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ACE INHIBITION AMELIORATES CARDIAC STEATOSIS IN OBESE ZUCKER RATS

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Cardiac steatosis, like hepatic and insular steatosis, is followed by a progressive increase in extracellular matrix expansion and fibrosis. Additionally, cardiac lipotoxicity has been reported in obese Zucker rats (OZR), which is a well-known animal model of metabolic syndrome X. Since renin angiotensin system is involved in the pathogenesis of the metabolic syndrome, the objective of the present study was to evaluate whether ACE inhibition by Ramipril (R) can ameliorate lipid deposit in cardiomyocytes of obese Zucker rats (OZR), beyond controlling blood pressure (BP). G1 OZR; G2 OZR + R; G3 OZR + Amlodipine (AML); and G4 lean Zucker rats (LZR) as control. G2 with R 1 mg/kg/day and G3 with AML 3 mg/kg/day for 6 months. Hearts were processed for light microscopy. In order to determine lipid deposit in cardiomyocytes (LDCM), Oil red was performed. We evaluated: a) systolic blood pressure (SBP) mmHg; b) insulin/glucose ratio (I/G ratio); c) serum triglycerides (TG) mmol/l; d) LDCM (% positive staining by Oil red 1/area); e) LDCM/TG ratio. At the end of the experiment: a) SBP: G1:153.1 ± 3.7; G2: 125.9 ± 2.5; G3: 124.1 ± 1.5; G4: 123.4 ± 1.7; b) I/G ratio = G1:60.1 ± 5.1**; G2: 44.7 ± 5.7; G3: 62.1 ± 6.4**; G4: 8.2 ± 2.4; c) TG = G1:11.2 ± 2.8**; G2: 7.3 ± 1.4; G3: 10.9 ± 1.8***; G4: 0.3 ± 0.1; d) LDCM/G1:12.4 ± 2.7**; G2: 0.8 ± 0.2; G3: 11.1 ± 2.1**; G4: 0.0 ± 0.0; e) LDCM/TG ratio = G1:1.12 ± 0.29; G2: 0.07 ± 0.03; G3: 1.03 ± 0.19**; G4: 0.0 ± 0. * vs. all groups p < 0.05; ** vs. G2 & G4 p < 0.05.Untreated OZR showed a significant LDCM along with remarkable disturbance in serum metabolic parameters. AML reduced significantly SBP, however it failed to modify both serum metabolic parameters and LDCM. By contrast, despite a modest although significant reduction in I/G ratio and serum TG, ACE inhibition by R showed a substantial reduction in LDCM, beyond controlling SBP in this animal model.

Key Words: ACE Inhibition, Lipid Deposit, Myocardium

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ORLISTAT-INDUCED WEIGHT LOSS CONTRIBUTES TO MORE EFFECTIVE BLOOD PRESSURE CONTROL IN TREATED OBESE ESSENTIAL HYPERTENSIVE SUBJECTS

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In the present study, we aimed at determining whether orlistat administration, plus mild caloric restriction, can have beneficial effects on blood pressure (BP) levels, in obese patients with inadequately controlled essential hypertension.