

Evaluation of Genetic Variation of local and Holstein cattle by RAPD-PCR Technique

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Summary

The study was conducted in the Laboratory of Molecular Genetics / College of Agriculture / University of Basrah, at 1/11/2016 until 30/7/2017 for the purpose of identifying the genetic variation and similarity between the cows of the local Iraqi breeds and Holstein using the polymerase reaction technique RAPD-PCR. Sixty blood samples from cows from Diwaniyah governorate were collected by 30 local Iraqi cattle samples and 30 Holstein cows. After extracting DNA from the samples under study, RAPD-PCR was used using five different primers: OPC-01, OPC-04, OPC-06, OPC-07 and OPC-09. The OPC-01 initiator fails to multiply DNA for all blood samples of the two strains.

The size of the OPC-04 multiplication packets was between 115–1000 base pairs. The total number of packages shown by the local strain was 29, 28 of which were formed and one was non-formed. The Holstein strain reached a range of 100–1000 base pairs, consisting of 42 packages, of which 41 were formed and one was non-formed. The lowest range in the local strain was 115 base pairs, while 100 pairs were Holstein dynasties, and the two breeds had 13 bundles. This prefix showed the frequency of beams in the local strain of 0.024 – 0.071, and in the Holstein strain of 0.017 – 0.085.

The initiator of the OPC-06 was the number of packets in the local strain: 45 packets, 44 of which were formed and one non-formed with a range of 100–1000 base pairs for both strains. Holstein 46 had 45 packages of which 45 were formed and one was non-formed. The extent of the beams was lower in both local breeds. There are 20 common packages between the two baskets. This prefix showed the

frequency of the bands in the local and Holstein strains of 0.01–0.0. The starting range of OPC 07 was 135–1000 base pairs in the local strain, whereas the number of packages for the local strain was 87, of which 86 were formed and one was not formed. The Holstein strain reached a range of 105–600 pairs. Thirty-five packages, 34 of which were fixed and one non-formed, showed 35 times less. Holstein 105 had a lower base pair, while 135 had a base pair for the local strain, while the number of cohorts was 4 between the two breeds. This prefix showed repeatedly the beams in the local strain of 0.01 – 0.07, and in the Holstein – Holstein strain 0.03 – 0.14.

The starting range of the OPC 09 reached 100–1140 base pair. The number of packages for the local strain was 96, all of which were formed. The Holstein strain had a range of 100–1000 pairs. Including 63 packages, 62 of which are formed and one non-formed. The minimum range in the two baskets was 100 base pairs and there were 27 common beams between the two breeds. The replication of the initiator for this initiator was in the local strain of 0.01–0.04, and in Holstein–Holstein 0.02–0.05. As for the similarity or difference between the two breeds, the average correlation between the two breeds was 16.17% while the difference between them was 83.83%. The two strains were significantly similar to 35.06% in the initiator OPC09 while the lowest correlation between the two strains was shown with the OPC07 initiator with a range of 6.15%, which gave a higher percentage of the difference between them and reached 93.75%. In general, the difference between the two breeds was very high and exceeded 80% for all the studied indices. This is evidence that there is a high genetic variation between the two breeds. The results of this study may help to protect and develop local breeds.