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## Abstract

Leptin is a hormone encoded by leptin (*LEP*) gene and is secreted by white adipose tissue. Multiple functions in humans as well as in animals such as milk and meat production, growth, reproduction, body energy balance and immunity are regulated by leptin. Various studies have been conducted evaluating genetic polymorphisms in *LEP* gene in various important livestock species including sheep, goat, cattle and buffalo. However limited work has been reported on *LEP* gene polymorphism in Pakistani sheep breeds. This study was conducted to identify the genetic variations in *LEP* gene in two important indigenous Lohi and Koka sheep breeds. Blood samples of the selected breeds were collected from various Government and private tracts of Sindh and Punjab provinces of Pakistan. The genomic DNA was extracted and quantified through a standard protocol. The 5' untranslated region (UTR), two exons (E2 and E3) and 3'UTR of *LEP* gene was sequenced of two sheep breeds. The *LEP* gene in sheep was comprised of 904 bp of 5'UTR, two exons (exons E2 [144 bp] and E3 [360 bp]) and 1587 bp of 3'UTR. The *LEP* gene was polymorphic in both sheep breeds. The newly identified genetic variations in *LEP* gene in sheep could be screened on large scale of sheep population for the association studies and marker assisted selection.

**Keywords:** leptin gene, sequencing, polymorphisms, Lohi, Koka, Pakistan