**Genetic Diversity and Phylogenetic Relationships of Several Indigenous Thai Pigs Assessed by the Mtdna D-loop Sequence**

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**Abstract**

The most common justification for genetic distancing projects is their importance for helping the decision-makers to identify genetically unique breeds so that they may be prioritised for breed conservation purposes. Thus, the assessment of genetic diversity in indigenous breeds became recently worldwide an important concept.

To date, little is known about the genetics of indigenous Thai pigs. Therefore, mitochondrial DNA (mtDNA) sequence studies were carried out using either blood, ear clip or hair samples of 55 Thai native pigs collected in eight locations from four Northern Thailand provinces. A total of 1047 bp of the D-loop region was comparatively sequenced. Comparisons of D-loop mitochondrial DNA were made among the indigenous Thai pigs and 18 further pig mtDNA sequences taken from GeneBank (3 Chinese, 1 Korean, 1 Japanese, 1 Vietnamese, and 7 European indigenous pig breeds as well as 3 Asian, and 2 European wild boars). The sequence alignment has revealed nucleotide variations (including gaps) at 54 positions (percentage of polymorphisms: 5.16%). In total, 32 different mtDNA haplotypes were found and 14 of them were specific for Thai pigs. Nine mtDNA haplotypes each were specific for Asian and European breeds. A neighbour-joining tree has been constructed using the distance matrix calculation and evaluated by a bootstrap test. The results propose that the indigenous Thai pigs and the other Asian breeds may go back to one common ancestor and are distinctly different from European breeds. The mtDNA D-loop analysis proved to be a valuable tool for revealing genetic relationships between and genetic diversity among the different Thai pig breeds. We intend to continue the project with a large-scale investigation of Thai pigs native in other parts of Thailand for conservation purposes and utilisation of Thai indigenous pigs as an important genetic resource in the future.

**Keywords:** D-loop, genetic diversity, mtDNA, phylogenetic relationships, Thai indigenous pigs

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