

Cryopreservation of poultry primordial germ cells ⁽¹⁾

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Abstract

The purpose of this study is to investigate the cryopreservation method of poultry primordial germ cells (PGC), so as to understand the preservation effect of poultry PGC. To investigate the effects of (1) using different freezing instruments, automatic cooling facility (WEST-4400) or simple commercial freezing boxes (Nalgene Cryo 1°C Freezing Container); (2) adding different concentrations (10 – 90%) of chicken serum; or (3) adopting of different thawing methods on the cryopreservation of poultry PGC, (A: after thawing, add M199 containing 10% CS dropwise at 3 times the volume, B: directly add M199 containing 10% CS, C: directly add M199 containing 0.5M sucrose). The results show that by using programmable cooler, the cell survival rate after thawing was 10 – 30% at a cooling rate of 1 °C/min, which was better than that of 0.33 °C/min. When the commercial simple freezing box is used and the temperature is reduced by 1 °C/min, the cell survival rate after thawing is significantly better than that of the programmable cooler, and the survival rate is 47 – 54%. The difference of chicken serum content in the cryopreservation solution exhibits no significant effect on the survival rate of PGC. The best thawing procedure of frozen PGC is rapid thawing (< 1 minute) in a 38°C water bath. In summary it is feasible to use Nalgene Cryo 1°C Freezing Container to freeze PGC.

Key words: Poultry, Primordial germ cells (PGC), Cryopreservation.

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