Cryotop device enhances vitrification outcome of immature Bovine Oocytes.

ABSTRACT

The aim of this study was to evaluate the effectiveness of different cryodevices (Open Pulled Straw (OPS), Electron Microscopy Grid (EMG) and cryotop for vitrification of immature bovine oocytes. Polar body, MII stage, survivability and subsequent developmental rates were compared. Only oocytes with 4-5 layers of cumulus cells were used. Oocytes were equilibrated in the first vitrification solution (VS1; HS+10% DMSO+10% Ethylene Glycol (EG)) for 30-45 sec and then in the second vitrification solution (VS2; 20% DMSO+20% EG+0.5 M Sucrose) for 25 sec. Within 30 sec they were mounted on one of the cryodevices and directly plunged into Liquid Nitrogen (LN2) for 10 days. Immature oocytes vitrified using cryotop represented higher rate of polar body extrusion and nuclear maturity ($p<0.05$). The highest survivability resulted from cryotop and EMG groups and no significant difference found between them. Vitrified oocytes in cryotop group had highest cleavage and blastocyst rates. All of the mean measured rates for vitrified/warmed immature oocytes were significantly lower than that of control group ($p<0.05$). In conclusion, results of this study showed the superiority of cryotop device for vitrification of immature bovine oocytes which resulted in higher viability and subsequent embryo development.

Keyword: Vitrification; Cryodevice; Bovine; Immature oocytes; Eggs; Electron.