

Abstract:

According to archeological documents, Iran is considered as the oldest domestication center of the horse. Iranian were the first people to breed horses especially for strength and speed as the Persian Empire required land transport on a huge scale. Some of the Iranian horse breeds are popular and well known in the world, in the present study genetic variation within Kurdish horse populations was assessed using twenty-two microsatellite markers.

Twenty-nine blood samples were randomly collected from Kurdistan, west Azarbaijan and east Azarbaijan. Genomic DNA was extracted. Polymerase chain reaction for the amplification of twenty-two microsatellite loci fragments was carried out using the exclusive Kowsar biotech company's primers in a standard manner.

Then, the polymerase chain reaction products were examined by capillary electrophoresis, the loci in the studied population showed high polymorphism. The number of observed alleles and effective alleles, expected and observed heterozygosity values, Shannon index and Wright index and polymorphic information content were calculated for all loci. The results of this research showed that the number of alleles is twenty-two the loci studied ranged from 3 to 9 alleles. The average number of observed alleles and the number of effective alleles in the entire studied population were 6.211 and 3.909, respectively. The average observed heterozygosity, expected heterozygosity, Shannon information index, Wright index and polymorphic information content in Iranian Kurdish horse population were 0.348, 0.682, 0.718, 1.482, 0.055, and 709/0 respectively. Which indicates the presence of high genetic diversity in the studied population. According to the observed results, the microsatellite loci used had high polymorphism in the Kurdish horse population.

We concluded that sizes 268 from HTG10, 297 and 303 from HMS3, 178 from ASB17, 207 from AHT5, 261 from HMS2, 161 from ASB2, 226 from HMS6, 382 and 410 from KBC71 are most likely Kurdish horse determinants.

Based on the findings of this research, it can be said that microsatellite markers are a powerful tool for population genetic studies of Kurdish horses.

Keywords: genetic diversity, microsatellite, polymorphism, Kurdish horse, specific primer.