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Genetic Identity of Native Pig Breeds in Northern Thailand Evidenced by Microsatellite Markers

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Abstract

At present, most of the northern Thai native pigs are still traditionally raised by hill tribes or smallholders due to customs, religion and for use in ritual sacrifice. Moreover, starting 20 to 30 years ago, many native pigs have been increasingly mated with European commercial breeds (*e.g.* Duroc; DR, Large White; LW, Pietrain; PT) as well as with the Chinese Meishan to improve their performance for economically important traits. Thus, Thai pigs are nowadays on the risk to lose their genetic identity, especially as only a limited number of studies have been conducted to investigate their genetic composition. In this study we performed a survey of the molecular identity of Thai pigs as well as their genetic relationship within and between pig populations in northern Thailand. A total of 162 animals representing two native breeds (Thai indigenous pigs; TIP and wild boars; TWB) and five commercial breeds or their intercrosses (DR, LW, PT, Duroc×Meishan; DRM and Pietrain×Native; PTN) were investigated for 18 FAO recommended microsatellite markers. The mean number of alleles per locus, the mean effective number of alleles per locus, the mean observed and expected heterozygosity per locus as well as the mean polymorphic information content of the overall population were 12.56, 5.93, 0.69, 0.82, and 0.79. The respective values were higher in native pigs (12.05, 6.31, 0.69, 0.82, and 0.80) compared to commercial pigs (8.11, 4.20, 0.68, 0.73, and 0.69). Our study indicates a high genetic diversity in Thai native pig breeds. Based on the phylogenetic tree obtained from Nei's genetic distances, most native pig populations have been distinctly different from commercial pigs (59.18%), but some of them are similar (40.82%). Our results provide valuable information for the preservation and utilisation as well as the further genetic improvement of Thai pigs.

Keywords: Genetic identity, microsatellites, native pigs, northern Thailand