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DELETION/INSERTION POLYMORPHISMS OF THE PRION PROTEIN GENE (*PRNP*) IN GAYAL (*BOS FRONTALIS*)

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The fatal disease, Bovine Spongiform Encephalopathy (BSE) due to misfolded prion protein in cattle is associated with the indel polymorphism in the promoter and intron 1 of the *PRNP* gene. The gayal (*Bos frontalis*) is an important semi wild bovid species and of great conservation concerns. However, so far this indel polymorphism of 23bp-indel in the putative promoter and a 12-bp indel in intron 1 of the *PRNP* gene with BSE has not been evaluated. Therefore, we collected 225 samples of gayal and evaluated the genetic indel polymorphism in the two regions of this *PRNP* gene. The results revealed high insertion of allelic frequencies in 23 bp (0.909) and 12 bp (0.667) with the significant genotype frequencies (x2-9.81; 23 bp and x2-43.56; 12 bp), while the haplotypes data showed different indel polymorphism with extremely low deletion (0.01) in both regions of *PRNP* gene. We compared this data with two other healthy and BSE affected German and Swiss cattle species, and significant difference ($p < 0.001$) was observed from BSE affected as well as healthy cattle. Furthermore, data was also compared extensively with previous reports on BSE and highly significant ($p<0.001$) outcomes were observed. This result demonstrated no susceptibility to BSE associated with polymorphism in the promoter and intron 1 of the *PRNP* gene in gayal. Thus, gayal can serve as a good model suitable for genetic selection, breeding and production. To the best of our knowledge, this study is the first describing indel polymorphism of 23 bp and 12 bp in gayal, semi wild species of China.

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