IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 2, August 2024

Protective Effects of Spermacoce hispida Against Cisplatin-Induced Nephrotoxicity: A Study on Oxidative and Nitrosative Stress

Dr. G. R. Sitaphale*, Dr. P. R. Laddha, Dr. P. R. Tathe
Professor, Samarth College of Pharmacy, Deulgaon Raja, Buldana, India
Corresponding author: Dr. G. R. Sitaphale
gsitafale@gmail.com

Abstract: *Background: Nephrotoxicity is a common and severe side effect of cisplatin, a widely used chemotherapeutic agent. The mechanism of cisplatin-induced nephrotoxicity involves oxidative stress, inflammation, and apoptosis, leading to renal damage. There is growing interest in exploring natural products with antioxidant and anti-inflammatory properties as potential protective agents against drug-induced nephrotoxicity.Objective: The present study aimed to investigate the protective effects of Spermacoce hispida against cisplatin-induced nephrotoxicity in an in vivo rat model.*

Methods: S. hispida was collected, and plant extracts were prepared using different solvents. The prepared extracts underwent phytochemical screening. Nephrotoxicity was induced in rats through a single intraperitoneal injection of cisplatin at a dose of 5 mg/kg. S. hispida extracts at a dose of 100 mg/kg were administered to assess their protective activity. Key parameters measured included blood urea nitrogen (BUN), serum creatinine, oxidative stress markers, proinflammatory cytokines, nitric oxide (NO) levels, and histological alterations in kidney tissue.Results: Cisplatin treatment resulted in increased levels of BUN, serum creatinine, and proinflammatory cytokines in rats, indicating nephrotoxicity. However, treatment with S. hispida extracts for 14 days significantly decreased these elevated levels. Additionally, S. hispida treatment reduced oxidative stress and NO production in cisplatin-treated rats. Histological examination revealed that cisplatin induced structural damage in kidney tissues, which was normalized by S. hispida treatment.

Conclusion: The study concludes that Spermacoce hispida exhibits nephroprotective activity, likely by inhibiting oxidative stress and NO production, thereby mitigating cisplatin-induced nephrotoxicity in rats.

Keywords: Cisplatin; oxidative stress;. Spermacoce hispida; Cytokine; Nitric oxide; HEK-293 cell line

DOI: 10.48175/IJARSCT-19472