Effects of Virgin Coconut Oil and Curcumin on Biochemical Alterations, Markers of Oxidative Stress and Histopathological changes in Streptozotocin Induced Diabetic Nephropathy in Laboratory Rats

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Abstract
Nephropathy is considered as one of the major secondary complications in diabetic patient. The present study was design to carried out preclinical screening of virgin coconut oil solubilised curcumin in diabetes induced nephropathy. Male albino rats of wistar strain were injected with single dose of streptozotocin (STZ) (60 mg/kg/i.p). Nephropathy was developed after 4 weeks of STZ injection and the treatment was continued for further 4 week (total protocol was for 8 weeks). Diabetic nephropathy (DN) rats were treated with virgin coconut oil (8ml), virgin coconut oil solubilised curcumin at low dose (0.66mg/4ml/kg) and virgin coconut oil solubilised curcumin at high dose (1.32mh/8ml/kg). DN was assessed by evaluating biochemical parameters such as blood glucose, total protein, albumin, urea, creatinine, and total bilirubin from serum and urine sample, whereas the activity of endogenous antioxidant and membrane bound phosphatases were studied from kidney homogenate. Virgin coconut oil solubilised curcumin significantly reduced the blood and urine glucose level, increased body weight and reduced kidney weight and kidney hypertrophy. It also normalized urine volume, albumin, creatinine, total protein, total bilirubin and urea levels. Treatment also significantly improved antioxidants and membrane bound phosphatases activities. Histopathological changes of kidney also corelated the different findings in rats. In conclusion virgin coconut oil solubilised curcumin protect the changes toward normal as compared to individual treatment group. This protection might be due to the strong antioxidant activity of both the compounds

Keywords
Virgin coconut oil; Curcumin; Diabetes; Nephropathy; Antioxidants