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## Safranal ameliorates glomerulopathy in experimentally induced in diabetic rats

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**Statement of the Problem:** Nephropathy is one of the major complications of diabetes. Many drugs are used to manage diabetes outcome. Insulin is used routinely in the treatment of diabetes. Pharmacological evidence has suggested anti-oxidant, anti-inflammatory, anti-aging and anti-cancer activities of Safranal. This investigation was designed to study the effects of Safranal on diabetic glomerulopathy in rats. Insulin, as an anti-diabetic drug, was used to compare results.

**Methodology:** Diabetes was induced by intraperitoneal injection of streptozotocin (55mg/kg) dissolved in sodium citrate buffer (0.1M, pH 4.5). After confirmation of diabetes (blood glucose level >250mg/kg), treatments with intraperitoneal injections of normal saline (control), Safranal (0.025, 0.1 and 0.4mg/kg) and insulin (5 IU/kg) were started and continued for six weeks. On 42<sup>th</sup> day, animals were euthanized and kidney tissues were collected, fixed and processed routinely and 5-7 $\mu$ m sections were prepared and stained with H&E, PAS and Masson trichrome and were subjected to semi-quantification analysis.

**Findings:** The glomerular changes in diabetic group were thickening and splitting of the glomerular basement membrane, expansion of mesangial matrix, mesangiolysis, hyperplasia and fibrosis. Safranal at a dose of 0.025mg/kg did not have significant effects on any of the lesions and at a dose of 0.1mg/kg showed significant effects only on mesangiolysis and hyperplasia. Safranal (0.4mg/kg) and insulin (5 IU/kg) produced similar improving effects by amelioration of all glomerular histopathological changes.

**Conclusion & Significance:** Safranal, as a biologically active substance of saffron and insulin, a synthetic anti-diabetic drug produce similar tissue protective effects on diabetic glomerulopathy. It is recommended that Safranal is considered for diabetes management.

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