

Molecular characterisation of a hsp70 gene from the filarial parasite *Setaria digitata*

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Abstract

The filarial parasite *Setaria digitata* is the causative agent of cerebrospinal nematodiasis in its abnormal hosts such as sheep, goats and horses, and therefore is of significant veterinary importance. Since very little is currently known about the biology of this parasite at molecular level, we have cloned and characterised a hsp70 gene, the first gene to be reported from this parasite. The genomic clone isolated contained sequences from two hsp70 genes. One gene, hsp70-2, was completely sequenced and found to contain nine introns ranging in size from 78 to 195 bp. The region upstream of the initiation codon contained a putative TATA box, two CAAT box elements and three heat-shock elements. A putative transcription initiation site was also identified. The 5' untranslated region contained a splice acceptor sequence. The gene was typically AT rich, having a GC content of 44.5%. The deduced aa sequence potentially encoded a cytosolic protein of 645 aa, which had three consecutive repeats of a tetrapeptide motif, GGMP, at the carboxyl end. The gene appeared to be constitutively transcribed and was not significantly enhanced in response to heat shock in adult worms. Another hsp70 gene (hsp70-1) was located further upstream, arranged in direct tandem with hsp70-2. Southern blot analysis revealed the presence of two or three additional hsp70-related genes in the *S. digitata* genome.

Keywords: Filariasis; Heat-shock protein; Hsp70; HSE; Nematode; *Setaria digitata*