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Title:

GONADAL TISSUE TRANSPLANTATION OF DAY-OLD CHICKEN FOR GENE CONSERVATION PURPOSE

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The aim of the study was to get an insight into one of the methods of the *in vitro* poultry genetic conservation. Nowadays, the only practically used preservation method is the cryopreservation of avian semen. Sperm cells contain only Z chromosome, females are heterogametic (ZW), therefore the original genotype cannot be regained in 100% even by 6-7 backcrosses. Because of the large amount of yolk it is impossible to freeze the female oocytes and embryos that contains W chromosome, which restrain the opportunity of cryobanking. Therefore an alternative method is needed to solve the preservation of female avian genetic material. Orthotopic transplantation in newly hatched chicks may be a capable method. As a starting point, the structure of avian ovary is very similar to the adult mouse, whose ovary has been cryopreserved and transplanted for a while.

It is proven, that not all breeds are suitable for being as a recipient. Indigenous breeds with each other and also intensive genotypes with each other can compose successful combinations. The aim was to form a suitable donor/recipient pair that is capable to preserve female genotype. We studied earlier the genetic distance between the pairs of intensive genotypes and compared it with the genetic distance between native breeds. According to the results we tried to create a donor/recipient combination, which can be efficient for transplantation. Yellow Hungarian/White Leghorn gonadal tissues were grafted first to check if the organs were rejected or not. The implanted organs adhered, and a histological examination proved, that ovaries and testicles are capable to produce gametes. Thanks to the success of the adhesion, the experimental group is raising up and will be fertilized with the semen of the same breed and later the origin of the offspring will be examined.

My roles in this work were the pre- and postoperative treatments, assistance during the surgery (prepare donors and recipients, anesthetize the animals, remove the vitelline sac, make the individual marking), later the steroid and immunosuppressant treatment of the hatched chicks, as well as the dissection of died embryos and peri-hatched eggs in preoperative examinations.

In this research we formed the first pair – Yellow Hungarian / White Leghorn - which can be suitable for gene conservation of the indigenous Yellow Hungarian chicken breed. Further aim is to find the best recipient to the other Hungarian indigenous chicken breeds.

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