Gene transfer of ducks growth hormones to a type of poultry

Mohamed Morsy Mohamed Ahmed

The present study was carried out during 1996-1998 at Cell Biology Department, Genetic Engineering and Biotechnology Division, National Research Center (NRC) Dokki, Giza and the poultryresearch farm (quails project), Animal Production Department, Faculty of Agriculture, Cairo University, Egypt. The purpose of this study was the transfer of ducks growth hormone gene and total DNA to fertilizedeggs of Japanese quails as a trial for producing strains with large bodysize and good quality.The ducks have some advantages: -It is economical foods among poultry, grow quickly, having high body weight and high percentage of protein and lipids in meet. The Japanese quails have some advantages: - a. It is capable of processing post translational modification; b. Ito IS an economical food among poultry, c. Grow quickly, time of generation 6 weeks, d-The eggs protect from asthma disease and meat relish good. Finally Japanese quails have been utilized as research animal to establish genetic relationships that may be present among other poultry species. 12-Cytological examination to estimate the chromoSOOlalchanges of all treatments and control from F1, F2 and F3•The results of this work indicate the following: - I-Transgenic quails injected with ducks GH gene and DNA gain larger weight than that of control quails.2-Transgenic quails injected with ducks GH gene gain larger weightthan that injected with ducks DNA.3-Transgenic quails combined effect Li+ Electro., with ducks GH gene gain larger weight than that combined effect with ducks DNA and non transgenic quails 4-The hatching percentage was higher by using combined effect than micro-injection but it was higher in injection in air sac than embryo. 5-The larger size of quails was stable genetically from F1 to F3•6-ln addition to the increase in body weight there was a new featherappeared with injection of DNA only. But the increase in body size was. greater by injection with GH gene.7-The level of GH was higher through injection with ducks GH gene injection in air sac, embryo and combined effect than through DNA and control, but the increase level of GH was within the normal range of GH for birds. This means that the transfer of GH gene is safe.8-Total protein percentage was higher through injection with ducksGH gene than through ducks DNA and control showing stable inheritance9-The SDS-PAGE of protein showed an increase of new three bandsin the treated quails than control showing stable inheritance from F2 to F3•10-The agarose gel electrophoresis of total DNA using the restrictedenzyme (E coRI) showed an increase of new one band in treatments, F1,F2, F3 and donor. In addition it showed a smeared pattern intensityappeared on the gel in donor, treatments, F), F2 and F3 than control andstable from F(to F3• II-The numerical change percentage was higher than structural changes percentage in; F), F2 and F3 birds. But this increase was nonsignificant. 12-The chromosomal changes percentage was higher in treatments(air sac, embryo and combined effect) than control. 13-The haploid percentage showed the highest numerical changes in all groups compared monosomic, dimonosomic, tetrasomic and triploid percentages. 14-The centromeric attenuation showed higher percentages in structural changes in all groups than break percentage. 15-The highest chromosomal change percentage was observedthrough injection with ducks DNA followed by GH gene in embryos, airsac and combined effect. 16-The highest chromosomal changes percentage was observed in, F1 among all generations examined.