# PREVALENCE OF AMPHISTOMOSIS IN DAIRY CATTLE OF DIFFERENT AGRO-ECOLOGICAL ZONES OF CENTRAL KERALA

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**Abstract**

*The present study was carried out to assess the prevalence of amphistomosis in six agro-ecological zones of central Kerala comprising Thrissur, Malappuram and Palakkad. Out of the 515 faecal samples examined 165 turned amphistome ova positive with a prevalence of 32 %. Amphistomosis was found to be high in all the six zones. High infection is favoured by the topography and climatic conditions of Kerala which favours the molluscan intermediate hosts. The study throws light on the prevalence of this neglected disease in our state which needs urgent epidemiological interventions for profitable dairy farming.*

**Key words**: *Amphistomosis, prevalence, dairy cattle, Kerala*

Paramphistomosis is a group of disease caused by different species of trematode parasites namely *Paramphistomum* spp., *Gastrothylax* spp., *Cotylophoron* spp., *Calicophoron* spp. and *Orthocoelium* spp. Amphistomosis leads to morbidity, reduced milk production, lowered feed conversion and mortality in young stock leading to economic loss. In India, several outbreaks of amphistomosis have been recorded among sheep, goats, cattle and buffaloes (Chandra *et al*., 2006). Swarnakar *et al*. (2014) reported 75.63 per cent of amphistome infection in buffaloes of Southern Rajasthan. In Kerala, the topography and climatic conditions are most favourable for the survival of amphistome species in domesticated animals. Paramphistomes have a heteroxenous life cycle with fresh water snails as intermediate hosts. Affected ruminants inhabit low lying areas where snails are found abundantly during monsoon and post monsoon. It is necessary to ascertain the prevalence of the disease in Kerala for prompt treatment to reduce the production loss due to amphistomosis. Hence the present study aimed at assessing the prevalence of amphistomosis in dairy cattle in different agroecological zones of Central Kerala.

## Materials and Methods

Study area was Central Kerala comprising of three districts *viz*., Thrissur, Palakkad and Malappuram spanning over six agro-ecological zones (KAU, 2011) namely Central midlands, Palakkad plains, Coastal sandy, Malappuram type, Chittoor black soil and Malayoram zones.

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A total of 515 faecal samples collected directly from the rectum of dairy cattle of six agro-ecological zones of Central Kerala were processed for microscopical examination by standard laboratory techniques viz., direct smear method and sedimentation. To about two grams of dung sample in a mortar, 15ml of water was added, mixed and seived to remove the coarse particles. The filtrate was then transferred into a test tube and centrifuged at 3000rpm for two min. The supernatant was discarded and examined the sediment under low power of the microscope. Identification of parasitic ova was made on the basis of their morphological characteristics (Soulsby, 1982).

**Results and Discussion**

The overall prevalence rate was found to be 32 % (165/515) for amphistomes in Central Kerala and is represented in Table. Statistical analysis using chi-square test did not reveal any significant difference between zones. The results of present study showed a high prevalence rate than Radhika *et al.* (2016) who recorded an overall prevalence rate of 19.7 per cent. The high infection in the present study might be due to the seasonal influence which favoured the molluscan intermediate hosts. Prasad and Bipin (2008) also reported a high prevalence of amphistomosis (41.63 %) in cattle of Vallikkunnu Panchayat. Gupta *et al*. (2008) recorded 23.2 % infection in buffaloes of Uttar Pradesh lower than present study may be due to the regional differences. The difference in the sample size, topography, climate, management and nutritional practices can affect the prevalence of infection.

The present study reported highest prevalence in Chittoor black soil followed by Malappuram zone and Coastal sandy. This is in agreement with Radhika *et al.* (2016) who recorded 32.4 per cent infection in Chittoor black soil during monsoon by microscopy. Even though the present study does not include seasonal effects, zones and seasons influence the prevalence of amphistomosis. Shabih and Juyal (2006) reported high incidence of amphistomes in different agro-climatic zones and also during monsoon in Punjab. Hassan *et al*. (2005) recorded highest incidence of amphistomosis during monsoon and post monsoon with a prevalence rate of 8.06 per cent followed by 2.92 per cent in summer.

