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Comparative effects of the anti-hypertensive drugs, ramipril and irbesartan, on the vascular protection in the kidney of diabetic rats

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Diabetic nephropathy (DN) develops in patients with diabetes mellitus (DM) and has become the leading cause of end-stage renal disease. Early identification and subsequent renoprotective treatment are of utmost importance. Renin-angiotensin-aldosterone system (RAAS) has a key role in the pathogenesis of DN. The aim of this study is to compare the efficacy of the anti-angiotensin drugs; ramipril and irbesartan on the vascular protection of kidneys of Streptozotocin (STZ)-induced diabetic rats (DR). 110 male albino rats were divided into 7 main groups. Group 1 (10 untreated rats) was used as a control. Group 2 (10 rats) was injected intra-peritoneally (i.p) with STZ to induce DM. Group 3 (10 rats) was controlled by insulin after induction of DM with STZ. Groups 4 to 7 consisted of 20 rats, each of which was injected i.p. with STZ and further subdivided into 2 subgroups that received either low or high dose of ramipril or irbesartan with or without insulin. Two months post treatment, rat tail blood samples were collected to measure: fasting blood sugar, HbA1c, Total and free serum proteins (Albumin and Globulin) and lipid profiles. Urine samples were collected to measure Albuminuria. Kidneys were isolated for histopathological study to confirm any biochemical findings. Biochemically, both ramipril and irbesartan lowered albumin concentration in urine samples of DR especially in high doses. However, histopathological examination of the kidneys failed to demonstrate beneficial response of low and high doses of both drugs. Only lowering of blood glucose by insulin together with either drug in DR has beneficial effects biochemically and histopathologically, especially in high doses. Low and high dose irbesartan seems to be more renoprotective as compared to ramipril. The other biochemical parameters showed negligible response to both drugs. In conclusion, low dose irbesartan and high doses of both drugs have renoprotective effect in DR treated with insulin.

Biography

Abdulmonim A Alqasim is an associate professor in physiology. He has completed his PhD in 2006 from University College London. He is the dean of Alqunfuda Medical College in Umm Alqura University Saudi Arabia. He has 6 papers in respected journals.

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