Effect of pomegranate on metabolic indexes and inflammatory biomarkers in STZ-NA induced diabetic rats

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Type 2 Diabetes is associated not only with hyperinsulinaemia and hyperglycemia but also with other disorders such as atherosclerosis, hypertension, inflammatory disorders and abnormal lipid profiles in dyslipidemia. Fruit extracts have been used universally in treatment of chronic diseases, because they are natural, safe, and readily accessible. Pomegranate (*Punica granatum Linn*) has been used, as pomegranate fractions have therapeutic potential stated by multitudinous scientists using various *in vitro* assay systems which is due to the presence of unique bioactive compounds and polyphenolic constituents. This study was performed to evaluate the pomegranate juice and seed consumption and their potential effect on treatment of diabetes and its associated complications such as abnormalities in plasma glucose, insulin, inflammatory factors, lipid profile level and pancreatic tissue in STZ-NA induced diabetic rats. Forty adult healthy male Sprague Dawley rats were dedicated in 5 groups of 8 rats each. Diabetes mellitus was induced in 4 groups by administration of streptozotocin-nicotinamide. Diabetic animals were further treated differently for 21 days, by using oral gavage by force-feed with needle. Rats in all groups were sacrificed on day 22. The results of the study suggests that the antioxidant flavonoids and Polyphenolic active constituents present in pomegranate are possibly responsible for hypolipidemic and anti-inflammatory effect in diabetic rats which can help the cure and management of diabetes. Although the biochemical mechanisms underlying Pomegranate seed and juice activities are not yet clear, our results demonstrated that *Punica granatum* has a suppressor effect versus lipid abnormalities and overexpression of inflammatory cytokines which are side effects of diabetes.

Keywords: Diabetes, pomegranate polyphenolic constituents, lipid abnormalities, inflammatory cytokines