Effect of wattle tannins on the hatchability of nematodes eggs in faeces of Small East African goats

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Background

- small ruminants → livelihood in resource-poor communities

- constraints to productivity → infections by parasitic nematodes of the gut

- infections → more rampant due to changing climate and other factors

- control of gut parasites → entirely dependent on the use of synthetic anthelmintics

- apart from being expensive, their misuse → anthelmintic resistance

- the importance of new alternative control measures & practices has been recognised

Why tannins?

- the need for an alternative control with less reliance on synthetic anthelmintics

- findings from field studies with sheep in New Zealand Niezen *et al*., (1993; 1995)

- literature: many tropical browses/trees are rich in tannins

Previous findings using tannins

- ***in vitro*** **studies → tannins had significant anthelmintic activities vs. mice & ruminant worms**

- ***in vivo*** **studies → wattle tannins (WT) can reduce FEC & worm burdens in sheep but little effect was observed in goats**

- **How about WT vs. other indicators of worm parasitism in goats such as egg hatchability?**

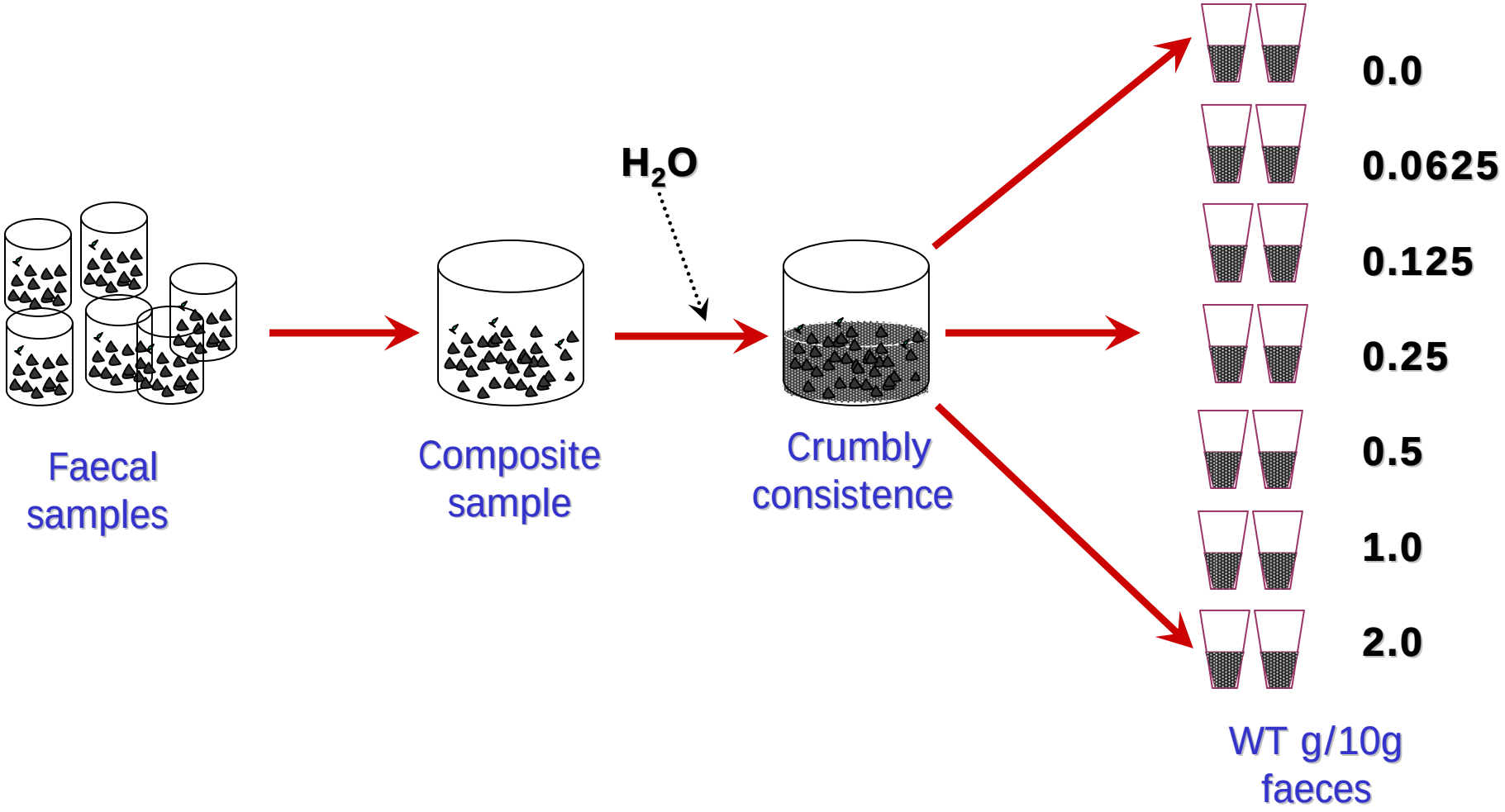
Objective of the study

- investigate the effect of WT on hatchability of worm eggs in goat faeces
- study the effect of storage (shelf life) of WT on its anthelmintic activity
- compare activity of the extract following spiking of faeces with WT or its administration as an oral drench

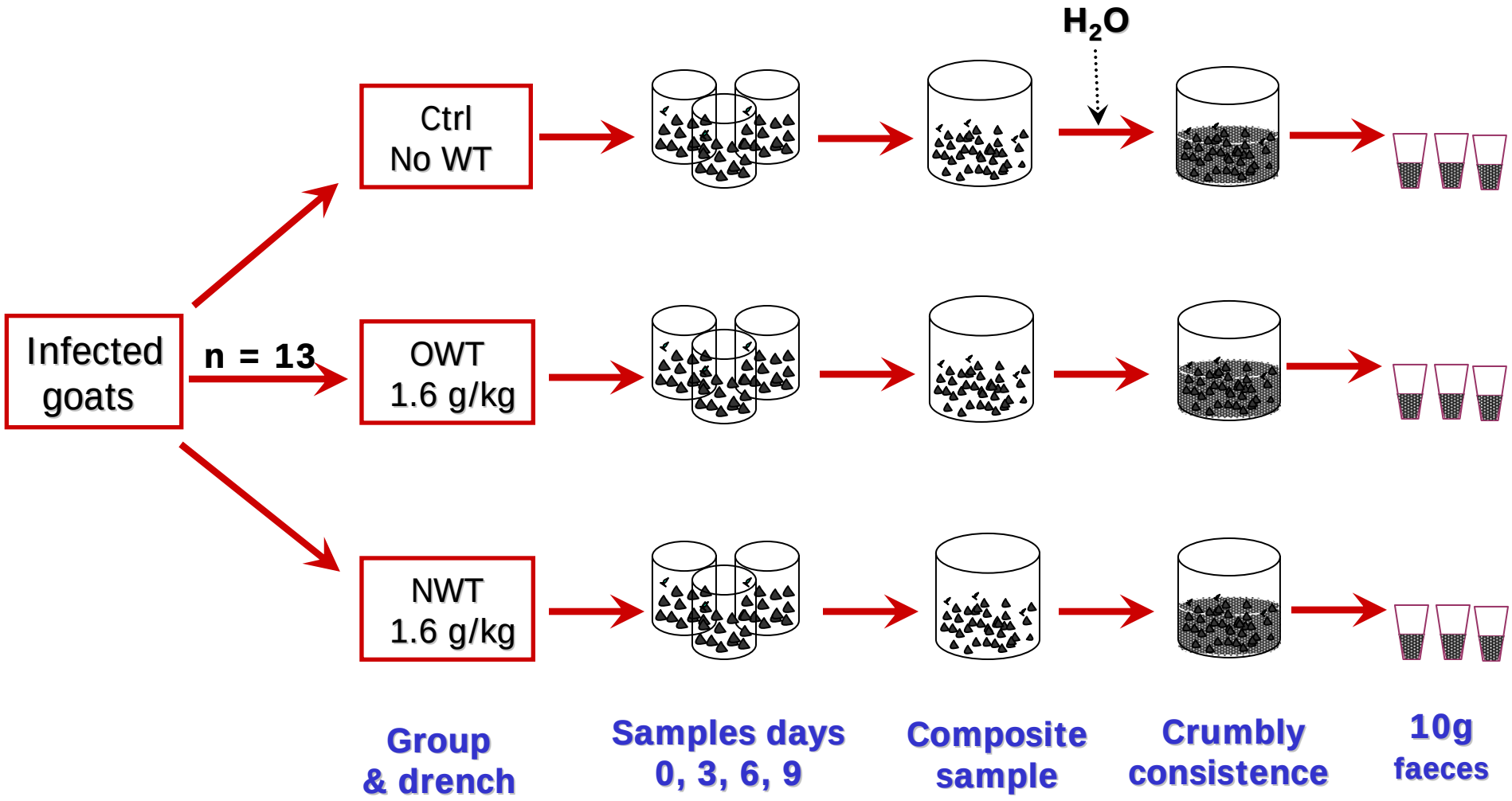
Wattle tannin extract (WT) from *Acacia mearnsii*

