

# Global prevalence of *Giardia duodenalis* in cattle: A systematic review and meta-analysis

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## Abstract:

*Giardia duodenalis* is an important intestinal parasite responsible for diarrhea in humans and animals worldwide. Up to now, *G. duodenalis* infections in cattle have been reported in many studies around the world. Hence, the aim of the present study is to report on the distribution of *G. duodenalis* in cattle at global scale and to evaluate the global prevalence, risk factors and genetic characterization of *G. duodenalis* infection among cattle worldwide. International databases were systematically searched to identify relevant studies. A random-effects meta-analysis model was used to estimate the overall and the subgroup-pooled prevalence of *G. duodenalis* across studies, and the variance between studies (heterogeneity) was quantified by I<sup>2</sup> index. One hundred and fifty-eight articles (including 195 datasets), from 48 countries met eligibility criteria for analysis. Considering detection methods, the pooled prevalence was estimated to be 24% (95% confidence interval (CI), 19–30%) using copro-antigen techniques, 22% (95% CI, 17–28%) using molecular, and 16% (95% CI, 12–20%) using microscopic detection. Molecular methods showed that the highest number of reports were associated with assemblage E (45/46; 97.83% studies), assemblage A (33/46; 71.74% studies) and assemblage A+E (10/46; 21.74% studies). The pooled prevalence different of subgroups (WHO regions, countries, and type of cattle) were analyzed separately. Moreover, a significant association was observed between *G. duodenalis* infection with cattle suffering from diarrhea (odds ratio (OR), 2.61; 95% CI, 1.50–4.55) and pre-weaned calves (OR, 1.79; 95% CI, 1.08–2.95). These results suggest that the corresponding control scheme and effective management measures should be formulated to reduce the transmission of *G. duodenalis* infection according to the difference of geographical conditions in different areas.

**Keywords:** Cattle; *Giardia duodenalis*; Meta-analysis; Worldwide prevalence.