with cardiovascular diseases risk in healthy, diabetic and hemodialysis patients.

Biography

N Y Gbandjaba has completed his PhD in Biochemistry from Hassan IIUniversity Casablanca Morocco in 2013. As a student, he develops a good collaboration with Sherbrooke University, Research Centre on Ageing, Sherbrooke (QC), Canada and the International Pasteur Institute of Morocco. In 2009, he won a grant from the IRSC to accomplish his Doctoral thesis in the Research Centre on Ageing. He is also called the Whistle Blower. His research focuses on the development of oxidative stress biomarkers involved in cardiovascular diseases related to successful ageing. He has more than 5 articles in reputed journals, 16 lectures, 32 posters and having won PASRES Prize in 2016.

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