World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:8, No:06, 2014

Colonization of Embrionic Gonads of Nile Tilapia by Giant Gourami Testicular Germ Cells

Authors : Irma Andriani, Ita Djuwita, Komar Sumantadinata, Alimuddin

Abstract : The recent study has been conducted to develop testicular germ cell transplantation as a tool for preservation and propagation of male germ-plasm from endangered fish species, as well as to produce surrogate broodstock of commercially valuable fish. Giant gourami testis had been used as a model for donor and Nile tilapia larvae as recipient. We developed testicular cell xenotransplantation by optimizing the timing of intraperitoneal cell transplantation to recipient larvae aged 1, 3, 5 and 7 days post hatching (dph). Freshly isolated testis of giant gourami weighing 600–800 g were minced in dissociation medium and then incubated for 3 hours in room temperature to collect monodisperce cell suspension. Donor cells labeled with PKH 26 were transplanted into the peritoneal cavity of Nile tilapia larvae using glass micropipettes. Parameters observed were survival rate of Nile tilapia larvae at 24 hours post transplantation (pt) and colonization efficiency of donor cells at 2 and 3 months pt. The incorporated donor cells were observed under fluorescent microscope. The result showed that the lowest survival rate at 24 hours pt was 1 dph larvae (82.74±6.76%) and the highest survival rate were 3 and 5 dph larvae (95.00±5.00% and 95.00±2.50%, respectively). The highest colonization efficiency was on 3 dph larvae (61.1±34.71%) and the lowest colonization efficiency was on 7 dph larvae (19.43±17.33%). In conclusion, 3 dph Nile tilapia larvae was the best recipient for giant gourami testicular germ cells xenotransplantation.

Keywords : xenotransplantation, testicular germ cell, giant gourami, Nile tilapia, colonization efficiency
Conference Title : ICVBS 2014 : International Conference on Veterinary and Biomedical Sciences
Conference Location : Istanbul, Türkiye
Conference Dates : June 19-20, 2014