Methodology

Spiking experiment



Drenching experiment



Data & analyses

- Hatchability (%H) = $\frac{LC_{[WT]}}{LC_{[Ctrl]}} \times 100$

- Regression → dose effect

- t - test → effect of storage i.e., OWT vs. NWT

Results & discussion

Spiking experiment

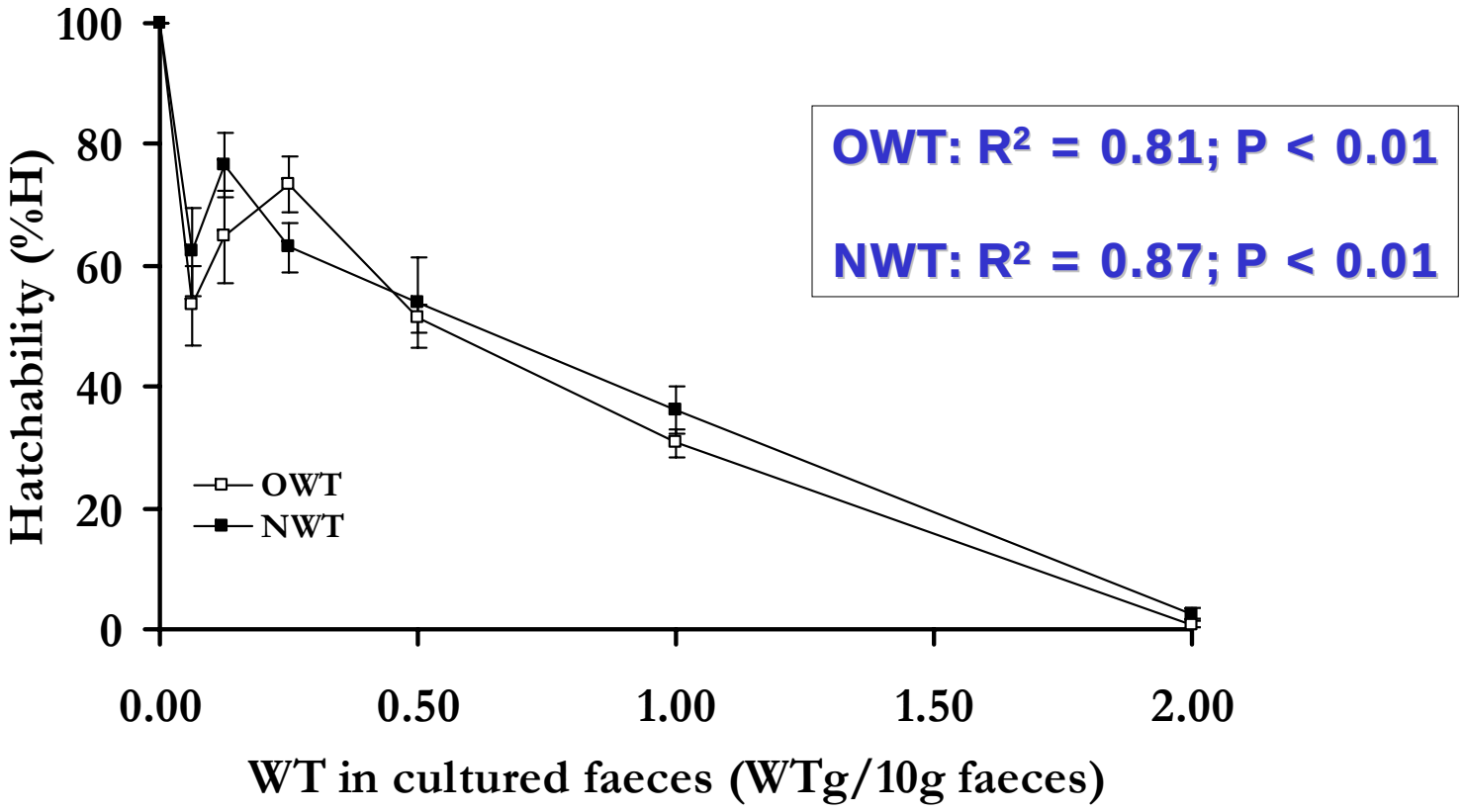


Fig 1: Effect of WT spiking on faecal egg hatchability

Drenching experiment

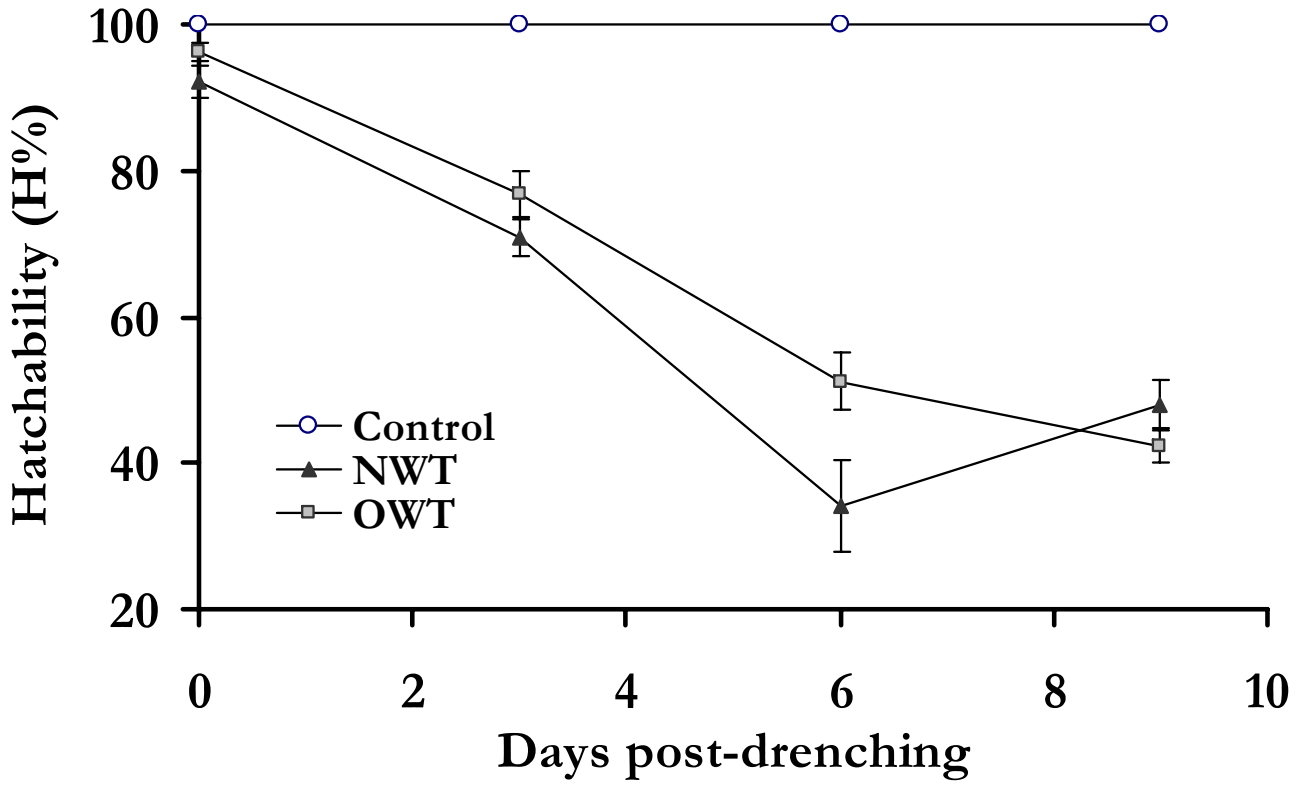


Fig 2: Effect of WT drenching on faecal egg hatchability

Conclusion

- WT capable of reducing hatchability of eggs passed out in faeces of goats
- storage did not significantly affect WT's anthelmintic activity
- the activity of WT was not affected by its passage through the host animal's digestive system

Implications

- ⇓ [%H] is an important epidemiological factor in the dynamics of worm populations
- Inclusion of tannin-rich plants in the small ruminants feed could be a good practice

Further research

- Treatment of the WT extract to reduce its negative effect on the host's gut

Acknowledgements

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Thank you!!