In the present study samples were collected during monsoon and post monsoon periods indicating the animals acquired infection during pre-monsoon period. Pfukenyi *et al*. (2005) recorded large burdens of immature flukes in cattle during dry months. High infection might be due to the climatic conditions of Kerala which favours the intermediate host, the snails. During the post monsoon season, when rain water recedes from larger to smaller areas, snail population gets concentrated in small water bodies and released metacercariae infects definitive hosts.

Amphistomosis in dairy cattle has been found to affect the yield and quality of milk

**Table:** Prevalence of amphistomosis in agro-ecological zones of Central Kerala

| Agro-ecological zones | Number of faecal samples collected | Amphistome ova positive | Per cent positive (%) |
|---|---|---|---|
| Malayoram zone | 141 | 43 | 27 |
| Central midlands | 100 | 24 | 24 |
| Palakkad plains | 75 | 25 | 33 |
| Malappuram zone | 79 | 29 | 36 |
| Chittoor Black soil | 70 | 26 | 37 |
| Coastal sandy | 50 | 18 | 36 |
| **Total** | **515** | **165** | **32** |

(Spence *et al*., 1996). Prasad and Bipin (2008) observed that the percentage of SNF and total solids in milk were significantly affected in amphistomosis infected animals. Thus amphistomosis curtails the milk production leading to heavy loss in dairy farming.

Eventhough in the present study there was no significant statistical differences in the occurrence of amphistomosis in different agro-ecological zones, the overall prevalence of infection of 32 per cent in Central Kerala demands urgent intervention including treatment and control of amphistomosis for sustainable and profitable dairy farming.

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**References**

Chandra, D., Singh. R., Singh. K.P. and Dwivedi. P. 2006. Outbreak of immature paramphistomosis in an organized sheep farm in Uttaranchal. *Indian J. Vet. Pathol*. **30**: 75-76.

Hassan, S.S., Kaur, K., Joshi, K. and Juyal, P.D. 2005. Epidemiology of paramphistomosis in domestic ruminants in different districts of Punjab and other adjoining areas. *J. Vet. Parasitol*. **19**: 43-46.

KAU (Kerala Agricultural University). 2011. *Package of Practices Recommendation: Crops*. (14th Ed.). Kerala Agricultural University, Thrissur, 360 p.

Radhika, R., Sabu, L. and Krishnan, S. Prevalence of amphistomosis in cattle of six different agroecological zones and in different seasons of Kerala. *Proceedings of the 28th Kerala Science Congress;* 28th to 30th January 2016, Calicut University, Kozhikkode.

Prasad, A. and Bipin, K. C. 2008. Prevalence of Amphistomosis in vallikunnu panchayath and its likely impact on milk production. *J. Ind. Vet. Assoc.*. **6**: 11-14.

Pfukenyi, D.M., Mukaratirwa, S., Willingham, A.L. and Monrad, J. 2005. Epidemiological studies of amphistome infections in cattle in the highveld and lowveld communal grazing areas of Zimbabwe. *Onderstepoort J. Vet. Res.* **72**: 67-86.

Shabih, H.S. and Juyal, P.D. 2006. Diagnosis of paramphistomosis in domestic ruminants in Punjab. Proceedings of the 11nth International symposium on Veterinary Epidemiology and Economics. 658p.

Soulsby, E.J.L. 1982. Helminths, Arthropods and protozoa of Domesticated Animals. (7th Ed.). ELBS, Bailliere, Tindall, 71p.

Spence, S.A., Fraser, G.C. and Chang, S. 1996. Responses in milk production to the

control of gastrointestinal nematode and paramphistome parasites in dairy cattle. *Aust. Vet. J*. **74**: 456-459.

Swarnakar, G., Kumawat, A., Sanger,B., Roat, K. and Goswami, H. 2014. Prevalence of amphistome parasites in Udaipur of Southern Rajasthan, India. *Int. J. Curr. Microbiol. App. Sci*. **3**: 32-37. ■