

Prevalence and Molecular Characterisation of Ovine Theileria in Jaffna Sheep, Sri Lanka

T. M. Chathuri Sandamali¹, Parththuran Gajavathany², Meenayokini Rajeshwaran³,
Rupika S. Rajakaruna¹, Piyumali K. Perera¹

¹ Department of Zoology, Faculty of Science, University of Peradeniya, Peradeniya, 20400, Sri Lanka.

² Department of Zoology, Faculty of Science, University of Jaffna, Jaffna, 40000, Sri Lanka.

³ Veterinary Surgeon Office, Thellipalai, Jaffna, 40000, Sri Lanka
*piyumali.perera@sci.pdn.ac.lk

Theileriosis affects small ruminant production and causes a serious impact on the economy. The present study aimed to investigate theileriosis in Jaffna sheep, an indigenous sheep population in Jaffna, reared for meat and manure by local communities. Hundred blood samples (5 ml) were taken from the jugular vein and altogether 57 ticks were collected from sheep in three farms in the Jaffna District. A questionnaire collected information on farm management practices and demographic data of sheep (age and gender). Geimsa-stained smears were prepared at the sample sites and nested-PCR was carried out using five *Theileria* species: *T. ovis*, *T. annulata*, *T. separata*, *T. lestoquardi*, and *T. luwenshuni* (*Theileria* sp. China 1). Primary PCR employed outer primers *Thei-F1* and *Thei-R1*, targeting the amplification of a 1700 bp region (of *18S rRNA* gene). Secondary PCR with the inner primers *Thei-F2* and *Thei-R2* were further specific to the *18S rRNA* gene, to amplify target regions between 1417 bp- 1426 bp. Selected amplicons were subjected to bidirectional sequencing. Microscopic examination of 50 Giemsa-stained blood smears and nested-PCR revealed 38.0% and 90.9% prevalence of *Theileria* spp., respectively with a statistically significant difference ($Z = -3.1813$, $p = 0.00148$). The phylogenetic analysis showed that the *Theileria* species identified had 99.5% sequence identity to the highly virulent *Theileria luwenshuni* species found in *Antelope cervicapra* in a zoological park in India. Although *T. luwenshuni* was well tolerated by Jaffna sheep, they can act as reservoir hosts and challenge the health of immunocompromised animals. Four tick species were identified as *Haemaphysalis bispinosa*, *Rhipicephalus haemaphysaloides*, *Rhipicephalus linnei* (formerly known as *Rhipicephalus sanguineus sensu lato* tropical lineage), and *Hyalomma marginatum isaaci*, the most prevalent being *H. bispinosa* (68.4%). This is the first report and molecular characterisation of *Theileria luwenshuni* in Sri Lanka and possible tick vectors responsible transmitting theileriosis in Jaffna sheep.

Keywords: *Theileria luwenshuni*, Jaffna sheep, Tick-borne Haemoparasites, Sri Lanka.

Acknowledgement: This work was funded by the Undergraduate Research Grant (Grant No. URG/2022/64/S) and Post Graduate Research Grant (Grant No. PGIS/2022/01).