Detection of *Trichinella spiralis* larvae in domestic pigs (*Sus scrofa domesticus*) using artificial digestion and a microfluidic device, a comparative study

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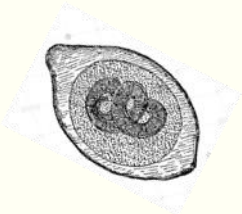
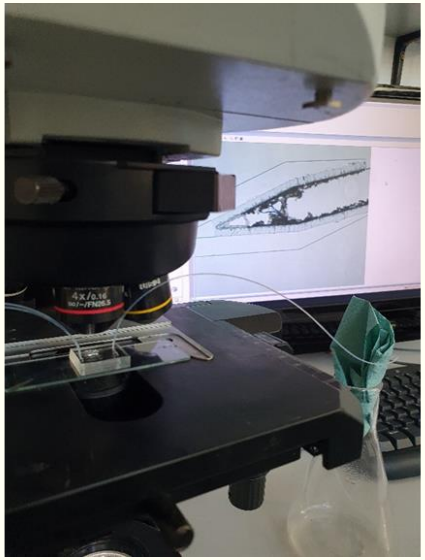
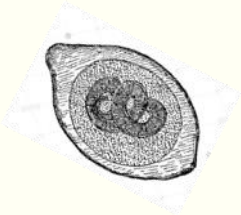
This study aimed to compare the detection capability for *Trichinella spiralis* larvae of artificial digestion and an experimental microfluidic device in pigs.



METHOD

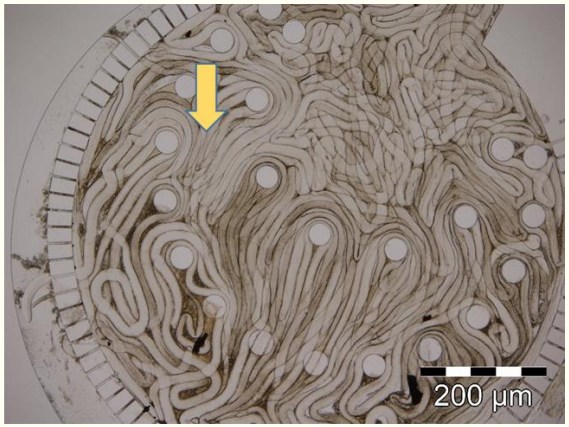


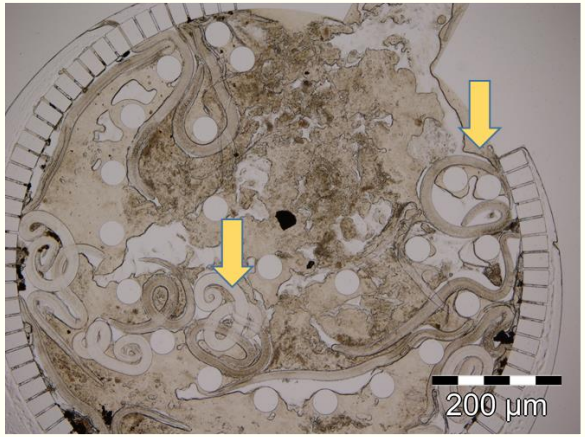


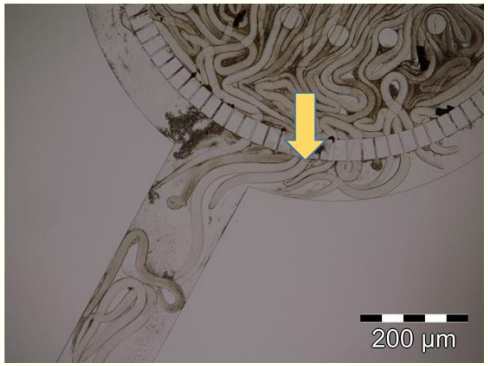
RESULTS

5g/animal/nr. Ctr	Microfluidic device	Results microfluidic device	Results artificial digestion
Porc/Nr.ctr 1	CMF3 E	0 larvae	2 larvae
Porc/Nr ctr. 2	CMF3 E	40 larvae	75 larvae
Porc/Nr ctr. 3	CMF3 E	18 larvae	12 larvae
Porc/ Nr. ctr. 4	CMF3 E	4 larvae	58 larvae
Porc/ Nr. ctr. 5	CMF3 E	1 larvae	20 larvae
Porc/ Nr. Ctr. 6	CMF3 E	0 Larvae	21 larvae
Porc/Nr. Ctr. 7	CMF3 E	51 Larvae	68 Larvae
Porc/Nr. Ctr. 8	CMF3 E	35 Larvae	32 Larvae
Porc/Nr. Ctr. 9	CMF3 E	19 larvae	100 larvae
Porc/ Nr. Ctr. 10	CMF3 E	50 larvae	500 larvae
	Total	**168 larvae**	**888 larvae**

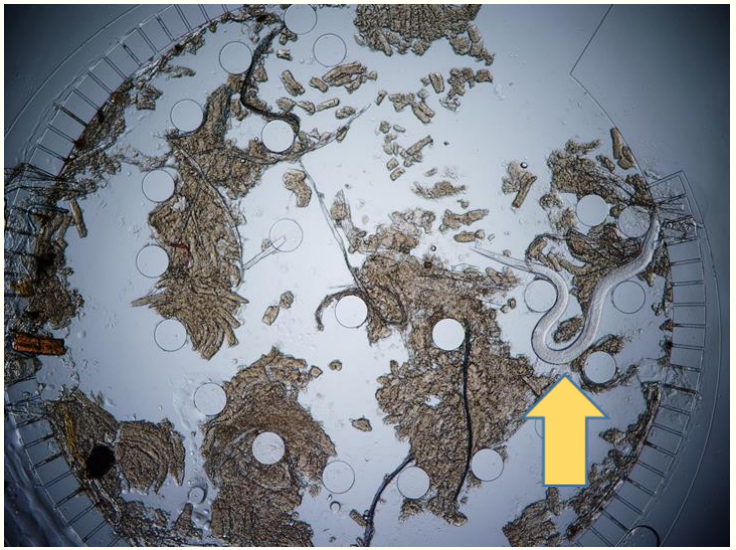
RESULTS







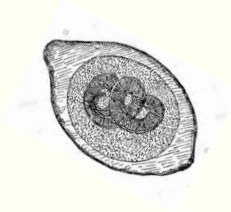
RESULTS



Observations (microfluidic device)

Positive:
Larvae detecting capability 80%;
Reduced content (residues) in the filter 90%;
Good visibility 100%;
It did not leak near the entry and exit areas 50%;
Larvae retained in the filter area 100%;

Negative:
Larvae escaped from filtering area 60%;
It leaked near the entry areas 70%;
The larvae retained in the inlet tube 90%
Many residues retained and which made it difficult to count the larvae 10%;



CONCLUSIONS

- The results indicate that the microfluidic device can be used in the direct detection and numbering of *T. spiralis* larvae but it's not as efficient as artificial digestion.
- Larvae and their structural integrity is easily observable in this new method.
- More improvements in this new device (microfluidic) are necessary.

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THANK YOU!