

Optimal hormonal regime and feasibility of using phosphate buffered saline and undissociated cumulus oocyte complex for embryo transfer in mice

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BALB/cJ mice were used for the experiment. During the preparatory stage all the required micro tools were improvised using locally available borosilicate glassware and instruments. To establish a suitable anesthesia regime, groups of mice were given different doses (16 mg/kg to 150 mg/kg) and combinations of Ketamine and Xylazine with or without Chloroform. Several males (12-16 weeks old) were surgically vasectomized to be used for making pseudopregnant recipients. To determine the superovulatory response for PMSG, three groups of mice (4-6 weeks old, 25-30 g body weight) were given a single intraperitoneal (IP) injection of 4, 5 or 6 IU of PMSG followed by 6 IU of HCG. After placing with male studs, the females having vaginal plugs were used for embryo retrieval. One-cell embryos were counted under a stereo zoom microscope. To determine the superovulatory response for HCG, three groups of female mice (4-6 weeks old, 25-30 g body weight) were treated with 5 IU of PMSG followed by 3, 4.5 or 6 IU of HCG. The numbers of one-cell embryos were determined using above procedure. For the feasibility study of ET, one cell embryos with COC obtained from donor mice treated with best PMSG and HCG regime, were surgically transferred through the infundibulum of the pseudopregnant synchronized recipients. Data were analyzed by using SAS computer package.

The improvised glassware and tools were effective in performing ET. Intraperitoneal administration of 100 mg/Kg Ketamine resulted in 20–30 minutes duration anesthesia with better survival rate (male 33%, female 66%). Higher number of embryos could be collected from the mice treated with PMSG and HCG compared to control ($P < 0.05$). Treatments with 5 IU of PMSG and 4.5 IU of HCG produced superior ($P < 0.05$) superovulatory response. Embryo transfer using COC in PBS medium was possible. Based on the above results it can be concluded that Ketamine (100 mg/Kg) suitable for anesthetizing mice for about 20 minutes. The optimum hormonal regime for superovulation was 5 IU of PMSG and 4.5 IU of HCG for about 25-30 g body weight. ET can be performed locally using PBS medium and COC following the above protocol.

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