MORPHOLOGICAL AND GENETIC CHRACTERIZATION OF NATIVE FOWL IN SRI LANKA

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Red Jungle fowl (*Gallus gallus*) is considered as the main ancestor of the domestic fowl. However, there is hardly any information available on the origin of Asiatic native fowl. Ceylon Jungle fowl (*Gallus laffeyati*) is one of the ancestral fowl species native to Sri Lanka. However, there is no investigation done to find the relationship of native fowl population in Sri Lanka. Therefore, the present study was conducted, in order to investigate the origin of native fowl in Sri Lanka and to find out the genetic relationship among them.

Observation of morphological characters of endemic, indigenous and exotic fowl types were carried out using Ceylon Jungle fowl, eleven types of village chicken and two exotic breeds (Cornish and Rhode Island Red). Blood samples were collected from the above three chicken types and DNA were extracted for Randomly Amplified Polymorphic DNA (RADP) analysis. Bands shearing were calculated as an expression of genetic similarity among selected chicken types from RADP results obtained.

The results of morphological characterization revealed many variations in colour pattern of plumage. Two different comb types namely; single and pea types were found in both indigenous and exotic types of chicken. A yellow coloured patch on red coloured comb was unique to Ceylon Jungle fowl. In the sample tested only one indigenous chicken type was with feathered shanks. Another distinguishable feature observed was the presence of white spots in red coloured earlobes in all village chicken types except naked neck type which is believed to be a cross of exotic and indigenous.

Sixteen non-specific DNA primers were tested. The 22 polymorphic bands observed ranged from 500 base pare (bp) to 1957.6 bp. There were two bands common to all chicken types tested. Genetic similarity coefficient detected according to Noeingen Index ranged from 0.5 to 1.1 indicating wide genetic base. According to the results of cluster analysis there was a clear separation of Ceylon Jungle fowl from the other chicken types tested. This indicates that there was an early separation and divergent evolution of Ceylon Jungle fowl from all the other domestic chicken types tested. The present study however, was carried out with limited sample size. From the results it can be confirmed that RADP is an effective method in genetic characterization of animal population with wide genetic basis though the repeatability is low.