



MULTINDELS-BOV: Zebu traceback method based on DNA insertion-deletion polymorphisms

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ABSTRACT. Brazil is a major producer and exporter of beef, with a herd of approximately 210 million animals. For the meat industry, a reliable animal traceback from its origin to the consumer market is paramount. Of all available identification systems, DNA is the only one that survives the slaughterhouse and reaches the dish of the consumer. DNA polymorphisms are already used for cattle traceback, but primarily for the subspecies *Bos taurus taurus*. However, in Brazil, another subspecies, *B. taurus indicus* predominates. We describe here the development of a DNA traceback method designed primarily for *B. taurus indicus* (Zebu), without leaving *B. taurus taurus* aside. We used insertion/deletion (indel) polymorphisms, which have the advantage of being simple and easily automatable, since in most cases, the variable loci are biallelic. We studied 94 indels, with a difference of two or more

base pairs, in DNA pools of 60 Zebu and 60 taurine animals. A set of 22 indels with heterozygosity greater than 0.3 were selected and used to construct two multiplex PCRs. On the basis of the allelic frequency of these indels, the probability of random match was calculated to be 1.12×10^{-8} for *B. taurus indicus* and 1.60×10^{-6} for *B. taurus taurus*. Moreover, we estimated that an analysis would cost less than US\$15.00 per animal. Thus, this system (MULTINDELS-BOV) is perfectly suited for building large genetic databases and offering viable prospects of a national system for cattle traceback DNA in Brazil.

Key words: Cattle; Traceback; Indel; Polymorphism; *Bos taurus indicus*