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Evaluation of the antioxidant potential of ethanolic extract of Manjishtha against oxidative stress and renal damage in diabetic rats

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Objectives:

Diabetes nephropathy, one of the lives threatening and multifactorial diseases, where the improperly managed diabetes can damage the blood vessel clusters of kidneys. The link between oxidative stress and diabetic-induced renal dysfunction has been addressed.

Recently for treating diabetes nephropathy, natural products have attracted scientific researchers' attention such as manjishtha (*Rubia cordifolia*), which was previously reported for treating diseases of the liver and abdomen. Considering the antioxidant and anti-hyperglycemic properties of the manjishtha, the present study was conducted to evaluate its efficacy in affording protection against alloxan-induced changes in rat kidneys.

Methods:

The oxidative stress parameters as thiobarbituric acid-reactive substances (TBARS) and glutathione (GSH) were measured spectrophotometrically in kidney tissues. Additionally, ethanolic extract from plants was used to see the impact in diabetic rats and the effect was compared to that of glibenclamide.

Results:

A single intraperitoneal injection of alloxan (150 mg/kg) in rats produced hyperglycemia within 3 days and altered kidney functions over a period of 90 days. Daily oral administration of the plant extract (100 and 200 mg/kg) in diabetic rats produced an anti-hyperglycemic effect comparable to that of glibenclamide (10 mg/kg). Unlike glibenclamide, the plant extract did not increase the serum insulin levels in diabetic rats. However, it produced a marked reduction in the levels of urinary glucose and protein. It normalized the renal tissue levels of TBARS and GSH in diabetic rats and the effect was comparable to that of glibenclamide.

Conclusions:

The findings suggested that an imbalance in the antioxidant system can be discovered in diabetes nephropathic tissues and a percentage of normal tissues. This study also shows that by exhibiting antioxidant and anti-hyperglycemic properties the extract of manjishtha affords protection against the renal damage associated with diabetes.