Effect of Season, Maturation Time and Media on *in vitro* Maturation Rate in Dromedary Camel Oocytes

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ABSTRACT

The application of assisted reproductive would offer an opportunity to investigate factors regulating developmental competence of camel oocytes and could improve the reproduction rate and genetic performance in camel. The objectives of this work were to investigate the effect of season, maturation time and maturation media on in vitro maturation rate in dromedary camel oocytes. These experiments were done during breeding season (December to April, ovary n= 196) and non-breeding season (June to October, ovary n=124). The total number of in vitro matured camel oocyte cultured in breeding and non-breeding season for 40 hours were 212 and 154 respectively and for 24 hours were 180 and 113 respectively. Excellent and good quality oocytes recovered either in breeding or non-breeding season were cultured in maturation medium (TCM+ epidermal growth factor (EGF)) at 38.5 °C in 5 % CO for 24 or 40 hours in humidified air. A total number of 2127 camel oocytes were used to investigate the effect of in vitro maturation (IVM) media (TCM-199 and CR1 with or without epidermal growth factor, EGF) on the in vitro maturation rate of dromedary camel oocytes. Excellent and good quality oocytes were cultured in TCM-199 (n=254), TCM+EGF (n=212), CR1 (n=213) and CR1aa+EGF (n= 206) media in 5% CO at 38.5°C for 40 h. Assessment of maturation was done by detection of the 1st polar body. The oocyte yield rate recovered during breeding season was 10.69 (2096/196) and 6.46 (801/124) during non-breeding season. Breeding season characterize by higher percentage of excellent and good quality oocytes (74.24%,

1556/2096) when compared with non-breeding season (50.2%, 402/801). In vitro maturation of dromedary camel oocytes for 40 h showed higher ($P<0.01$) maturation rate (MII, $P<0.01$) either during breeding (87%) or non-breeding season (37%) when compared with in vitro maturation for 24 h were 54% during breeding season and 42% during non-breeding season. Maturation rate were significantly higher during breeding season either that in vitro matured for 40 h ($P<0.01$) or for 24 h ($P<0.05$) than during non-breeding season. Cumulus expansion G2 was significantly higher ($P<0.05$) in oocytes in vitro matured in TCM- 199 when compared with CR1aa media. Addition of EGF on in vitro maturation media (TCM199 or CR1aa) significantly increased ($P<0.01$ or $P<0.05$) maturation rate (87 and 83 % respectively) when compared with the same media without EGF (75 and 70 % respectively) of dromedary camel oocytes.In conclusion, breeding season was characterized by significantly higher recovery rate of excellent and good quality oocytes that suitable for in vitro embryo production in dromedary camel. Addition of EGF to maturation media improve maturation rate in dromedary camel oocytes. Breeding season is characterized by high number of oocyte yield rate of excellent and good oocytes quality in dromedary camel. Addition of EGF to maturation media improve maturation rate in dromedary camel oocytes.

Keywords: Camel oocytes, maturation, season TCM-199 and CR1 media