Phenotype distribution of human serum paraoxonase 1 in a cohort of healthy Sri Lankan individuals

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Cardiovascular diseases include diseases of heart, vascular diseases of brain and diseases of blood vessels. Cardiovascular diseases are responsible for over 17.3 million deaths per year and are the leading cause of death worldwide. Most of these deaths occur before age of 60 and could have largely been prevented. PON 1 is a cardioprotective enzyme synthesized in liver. It can be used as a personalized, proactive measure in assessing CVD risk in people. Serum samples of 155 apparently healthy individuals between 19-70 years were used for the study. Phenotype distribution was assessed using dual substrate method. Salt stimulated PON 1 activity (with 1M NaCl) and arylesterase activity was measured spectrophotometrically using paraoxon and phenyl acetate as substrates. Out of 155 participants 77 were females and 78 were males. In this study population, a wide interindividual variability (up to 18 folds) of PON1 activity was found. The mean of basal, salt stimulated paraoxonase and arylesterase activities were 222.4 ± 122.57U/l, 302.36 ± 204.03U/l and 1.72±1.14 U/l respectively. The ratio of salt stimulated PON1 activity to arylesterase activity was used for definition of phenotypes. Based on the observed ratios, 3 distinct phenotypes AA (low activity), AB (Intermediate activity) and BB (high activity) were determined. The PON1 ratio varied from 0.21 to 4.99. The paraoxonase phenotype frequencies were approximately 44.52% (AA), 46.45 % (AB) and 9.03% (BB). The distribution of PON 1 phenotypes in this Sri Lankan population was trimodal. Individuals with low PON 1 activity may be more susceptible to CVD. They were advised to make necessary changes in life style and diet to mitigate risk of getting CVD.

Key words: Cardiovascular diseases, Paraoxonase,Arylesterase, phenotype

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