

## **Novel parasitic nematode-specific protein of bovine filarial parasite *Setaria digitata* displays conserved gene structure and ubiquitous expression**

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**Abstract.** *Setaria digitata* is an animal filarial parasite, which can cause fatal diseases to livestock such as cattle, sheep, goat, buffaloes, horses etc. inflicting considerable economic losses to livelihood of livestock farmers. In spite of this, the biology and parasitic nature of this organism is largely unknown. As a step towards understanding these, we screen the cDNA library of *S. digitata* and identified an open reading frame that code for parasitic nematode-specific protein, which showed a significant homology to functionally and structurally unannotated sequences of parasitic nematodes *Wuchereria bancrofti*, *Brugia malayi*, *Onchocerca volvulus*, *Loa loa* etc., suggesting its role in parasitism. RT-PCR analysis indicated that the *S. digitata* novel gene (*SDNP*) is expressed in adult female and male, and microfilariae. Southern hybridization studies revealed that this gene is a single-copy gene. Sequence analysis of the genomic region obtained from overlapping PCR amplification indicated that the size of the genomic region is 1819 bp in which four exons encoding 205 amino acids were interrupted by three introns of varying lengths of 419, 659 and 123 bp, and also the expansion of the size of the introns of *S. digitata* compared to its orthologues by integrating micro and mini-satellite containing sequence. Sequences around the splice junctions were conserved and agreed with the general GT-AG splicing rule. The gene was found to be AT rich with a GC content of 38.1%. Bioinformatic analysis indicated that the gene structure of *SDNP* and its orthologues is conserved and it expressed ubiquitously in all the stages of nematode's lifecycle. Therefore, taking these outcomes together, it can be concluded that *SDNP* is a parasitic nematode-specific, single copy gene having conserved gene structure of four exons interrupted by three introns and that the gene is expressed ubiquitously throughout nematode's lifecycle.