**Supplementation of Nigella sativa oil and honey prolong the survival rate of fresh and post-thawed goat sperms**


ABSTRACT

Some chemical compositions of polyphenol antioxidants found in Nigella sativa and honey have potential to protect sperm membrane from lipid peroxidation. Therefore, we study the effect of in vitro supplementation of Nigella sativa oil and honey on sperm parameters; motility, progressive score, and abnormalities in fresh and post-thawed goat semen. Pooled semen from five sexually matured males Jermasia goats between aged 2 to 3 years old, with average live weight of 35.9±5.7 kg and aver-age body condition score (BCS) of 1.7±0.45 were used in this study. The semen were added with tris-egg yolk extender and combination of supplements (Nigella sativa oil or/and honey), and divided into groups; Control (no supplementation), Treatment 1 (0.5% v/v Nigella sativa), Treatment 2 (2% v/v hon-ey), and Treatment 3 (0.5% v/v Nigella sativa and 2% v/v honey). All parameters of fresh semen were immediately assessed after semen collection and parameter of post-thawed semen were assessed after 48 hours (2 days) of semen cryopreservation. The fresh sperm parameters were observed at 0, 0.5, 1, 1.5, and 2 hours after semen collection. Results showed that the motility of fresh semen at 1.5 and 2.0 hours after collection treated with Nigella sativa oil (Group 1; 73.8% and 72.0% respectively) and honey (Group 2; 73.3% and 72.0%; respectively) were 20% (1.5 h) and 8% (2.0 h) lower than Controls (93.0% and 79.8% of motility) ($P<0.05$). The progressive score and sperm abnormality were not sig-nificant between groups. While, the motility of post-thawed semen was higher ($P<0.05$) in treatment 3 (60.33±10.08 of motility; supplemented with Nigella sativa and honey) compare to Controls (24.33±8.17 of motility) at 0 and 0.5 hour after thawing. Thus, we suggested that Nigella sativa oil and honey show a potential as a supplement to goat's extender with the ability to protect sperm membrane from dam-age due to oxidative stress and could prevent ice crystal formation during cryopreservation.



**Keyword:** Cryopreservation; Goat; Sperm motility; Nigella sativa; Honey