

# Molecular characterization of *Setaria digitata* from Mithun (*Bos frontalis*)

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## Abstract

Mithun is a strongly built hill animal of Southeast Asia and plays an important role in the socio-economic and cultural life of the tribal population. *Setaria digitata* isolated from peritoneal cavity of mithun both from Arunachal Pradesh and Nagaland were characterized based on conserved region of 12SrDNA, 28SrDNA and ITS-2 and mitochondrial gene CoxI. Based on sequence analysis, it was found to be 99% similarity with Srilankan isolate of *S. digitata*.

## Keywords

Genetic characterization, Mithun, *Setaria digitata*, PCR amplification

## Introduction

Mithun (*Bos frontalis*), popularly known as the "cattle of hills" is an important bovine species of north-eastern hilly region of India, which is believed to be a descendant of Gaur (*Bos gaurus*). Mithun is a heavily built semi-domesticated rare ruminant species reared mainly for meat purpose and plays an important role in socio-economic and cultural life of the tribal population. Mithun is mainly confined to deep jungle of forest, however only particular occasion or festivals, whenever need, owners goes to forest and offered to salt to mithun as a bonding between animals and owners as well as identification purpose of own animals. In India, Mithun meat is considered to be more tender and superior over the meat of any other species. Since, the animal is mostly found in deep jungle of the forest; therefore it is difficult to ascertain the cause of death. Among different diseases affecting mithun, parasitic infection is also known to be the cause of high morbidity and less mortality among animals. In *S. digitata* infection, cerebrospinal nematodiasis is one of the severe conditions caused by immature stage of *Setaria* species (Tunga *et al.* 2003). Congenital case of setariosis has also been reported (Kim *et al.* 2010). However, reports of *S. digitata* infections are very scanty in mithun (Rajkhowa *et al.* 2005). Though the parasite is not actively associated with clinical disease; however it is very important from subclinical point of view. The present research work was carried out for genetic characterization in order to

molecular identification of *S. digitata* occurring in mithun both from the Arunachal Pradesh and Nagaland.

## Materials and Methods

In order to study the prevalence of microfilaria occurrence, pilot work was done as per modified knott technique (Soulsby, 1986), in where, blood of 41 numbers of adult animals were examined irrespective of age and sex. For recovery of adult parasites, a total of 45 mithun were examined during slaughtering in various ritual festivals and marriage ceremonies of the local tribal population of Arunachal Pradesh (30 animals) and Nagaland (15 animals). The infection *Setaria* spp. was recorded in the peritoneal cavity of 5 animals. The recovered parasites were identified as *S. digitata* based on morphological key (Soulsby, 1986). The gross parasites recovered from peritoneal cavity were washed by NSS in order to remove dirt and tissue debris and kept in 70% alcohol at  $-20^{\circ}\text{C}$  refrigerated condition until used for molecular study.

The conserved ribosomal region of 12S rDNA of parasites were amplified by using the primer of 12SF: 5-GTT CCA GAA TAA TCG GCT A-3 and 12SR: 5-ATT GAC GGA TG(AG) TTT GTA CC-3, which were designed by Casiraghi *et al.* (2001). The PCR was performed under the condition of initial denaturation at  $94^{\circ}\text{C}$  for 3 min for 40 cycles, denaturation at