Background: Integrins are known receptors that facilitate sperm-oocyte interactions and play important roles in fertilization, proliferation and implantation process. The aim of this study was to investigate the incidence of α9, αv, β1, β3 integrin in mice oocytes after vitrification by Cryotop.

Method: A total of 200 germinal vesicle (GV) and 200 metaphase II (OV-MII) oocytes obtained from ovaries and fallopian tubes of NMRI mice respectively and divided into two control and experimental (vitrified) groups. Oocytes in experimental group were vitrified by Cryotop using 1,2-Propanediol / Ethylene glycol vitrification medium (Origio) and were kept in liquid nitrogen for one month. Oocytes in both group after insemination were assessed to hatching stage. The data was compared statistically using SPSS software and chi-square test. Real-time PCR and immunocytochemical study were performed in mouse oocytes to demonstrate the expression and distribution of α9, αv, β1, β3 integrin.

Result: The incidence of fertilization rates in vitrified group showed a significantly decrease compared with the control group (P<0.05). The expression and distribution of Integrins was reduced in vitrified group compared to control oocytes. Immunocytochemical analysis revealed higher expression of α9, β1 in GV control oocytes. in other hand β1 expression was the lowest in OV-MII oocytes of vitrified group.

Conclusion: vitrification may play an important role in GV&MII oocyte injury. Therefore reduction of mouse oocyte surface integrin could be one reason for this unsuccessfulness.

Keywords: Vitrification, maturation, fertilization, Integrin, Cryotop, Oocyte.