



ABSTRACT

A novel PCR based ARMS (amplification refractory mutation system) type identification assay for detection of 6 most common mammalian species (cow, buffalo, goat, donkey, horse and dog) was developed by designing specie-specific primers against variable regions and a single universal primer against most conserved region of nuclear beta actin (ACTB) gene by investigation of areas of homology and variation. DNA extraction was conducted by using an optimized phenol chloroform method of extraction. PCR bands of 128, 229, 273, 362, 710 and 796 bp were generated on electrophoretic gel for buffalo, donkey, cow, horse, dog, and goat meat species respectively. Besides singleplexing, duplex (multiplex) PCR for donkey and horse, donkey and goat, and donkey and buffalo were also performed which successfully generated corresponding bands. No cross reaction of specie-specific primers was observed with any other species under investigation. The method was able to differentiate cow, buffalo, goat, donkey, horse, and dog by ARMS type PCR and for the first time provides a definitive method for identification of these species in a true context by utilizing ACTB gene as a target. The method is a simple and straightforward setup; results can be interpreted easily in a short time and doesn't need validation by sequencing. Results of the present study clearly demonstrate that the method can be used as an identification tool for differentiation between cow, buffalo, goat, donkey, horse, and dog species.