RAPD analysis of three deer species in Malaysia

ABSTRACT

The genetic variability within and among three deer species in Malaysia, namely Cervus nippon (sika), Cervus timorensis (rusa) and Cervus unicolor (sambar), were evaluated using the RAPD technique. The DNA extracted from the buffy coat of 34 sika, 38 rusa and 9 sambar were analysed using ten primers that gave bands which showed good resolution. The primers generated 164 RAPD markers in total, and these ranged in size from 150 to 900 bp. The percent of polymorphism of the bands generated per primer ranged from 66.66-93.33% for rusa, 36.84-61.14% for sambar and 52.38-100% for sika. The overall percent polymorphism observed for the 164 RAPD markers was 99.39%. The results revealed five exclusive, monomorphic markers for sambar and one exclusive, monomorphic marker for sika; none was observed for rusa. However, these cannot be declared as markers for the identification of the species without analysis of more samples, populations and species. The means of within population genetic distances, based on Dice's and Jaccard's similarity indices, were similar for the rusa (0.383 and 0.542, respectively) and sika (0.397 and 0.558, respectively) populations with the sambar population being the least variable (0.194 and 0.323, respectively). The Dice based genetic distances within the species ranged from 0.194 to 0.397 and the genetic distances among the species were 0.791-0.911. The genetic distances based on Dice's and Jaccard's similarity indices between the rusa and sambar were 0.556 and 0.713, between the rusa and sika populations were 0.552 and 0.710, and between sambar and sika were 0.622 and 0.766, respectively.

Keyword: RAPD; Deer; Rusa; Sambar; Sika