



Use of oxfendazole to control porcine cysticercosis in a high-endemic area of Mozambique

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Background

In Mozambique, data on cysticercosis is scarce and fragmented

CESA project from 2006 – 2010

Prevalence and associated risk factors for *T. solium* cysticercosis in Angónia district, Mozambique assessed in 2009

1. *T. solium* cysticercosis is endemic in the region

Porcine Ag-ELISA_{B158/B60}: 231/661 (35%)

Human Ag-ELISA_{B158/B60}: 243/1723 (15%)

2. Increasing pig age and pig husbandry practices contribute significantly to PC transmission

***T. solium* cysticercosis is endemic in the region**
(Pondja et al. 2010)

Tete Province–Angonia district

Area: 3 277 km²

Altitude: 700 to 1655 m (MAE, 2005)

Households: 81 645







Meat inspection?



Study objective

Evaluate the effectiveness of a single oral dose of 30 mg/kg of oxfendazole treatment for control of porcine cysticercosis



Methodology

- Approach to local authorities & population:
 - Community leaders (willingness to participate)
 - Basic ethical principles explained to participants
 - Willingness to raise study pigs
 - Informed consent
 - OIE's Terrestrial Animal Health Code for the use of animals in research and education

Ethical clearance from scientific board at Veterinary Faculty, Eduardo Mondlane University



Methodology



A randomized controlled field trial

4 rural villages of Angónia district
(Camuetsa, Campessa, Ndaula, Lilanga)



216 pigs 4 month of age

Obtained from 54 litters from 54 farms in the area

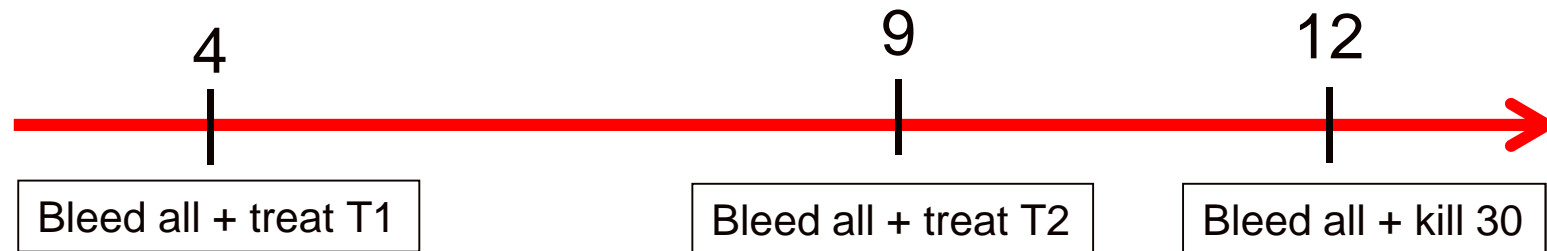
T1: 54 pigs – treat OFZ month 4

T2: 54 pigs – treat OFZ month 9

C : 108 pigs – litter matched controls



Methodology



30 randomly selected pigs (8 from T1, 8 from T2 and 14 from control group) purchased from villagers, slaughtered locally and dissected for assessment of *T. solium* cysticerci.

Oxfendazole: 30 mg/kg p.o. (Oxfen-C Beyer, South Africa).

Blood samples for Ag-ELISA collected before T1 (m 4), T2 (m 9) and month 12.

Ag-ELISA: B158/B60 (Dorney et al. 2002).

Results

Pig race: Landim
Males: 55%, Females 45%



46 pigs lost to follow up
(24 control, 12 T1 and 10 T2 group)

Baseline prevalence 5.1 % (95% CI = 2.6% – 8.9%)
no sig. diff between groups ($p > 0.05$)



Results - effectiveness

Age	Control group		T1 group		T2 group	
	Number tested	Prevalence (%)	Number tested	Prevalence (%)	Number tested	Prevalence (%)
4 months	108	5.6	54	5.5	54	3.7
9 months	90	33.3	44	13.6	50	36.0
12 months	84	66.7	42	21.4	44	9.1

- **Control:** Significant increase from 4 to 9 and from 9 to 12 month ($p < 0.001$).
- **T1:** Increase from 4 to 12 but significantly lower than control ($p < 0.001$).
- **T2:** Significant increase from 4 to 9 months ($p < 0.001$) and significant decrease from 9 to 12 months ($p < 0.01$).



Results - incidence study



At baseline, 205 pigs from all groups were negative by Ag-ELISA

Period	Number of cases per 100 pigs-month		
	Control group	T1 group	T2 group
1 (between 1 st and 2 nd sampling)	2.2	1.1	2.9
2 (between 2 nd and 3 rd sampling)	11.5	2.1	1.6

- T1 and T2 had lower incidence rates than control during the follow-up ($p < 0.05$)
- All infected pigs at the time of treatment were found negative in the subsequent sampling round



Results - Multivariate logistic regression



Factor		Odds Ratio	95% CI	p-value
Treatment group	Control	1		
	OFZ-T1	0.14	0.05 - 0.36	<0.001
	OFZ-T2	0.05	0.02 - 0.16	<0.001
Sex	Female	1		
	Male	1.02	0.47 - 2.22	0.95
Free range	No	1		
	Yes	1.76	0.38 - 8.20	0.47
Village	Camuetsa	1		
	Campessa	1.12	0.34 - 3.68	0.85
	Ndaula	1.09	0.40 - 2.95	0.87
	Lilanga	1.06	0.23 - 4.81	0.94



Conclusion

Treatment of pigs with oxfendazole in the last part of the fattening period is cost-effective in controlling porcine cysticercosis in endemic low-income areas but should be integrated with other control measures.



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 - Pig farmers
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