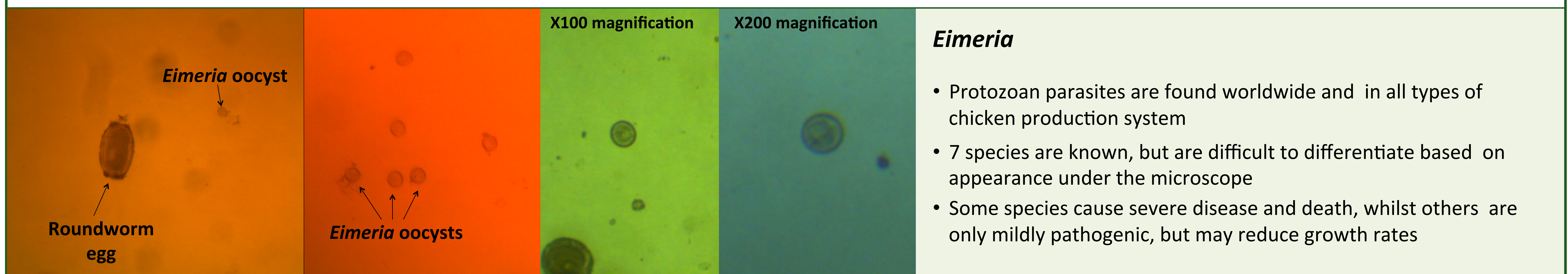


Prevalence and molecular characterisation of *Eimeria* species in Ethiopian village chickens



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Methods

- Faecal samples were collected from healthy adult chickens from two Ethiopian woredas in May (n=383) and October 2011 (n=384)
- Where possible, chickens sampled in May were resampled in October, giving 110 further samples
- McMaster counts were performed on each sample to quantify oocysts [1]
- A selection of samples from those collected in May from each woreda were speciated using real time PCR [2]

Detection of *Eimeria* oocysts in faeces



Weighing faecal samples in the Debre Zeit laboratory in preparation for parasite examination

- 427 (56%) of samples were positive for oocysts, but more samples were positive in October (65%) compared to May (47%)
- There was moderate clustering of positive birds within households, suggesting common risk factors or exposure
- There was no difference in overall prevalence between the regions or villages, but different species were more prevalent in each region
- Birds positive in May were just as likely to be positive in October as randomly-sampled birds, perhaps suggesting infection with different species, or immunologically distinct strains

Frequency of PCR detection of *Eimeria* species in chicken faecal samples

Species	Region		Fisher's exact p-value	Mixed species infection (n = 23)	Single species infection (n = 13)
	Horro (n = 22)	Jarso (n = 25)			
<i>E. acervulina</i>	9 (40%)	10 (40%)	0.8	12 (52%)	1 (8%)
<i>E. brunetti</i> ¹	4 (18%)	5 (20%)	0.9	5 (22%)	0 (0%)
<i>E. maxima</i>	5 (22%)	15 (60%)	0.02 ²	13 (57%)	4 (31%)
<i>E. mitis</i>	0 (0%)	7 (28%)	0.01 ²	2 (9%)	2 (15%)
<i>E. necatrix</i> ¹	4 (18%)	2 (8%)	0.4	4 (17%)	0 (0%)
<i>E. praecox</i>	21 (95%)	9 (36%)	<0.001 ²	17 (74%)	6 (46%)
<i>E. tenella</i> ¹	3 (12%)	7 (28%)	0.3	3 (13%)	0 (0%)

¹Considered to be highly pathogenic [3].

²Significantly different (p < 0.05).

- All seven species were detected, and highly pathogenic species were detected in 20/47 (43%) of samples
- Mixed infections were common (in 36 samples known to come from a single bird), and tended to occur with the most prevalent species in each region

Conclusions

- *Eimeria* oocysts, including those with the potential to be highly pathogenic, can be frequently detected in faecal samples from village chickens in the absence of clinical signs of disease
- There is variation in the prevalence of some species between regions, perhaps suggesting local risk factors associated with the birds, management or environment
- Further investigations are required to assess the role of *Eimeria* in clinical disease and subclinical effects on production in village chickens
- Research is also required as to whether interventions may have any positive impacts, or impact negatively by disrupting existing endemic stability

References

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