ABSTRACT

CANDRANI KHOIRINAYA. Viability of Mouse (*Mus musculus albinus*) Embryo after Cryopreservation by Double Vitrification of Zygote Followed by Blastocyst Stage. Under direction of ARIEF BOEDIONO and WAHONO ESTHI PRASETYANINGTYAS.

Development of cryopreservation technology by vitrification method allowed cell storage as a genetic or cell banking that can be utilized in the future. The aim of this research was to find out the viability of mouse embryo after double vitrification at zygote and followed by blastocyst stage. Zygote were obtained from DDY mouse through superovulation by injecting the pregnant mare serum gonadotrophin (PMSG) hormone, followed by human chorionic gonadotrophin (hCG) hormone with interval 48 hours. Before the zygote was being plunged into liquid nitrogen, they were exposed to vitrification medium consist of 15% ethylene glycol + 15% dimethylsulfoxide + 0.5M sucrose in dulbecco’s phosphate buffered saline (DPBS) which supplemented with 20% fetal bovine serum (FBS) and then dropped onto the open inner face of the 0.25 ml straw (hemi-straw carrier). Warming process was done in rehydration medium (sucrose solution leveled by 0.5M, 0.25M, 0.1M in DPBS solution which supplemented with 20% FBS). The result showed that survival rate after double vitrification at zygote and followed by blastocyst stage were 96.81% and 92.50%, respectively, two hours after in vitro culture was similar (P>0.05) compared to control group. The development of hatched blastocyst embryos after single vitrification at blastocyst stage reached 80%, meanwhile after double vitrification reached 66.22%, they were not different (P<0.05) compared to the control group (79.62%). In conclusion, the mouse embryo could be double vitrified at zygote followed by blastocyst stage.

**Keywords**: blastocyst, double vitrification, hemi-straw, mouse, zygote.