Molecular epidemiology of Giardia in black goats, pigs and cattles in Hainan, China

Jinkang Pu, Sheng Lei, Jiaqi Li, Guangxu Ren, Yu Qiang, Yuan Wang, Xiuyi Lai, Jingyan Xiong, Yun Zhang, Tingting Li, Gang Lu*

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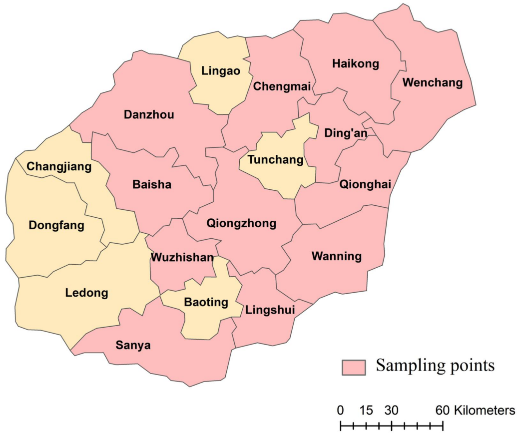
* Correspondence: luganghn@163.com

Introduction

Giardia is a widespread intestinal protozoan that causes diarrhea in humans and animals. No systematic research was reported on *Giardia* in black goats, pigs and cattles in Hainan, China.

Methods

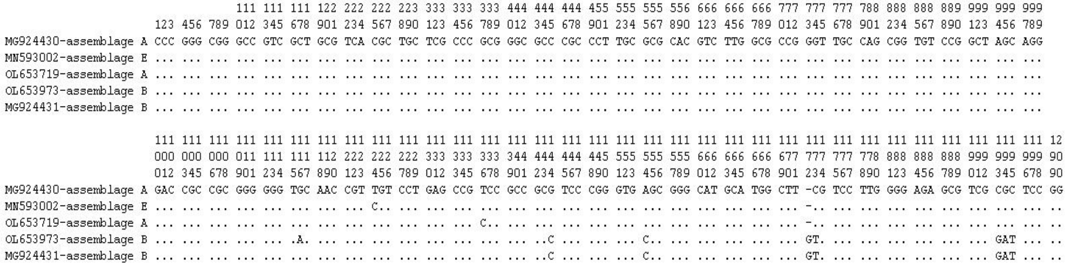
A total of 1,480 feces samples were collected in Hainan island, including 710 black goats, 456 pigs and 314 cattles. *Giardia* was detected and genotyped by nested PCR targeting small subunit ribosomal RNA (SSU rRNA) gene and sequence analysis.



Specific locations where samples were collected in this study

Results

The infection rates of black goats, pigs and cattle of were 6.2% (44/710), 2.6% (12/456) and 2.2% (7/314), respectively (P < 0.05). Higher infection rates of younger livestock were observed than older ones. Giardia assemblages A(n=17), B (n=8), and E (n=19) were identified black goats. Only assemblages E was identified in pigs (n=12) and cattle (n=7). Interestingly, among the 16 positive samples from 115 samples in black goats from Haikou, 15 were assemblage A. Eight positive samples were all assemblage B among 53 samples from Wuzhishan.



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                       123 456 789 012 345 678 901 234 567 890 123 456 789 012 345 678 901 234 567 890 123 456 789 012 345 678 901 234 567 890 123 456 789
MG924430-assemblage A CCC GGG CGG GCC GTC GCT GCG TCA CGC TGC TCG CCC GCG GGC GCC CGC CCT TGC GCG CAC GTC TTG GCG CCG GGT TGC CAG CGG TGT CCG GCT AGC AGG
MN593002-assemblage E ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ...
OL653719-assemblage A ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ...
OL653973-assemblage B ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ...
MG924431-assemblage B ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ...

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                      012 345 678 901 234 567 890 123 456 789 012 345 678 901 234 567 890 123 456 789 012 345 678 901 234 567 890 123 456 789 012 345 678 90
MG924430-assemblage A GAC CGC CGC GGG GGG TGC AAC CGT TGT CCT GAG CCG TCC GCC GCG TCC CGG GTG AGC GGG CAT GCA TGG CTT -CG TCC TTG GGG AGA GCG TCG CGC TCC GG
MN593002-assemblage E ... ... ... ... ... ... ... ... C.. ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... -.. ... ... ... ... ... ... ... ... ..
OL653719-assemblage A ... ... ... ... ... ... ... ... ... ... ... ... C.. ... ... ... ... ... ... ... ... ... ... ... -.. ... ... ... ... ... ... ... ... ..
OL653973-assemblage B ... ... ... ... ... .A. ... ... ... ... ... ... ... ... ..C ... ... ... C.. ... ... ... ... ... GT. ... ... ... ... ... ... GAT ... ..
MG924431-assemblage B ... ... ... ... ... ... ... ... ... ... ... ... ... ... ..C ... ... ... C.. ... ... ... ... ... GT. ... ... ... ... ... ... GAT ... ..
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Conclusions

This study found that the wide distribution of *Giardia* in black goats, pigs and cattles in Hainan, China. Significant variation for genotypes distribution existed in different regions. Black goats, pigs and cattles might a potential source of human giardiasis.