The survey of the effects of Scrophularia Striata extract on the cadmium reproductive system toxicity in male mice

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Introduction

Cadmium (Cd), an environmental pollutant present in soil, water, and food, is known to pose significant risks to male reproductive health by inducing oxidative stress and toxicity. Scrophularia striata extract (SSE) is rich in natural antioxidants that play a crucial role in neutralizing toxins and protecting various organs. This study aimed to evaluate the therapeutic potential of SSE in mitigating testicular damage and impairments in spermatogenesis induced by Cd using an animal model.

Results

The results demonstrated that SSE significantly improved spermatogenesis, as indicated by improved sperm count, motility, viability, morphology, and chromatin integrity. Additionally, testosterone levels and testicular histopathology were notably improved in SSE-treated groups. While Cd exposure significantly elevated oxidative stress in the testes, SSE treatment effectively enhanced antioxidant defense by increasing TAC levels and reducing NO and MDA levels.

Methods

Adult mice were randomly assigned to six groups: control, Cd, SSE 100 mg/kg, SSE 200 mg/kg, SSE 100 mg/kg plus Cd, and SSE 200 mg/kg plus Cd. Mice were intraperitoneally injected with 0.35 mg/kg of Cd for 35 days, with or without SSE. At the study's conclusion, various parameters were assessed, including sperm count, motility, viability, morphology, DNA integrity, testosterone levels, testicular histopathology, and the levels of malondialdehyde (MDA), nitric oxide (NO), and total antioxidant capacity (TAC) in the testes.

Conclusions

Overall, SSE provided substantial protection against testicular damage induced by chronic Cd exposure by modulating oxidative stress, highlighting its potential as a promising herbal therapy for addressing reproductive toxicity and male infertility linked to environmental pollutants.







The effects of Cd with or without SSE on sperm parameters



The effects of Cd with or without SSE on AB & TB







The effects of Cd with or without SSE on TAC

The effects of Cd with or without SSE on MDA & NO