



Allele frequencies of microsatellite loci for genetic characterization of a Sicilian bovine population

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ABSTRACT. Short tandem repeats are used as an effective method to trace DNA markers in genotyping. Using a standardized kit, we tested 11 microsatellite markers recommended by the International Society for Animal Genetics (ISAG) in a sample of 495 Sicilian cattle. The aim of this study was to investigate the allele frequencies in the Sicilian cattle population to provide a reference database and at the same time to assess the use of the ISAG microsatellite panel for pedigree analysis. DNA samples were collected from blood and amplified in an 11-plex polymerase chain reaction (PCR); PCR products were injected in a 3130 Genetic Analyzer. All loci showed high mean polymorphism information content (0.768), and the observed mean heterozygosity was less than the expected value (0.732 vs 0.794, respectively). The exact test for Hardy-Weinberg proportions, allele number, and inbreeding coefficient were calculated. Our results indicated that equilibrium was not always maintained. The observed mean homozygote value exceeded the expected value (132.81 vs 102.14), but no evidence for allele dropout was found. These results could be explained by a non-random mating; further studies using a larger number of animals could confirm or invalidate this hypothesis. The probability of identity and

exclusion of a locus were also estimated and proved to be useful in paternity testing. The ISAG microsatellite panel is useful to screen the Sicilian bovine kinship. Currently, an allele frequency database is being constructed.

Key words: Microsatellite; Sicilian cattle; Frequency database; Allele frequencies