ABSTRACT

MORINGA OLEIFERA LEAF NANOPARTICLE SUPPLEMENTATION TO MALONDIALDEHYDE LEVELS AND CASPASE-3 EXPRESSION DURING IN VITRO MATURATION

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Successful in vitro fertilization (IVF) needs high quality mature oocytes for optimum results during in vitro maturation (IVM). If the temperature in the incubator is not optimal, the condition of culture, protein supplementation, pH also becomes not optimal, and leads to an increase in the production of reactive oxygen species (ROS). Increased ROS due to high temperatures initiates a lipid peroxidation and the end products are malondialdehyde (MDA) levels and leading activation caspase-3 expression. More attention has been given to the antioxidant supplementation such as Moringa oleifera (MO) leaf with nanoparticle during IVM. With small size, nanoparticles shows closer to the surface of damaged cell due to the production of ROS. This study aimed to analyzed the effect of moringa oleifera leaf nanoparticle supplementation to malondialdehyde levels and caspase-3 expression during in vitro maturation. This study was true experimental with post-test only control group design, used goat oocyte, which each the treatment group (n=31) was supplementation dosage 1.0 and 2.0 μM with MO leaf nanoparticle. Maturation process was done in CO2 incubator 5% at different temperature, 3 groups 38.5ºC and 3 groups 41ºC for ±20-22 hours. The results of the performed statistical test MDA levels (38.5°C p=0.276; 41°C p= 0.001), and caspase-3 expression (38.5°C p=0.046; 41°C p= 0.028) significantly different ($p<0.05$) with MO leaf nanoparticle supplementation during IVM. Conclusion: supplementation of MO leaf nanoparticle has effect to reduce MDA levels and caspase-3 expression during IVM.