

Protective effect of geraniol on sperm morphology, survival and motility in methylation-induced lesions in the testis

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Abstract

Introduction: Polycyclic aromatic hydrocarbons (PAHs) have been shown to cause tissue lesions in rodents, leading to immunosuppressive effects. The mutagenic properties of these substances on reproductive cells are also noteworthy. Geraniol (Ge), a phenolic compound, has antioxidant properties and significant potential in preventing damage caused by these toxicants.

Methods: In this 8-week experimental study, male rats were randomly assigned to four groups of five. Dimethylbenzanthracene (DMBA) was administered as a single dose of 30 mg per animal via intraperitoneal injection on the first day to induce the lesion. Geraniol was also administered as a weekly dose of 100 mg/kg via gavage. At the end of the period, sperm samples were collected from the epididymis and sperm parameters and morphological analysis were performed.

Results: The findings showed that DMBA reduced sperm count and motility, increased survival rate and lesions in sperm morphology such as tail abnormalities, tail twist, tail shortening, microcephaly and tail bending. Geraniol also reduced lesions in the treatment group.

Conclusion: Geraniol effectively reduced lesions in sperm parameters by reducing oxidative stress and inflammation, highlighting its potential as a protective agent against PAH-induced damage.

Keywords: Geraniol, methylation, sperm, rat.