IOCAN 2026 Conference
The 4th International Online Conference on Animals
17–19 March 2026 | Online
MDPI

ANEHOLE PRESERVES THE VIABILITY OF EPIDIDYMAL SPERMATOZOA IN WISTAR RATS

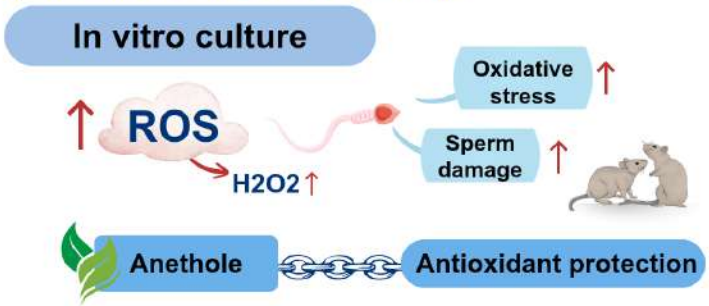
Juliana Sousa Ribeiro de Lima e Silva [1], Solano Dantas Martins [2], Mariana Moraes Frota [3], Vânia Marilande Cecatto [4] José Henrique Leal Cardoso [5], Valdevane Rocha Araújo [6]

[1] Laboratory of Research in Reproductive Physilogy (FisioRep Lab), Parnaiba Delta Federal University (UFDPAR), Parnaíba 64202-020, Brazil

[2] ISCB-Superior Institure of Biomedical Sciences, States University of Ceará (UECE), Fortaleza 60714-903, Brazil

INTRODUCTION & AIM

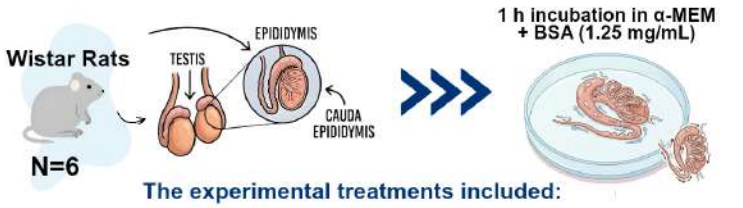
In vitro reproductive conditions can increase reactive oxygen species (ROS), leading to oxidative stress that impairs sperm function. Antioxidants such as anethole may help protect sperm cells from ROS-induced damage.



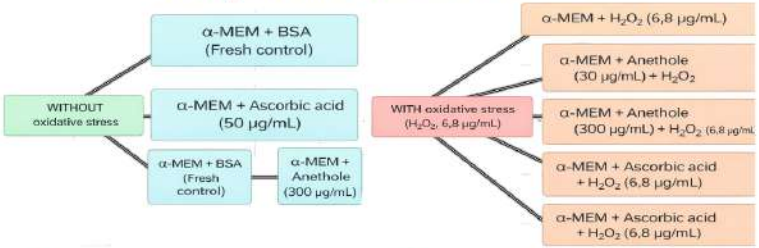
Aim: To evaluate the effects of anethole supplementation on the viability of epididymal spermatozoa from Wistar rats during in vitro incubation.

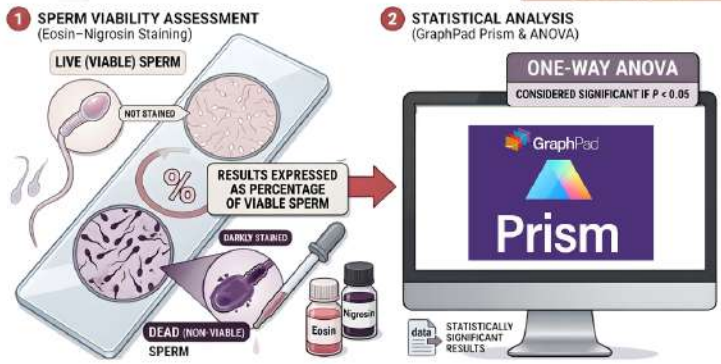
METHOD

The experimental protocol was approved by the Ethics Committee for Animal Use (CEUA/UECE N°. 10283494/2020).



The experimental treatments included:





RESULTS & DISCUSSION

After 1 hour of incubation, both concentrations of anethole (30 µg/mL and 300 µg/mL) maintained sperm viability similar to the fresh control and the ascorbic acid group ($P > 0.05$).
No significant differences were observed among the evaluated treatments, including the groups exposed to oxidative stress.

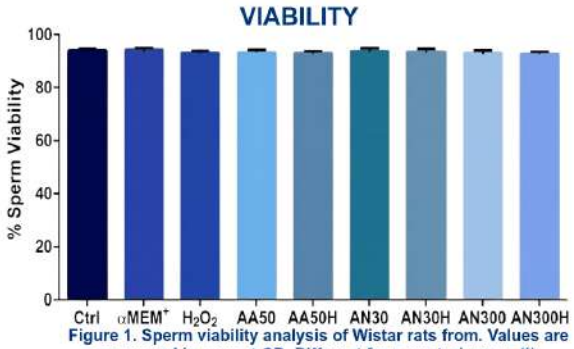


Figure 1. Sperm viability analysis of Wistar rats from. Values are expressed in mean ± SD. Different from control group (*)

Anethole maintained sperm viability without cytotoxic effects, suggesting its potential as an antioxidant in reproductive culture media (4). Further studies are needed to evaluate its effects on fertilization and embryo development.

CONCLUSION

Anethole supplementation proved to be safe for the in vitro culture of Wistar rat spermatozoa, maintaining viability and showing no cellular toxicity. These findings reinforce the potential of anethole as an antioxidant substitute to ascorbic acid in commercial formulations of media in reproductive protocols. However, its potential beneficial effects on embryo production still need to be investigated.

REFERENCES

1. Agarwal A, Mulgund A, Hamada A, Chyatte MR. A unique view on male infertility around the globe. Reproductive Biology and Endocrinology. 2016.
2. Kothari S, Thompson A, Agarwal A, du Plessis SS. Free radicals: their beneficial and detrimental effects on sperm function. Indian Journal of Experimental Biology. 2010.
3. Freire RAM et al. Synthesis and antioxidant, anti-inflammatory and gastroprotective activities of anethole and related compounds. Bioorganic & Medicinal Chemistry. 2005.
4. Sá NAR et al. Anethole improves the in vitro development of isolated caprine secondary follicles. Theriogenology. 2015.