

# The Ameliorative Potential of Dexmedetomidine and Benincasa cerifera Extract in Renal Ischemia/Reperfusion Injury in a Streptozotocin-induced Diabetic Model

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**Introduction:** Renal ischemia/reperfusion injury (IRI) represents the main reason for acute kidney injury (AKI). Dexmedetomidine (Dex) and Benincasa cerifera (BC) have wide benefits due to their anti-inflammatory and antioxidant properties. This study aims to illustrate the protective effects of BC and Dex on renal IRI in a diabetic model.

**Material and Methods:** Sixty adult male albino rats (Wistar strain), weighing 250–300 g, were included in the study. The rats were divided into four groups, as follows: sham group:

(non-diabetic); diabetes mellitus (DM) + IRI group: streptozotocin (STZ)-induced diabetic rats exposed to renal IRI on day 30 after diagnosis of diabetes; DM + IRI + BC group: STZ-induced diabetic rats treated with BC (500 mg/kg) for 30 days after diagnosis of diabetes, then exposed to renal IRI; and DM + IRI + Dex group:

STZ-induced diabetic rats treated with Dex (100 µg/kg intraperitoneally) 5 min before induction of ischemia on day 30 after diagnosis of diabetes, then exposed to renal IRI. Biochemical parameters, histopathological examination, and immunohistochemical markers were evaluated.

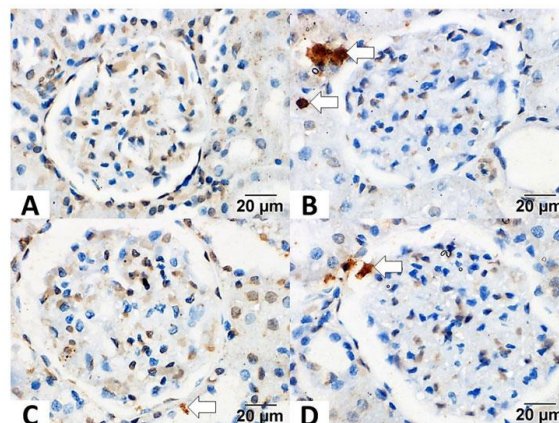


Figure 5a: Section of sham-operated group showed weak cytoplasmic TNF-α protein expression.

**Results:** A significant improvement in the biochemical, histopathological, and immunohistochemical parameters were observed in the DM + IRI + BC group, while the DM + IRI + Dex group showed improvements in renal IRI and dyslipidemia.

**Conclusion:** The present study demonstrated that oxidative stress plays a chief role in renal IRI in the STZ-induced diabetic model. Treatment with BC achieved excellent ameliorative effects, while treatment with DEX improved renal IRI.