The Duration of Fertility in Ducks: Studies on the Polymorphism of the Oestrogen Receptor Gene

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The duration of fertility in ducks indicated that a considerable additive genetic variation was presented. The selection to improve the duration of fertility in ducks might be a solution. On the other hand, the prolific gene would affect the reproductive performance of pig. Hence, the purpose of the present study was to identify the polymorphism of the oestrogen receptor gene in ducks. DNA was isolated from the blood of 5 generations of selected ducks with different durations of fertility. Duration of fertility in ducks was compared using three sets of oligonucleotide primers (ESR 3, 4 and ESR 3, 6) of the porcine oestrogen receptor gene. The sequences of ESR 3, 4 and 6 respectively are 5'-CCC TCT ATG ACC TGC TGC GC-3', 5'-TCA GAT TGT GGT GGG GAA GTT C-3' and 5'-GGA AGT TCT CCG CCT CCG C-3'.

The reaction was carried out in a volume of 10μl containing 100ng genomic DNA; 12 pmole/μl of primers; 2.5mM dNTP; and 0.2U Tag polymerase in PCR buffer (10mM Tris-HCl, pH8.8; 1.5mM MgCl₂; 150mM KCl).

Amplification was performed on an air thermo-cycler (Idaho Technology) machine with 5min denaturation at 95°C followed by 30cycles of 30s at 95°C, 1min at 55°C, 30s at 72°C. PCR-product (5μl) of ESR 3, 4 and ESR 3, 6 were digested by 5 unit of Ava1 and 5 unit of MspAlI respectively at 37°C for 3 hours. Electrophoresis was undertaken in 3% agarose gel and stained with ethidium bromide. The results showed that the primers could be used on ducks. The results of ESR 3 and ESR 4 showed two bands of 194 bp and 100 bp, and also showed two bands with 281 bp and 118 bp for ESR 3, 6. Until now, these four bands could not be digested by Ava1 and MspAlI enzymes for ESR 3, 4 and ESR 3, 6 respectively. The polymorphisms of the oestrogen receptor gene in ducks are similar to those observed in pigs. In order to identify the homology of oestrogen receptor gene between duck and pig, DNA sequencing needs to be done. The relationship between the function of oestrogen receptor gene and the performance of ducks needs to be further studied.

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