

Molecular detection and epidemiological risk factors associated with *Cryptosporidium* infection among cattle in Peninsular Malaysia

ABSTRACT

Enteric protozoa infection among cattle may pose a threat to productivity and survival leading to negative impacts on the livestock industry. A number of these pathogens are also known to be zoonotic and are of public health concern. Despite the importance of these enteric protozoa to both animal and human health, there remains a paucity of published information on the epidemiological risk factors that may be associated with bovine cryptosporidiosis in Southeast Asia. The present study was undertaken to determine the molecular prevalence and associated risk factors for *Cryptosporidium* infection among beef and dairy cattle in Peninsular Malaysia. Faecal samples were collected from 824 cattle in 39 farms (526 beef and 298 dairy) situated in 33 locations throughout the country, and subjected to PCR detection for *Cryptosporidium* using primers targeting the 18S SSUrRNA gene. Epidemiological variables including host, environment and management factors were subjected to univariate and multivariate logistic regression analyses to determine the potential risk factors for infection. The prevalence of *Cryptosporidium* among the cattle was 12.5%, with significant difference in the infection rate among the various breeds. There was no significant effect of gender, and both the beef and dairy cattle were at similar odds for infection. The younger cattle had a significantly higher infection rate compared to the older animals. Multivariate analysis revealed that deworming practice, distance to human settlement, geographical location (zone) and farm management system were significant risk factors associated with *Cryptosporidium* infection. The cattle that were reared on farms located in the northeast of the country, closest (≤ 200 m) to human settlements, reared extensively, and dewormed every four months were at highest risk of infection. The present study constitutes the first attempt to analyze the multivariable epidemiological risk factors involved in bovine cryptosporidiosis in Malaysia and in Southeast Asia. It is envisaged that the data obtained will facilitate better control and prevention measures for *Cryptosporidium* infection among cattle in the region. Due to the potential zoonotic nature of the infection, serious steps should be instituted for animal treatment and biohazard waste management on local cattle farms.

Keyword: *Cryptosporidium*; Cattle; Risk factors; Peninsular Malaysia