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The Diversity of DRB1 Locus of Exon 2 of MHC Molecule of Sudanese Indigenous Desert Sheep

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Abstract : The study examined and analyzed the genetic diversity of DRB1locus of exon 2 of major histocompatibility complex of Sudanese desert sheep using PCR-RFLP and DNA sequencing. Five hundred samples belonging to five ecotypes of Desert Sudanese sheep (Abrag (Ab), Ashgar (Ash), Hamari (H), Kabashi (K) and Watish (W) were included. Amplification of exon 2 of the DRB1 gene yielded (300bp) amplified product in different ecotypes. Nine different digestion patterns corresponding to Five distinct alleles were observed with Rsa1 digestion. Genotype (ag) was the most common among all ecotypes, with a percentage comprised (40.4 %). The Hardy-Weinberg equilibrium (HWE) test showed that the studied ecotypes have significantly deviated from the theoretical proportions of Rsa1 patterns; probability values of the Chi-square test for HWE for MHC-DRB1 gene in SDS were 0.00 in all ecotypes. The constructed phylogenetic tree revealed the relation of 22 Sudanese isolates with each other and showed the shared sequences with 47 published foreign sequences randomly selected from different geographic regions. The results of this study highlight the effect of heterozygosity of MHC genes of the Desert sheep of Sudan which may clarify some of genetic back ground of their disease resistance and adaptation to environment.

Keywords : desert sheep, MHC, Ovar-DRB1, polymerase chain reaction (PCR), restriction fragment length polymorphism (RFLP)
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