World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

In vitro Effects of Viscum album on the Functionality of Rabbit Spermatozoa

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Abstract : This study aimed to assess the in vitro effects of different concentrations of the Viscum album extract on the motility, viability, and reactive oxygen species (ROS) production by rabbit spermatozoa during different time periods (0, 2, and 8h). Spermatozoa motility was assessed by using the CASA (Computer aided sperm analysis) system. Cell viability was evaluated by using the metabolic activity MTT assay, and the luminol-based luminometry was applied to quantify the ROS formation. The CASA analysis revealed that low Viscum concentrations were able to prevent a rapid decline of spermatozoa motility, especially in the case of concentrations ranging between 1 and 5 µg/mL (P<0.05 with respect to time 8h). At the same time, concentrations ranging between 1 and 100 µg/mL of the extract led to a significant preservation of the cell viability (P<0.05 in case of 5, 50 and 100 µg/mL; P<0.01 with respect to 1 and 10 µg/mL, time 8h). 1 and 5 µg/mL of the extract exhibited antioxidant characteristics, translated into a significant reduction of the ROS production, particularly notable at time 8h (P<0.01). The results indicate that the Viscum extract is capable of delaying the damage inflicted to the spermatozoon by the in vitro environment.

Keywords : CASA, mistletoe, mitochondrial activity, motility, reactive oxygen species, rabbits, spermatozoa, Viscum album
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020