Is resveratrol intake associated with functional and structural amelioration following uninephrectomy?

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Background: Uninephrectomy (Unix) is generally followed by structural and functional changes in the remaining kidney, as well as systemic metabolic changes. We investigated the effect of resveratrol, a naturally occurring polyphenol with strong antioxidant and nephro-protective properties, on these changes at 3, 5 and 7 months post uninephrectomy.

Materials & Methods: Uninephrectomy was performed in adult Wistar 54 rats aged 12 weeks; 26 of those received resveratrol 20 mg/kg/day by oral gavage starting 7 days post-uninephrectomy, and until termination of the experiment. A further 17 rats were sham operated and acted as controls. The experiment was terminated at 3, 5 or 7 months post-uninephrectomy, to study the progress of structural and functional renal changes over time.

Results: Uninephrectomy was associated with compensatory renal growth, with hypertrophy of the remaining kidney that were evident at 3, 5 and 7 months post-surgery. Fibrosis of the remaining kidney appeared at 7 months, with an increase of serum urea (+39%, P = 0.001) and creatinine (+32.7%, P < 0.0001) relative to controls. Resveratrol significantly decreased hypertrophy of the remaining kidney (-17%, P = 0.0001) and limited compensatory growth (-14%, P = 0.0001), and ameliorated the renal fibrotic changes. At 7 months post uninephrectomy, resveratrol had also lowered fasting serum urea (-17.4%, P = 0.01), creatinine (-15.4%, P = 0.0002), triglycerides (-15%, P = 0.005), total cholesterol (-22%, P = 0.004), non HDL cholesterol (-50%, P = 0.002) and atherogenic index (+36%, P = 0.004) relative to the untreated uninephrectomy group. Moreover, resveratrol intake for 7 months post-uninephrectomy decreased 24 hour urine total protein (-42%, P = 0.01) and the urine protein/creatinine ratio (-35%, P = 0.06).

Conclusion: Early administration of resveratrol following uninephrectomy ameliorates long-term renal structural and functional changes and metabolic perturbations. Our data suggests that resveratrol may be potentially beneficial as an adjuvant therapy in human kidney donors.

Role of irisin administration in modulating testicular function in adult obese albino rats

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Background: Irisin, exercise-induced myokine, is known to improve obesity-induced metabolic disturbances by enhancing thermogenesis and increasing energy expenditure. Recent studies have reported that irisin promoted cell proliferation and protected cells from apoptosis. However, the effects of irisin on testicular function in obese rats is still to be investigated.

Objective: This study was designed to explore the probable effects of irisin treatment on modulating the adverse effects of obesity on testicular functions with a trial to clarify some of the possible underlying mechanisms.

Design: Thirty adult male wistar albino rats (200 ± 30g) were divided equally into 3 groups, group (I): Saline-vehicle treated normal fed group, group (II): Saline-vehicle treated rats were fed a high fat diet (HFD) for 10 weeks. group (III): Irisin treated HFD-fed rats for 10 weeks and irisin was injected subcutaneously (150 μl daily for 4 weeks). Rats were weighed and serum levels of glucose, insulin, lipid profile, FSH, LH, estradiol & testosterone levels, epididymal sperm count and motility, testicular malondialdehyde (MDA) level, superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPX) activities, testicular and epidyimal fat weights were estimated. Testicular histopathological study was done as well.

Results: There was a significant increase in the body mass index (BMI) together with deterioration of metabolic, gonadal functions and testicular oxidant/anti-oxidant system in group (II), while exogenous irisin administration in group (III) resulted in: Significant decrease in BMI, insulin resistance with improvement in lipid profile, significant increase in serum FSH, LH & testosterone, sperm count and motility in male rats. Together with marked improvement in the testicular histoarchitecture. Additionally, there was a significant increase in testicular SOD, CAT & GPX activities. However, it significantly decreased testicular MDA level.

Conclusions: It could be suggested that irisin has a potential positive role against obesity-induced testicular dysfunction, which may be due to its role in maintenance of glucose & insulin homeostasis, its antioxidant properties and/or maintenance of gonadal hormonal function via indirect and/or direct effects on the gonads.

The effect of synbiotics on serum indoxyl sulfate in maintenance haemodialysis patients


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Background and Objectives: Indoxyl sulfate (IS) is a major uro-eremic toxin contributing to major cardiovascular morbidity and mortality. The aim of our study was to evaluate whether synbiotic (pre- and probiotic) therapy alters the gut microbiota and reduces serum concentrations of IS in hemodialysis patients. DESIGN, SETTING, PARTICIPANTS, & MEASUREMENTS: 80 ESRD patients undergoing regular hemodialysis recruited (between January, 2017 and March, 2017) to a single-blind, placebo-controlled trial of synbiotic therapy over 6 weeks. The primary outcome was serum Indoxyl Sulfate (IS). Secondary outcomes included serum Creatinine, Blood Urea Nitrogen (BUN), Sodium, Potassium, Calcium, Phosphorus and C-reactive protein (CRP).

Results: All 80 individuals randomized (70% males) completed the study. Synbiotic therapy significantly reduced serum IS (change in serum IS is 13.55 ± 9.31 in the group receiving Synbiotics, in comparison to 3.18 ± 14.56 in the control group, p-values: <0.001, 0.176 respectively). Also Symbiotic therapy significantly reduced the levels of Creatinine, BUN, Phosphorus (p-values <0.001) and CRP (p-values: 0.011).