Effects of Two Synthetic PPAR-γ agonists in Hypercholesterolemic Rats

[1]Erdogan I [2]Akalin G., [3]Musmul A., [4]Akalin A., [1]Alatas O.

[1]Department of Biochemistry, Eskisehir Osmangazi University,.Medical Faculty, Eskisehir, Turkey,

[2]Department of Biochemistry, Faculty of Pharmacy, University of Anadolu, 26470, Eskisehir, Turkey,

[3]Department of Biostatistics, Eskisehir Osmangazi University, Medical Faculty, Eskisehir, Turkey

[4]Department of Endocrinology, Eskisehir Osmangazi University, Medical Faculty, Eskisehir, Turkey

Introduction: Peroxisome proliferator-activated receptor-γ (PPAR-γ) is well expressed in cardiovascular system-relevant tissues such as heart , endothelium and vascular smooth muscle. Since TZDs have importance on PPAR-γ expressed in cardiovascular system, we investigated lipit profiles of hypercholesterolemic rat which are treated with different Rosiglitazone and Pioglitazone concentrations.

Methods: The rats were divided into five groups (n=8). The control group (group I) fed basal diet during entire experiment period. All other animals fed with hypercholesterolemic diet which contains 2% (w/w) cholesterol and 1% cholic acid in basal diet for 8 weeks. The hypercholesterolemic group (group II) was continued taking hypercholesterolemic diet while the group III, IV and V received 1 mg and 4 mg Rosiglitazone and 3 mg pioglitazone respectively by oral gavage in addition to hypercholesterolemic diet for 3 weeks. All the animals were sacrificed at the end of 11 weeks. Serum Total-C, TG, HDL-C, LDL-C, Apo A1, Apo B and Lp(a) levels were also determined in our clinical laboratory using routine standard methods with Roche Diagnostic System kits.

Results: TG levels of control, hypercholesterolemic and 3mg Pioglitazone treated rats were respectively [mean (SD) 49.71, (2), 79.2 (20) and 33.14 (7,8) mg/dl], Total Cholesterol levels of control, hypercholesterolemic and 4mg Rosiglitazone treated rats were respectively [mean (SD) 44.3, (7,4), 181.2 (24,5) and 154.8 (48) mg/dl] LDL-C levels of control, hypercholesterolemic and 1 mg Rosiglitazone treated rats were respectively [mean (SD) 11.14, (5,75), 151,7 (15) and 116.57 (53,06) mg/dl] Apo B levels control, hypercholesterolemic and 3mg Pioglitazone treated rats were respectively [mean (SD) 5,41, (1.37), 9.82(0,25) and 6.05 (3,22) mg/dl].

Conclusions: We conclude that all the TZDs drugs (Rosiglitazone and Pioglitazone) used in this study improved lipit profile of hypercholesterolemic rat. But Rosiglitazones were more effective than pioglitazones.