

Self-medicative Behavior in Gastrointestinal Parasite Infected Goats: Shift in Preferences for Tanniferous Fodder Plants

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Introduction

- Gastrointestinal nematodes (GIN) are a worldwide major threat in ruminant livestock
- Resistance against conventional anthelmintics is common
- Condensed tannins (CT), plant secondary metabolites, show evidence of anthelmintic properties but also feature detrimental nutritional effects at higher dosage
- Evidence of 'self-medicative behavior' in goats when infected with GIN¹
→ Change in feed preferences when infected with GIN?

Animals, Materials & Methods

- Free choice cafeteria feeding trial for 12 weeks with 4 test feeds of varying tannin contents (pelleted leaves of sainfoin, walnut, blackberry, willow) and tannin-free hay pellets
- 18 juvenile boar goats (3-4 months) in individual boxes
- 3 trial groups à 6 goats:
 1. Treatment group W (infected/feeding trial)
 2. Treatment group S (infected/no feeding trial)
 3. Control group K (non-infected/feeding trial)
- At the beginning, goats were free of GIN. After 4 weeks, groups W+S were experimentally infected with third-stage GIN larvae
- Groups W+K were offered a free choice cafeteria trial for 30min per day prior to the usual daily feeding time
- Measurements: video surveillance, amount of ingested pellets, weekly analyzes of blood parameters, saliva composition and feces



Figure 1: Feeding trough with experimental pellets

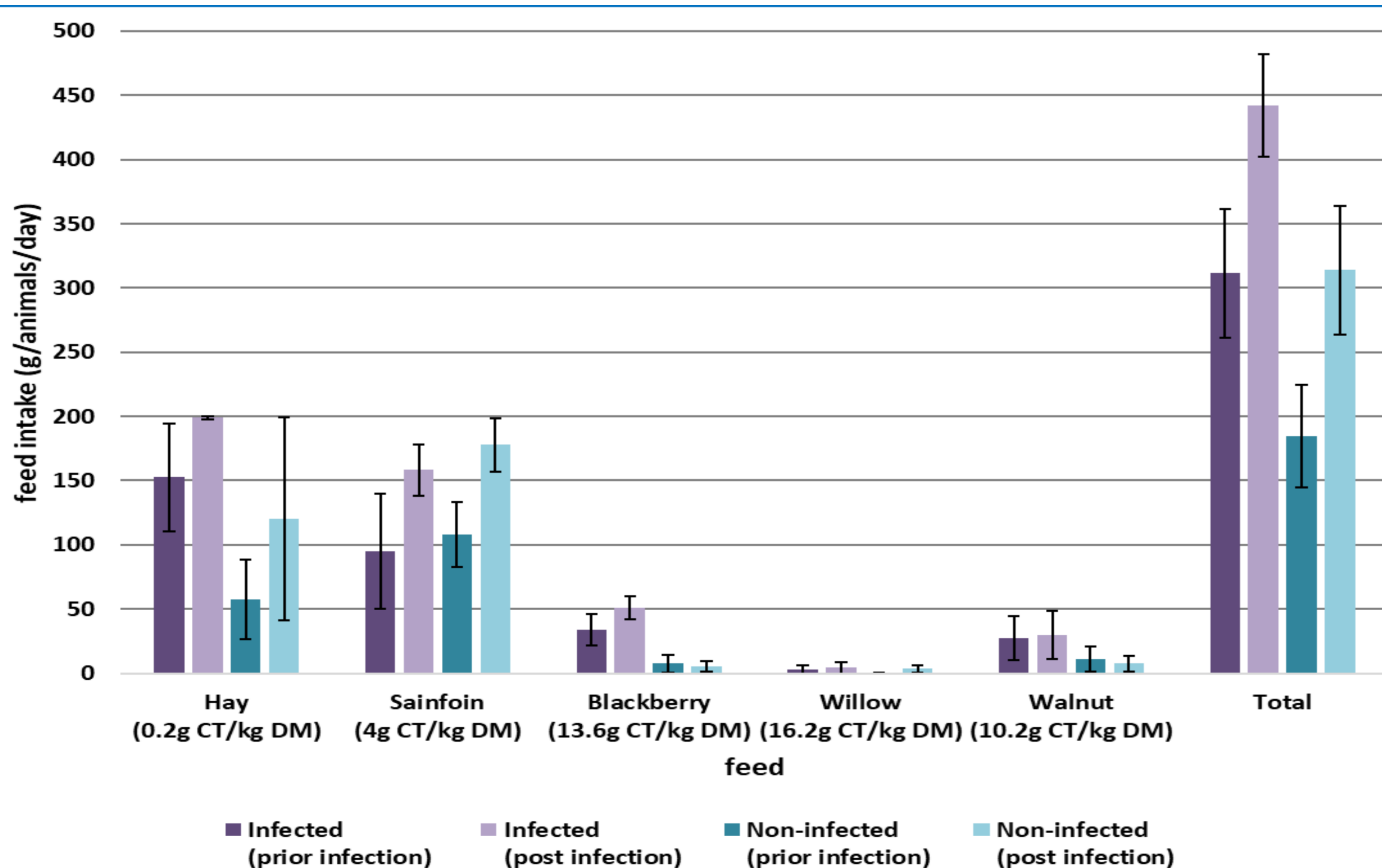


Figure 2: Average feed intake prior and past infection [g/animal/day] free choice cafeteria trial for 30 min

Results

- No significant difference between infected and non-infected animals regarding absolute increase of feed intake during the free choice cafeteria trial for 30 min (Fig.2)
- Animals of infected group W showed a significantly higher proportional increase of blackberry pellet intake of 14 % after infection (Fig.3)

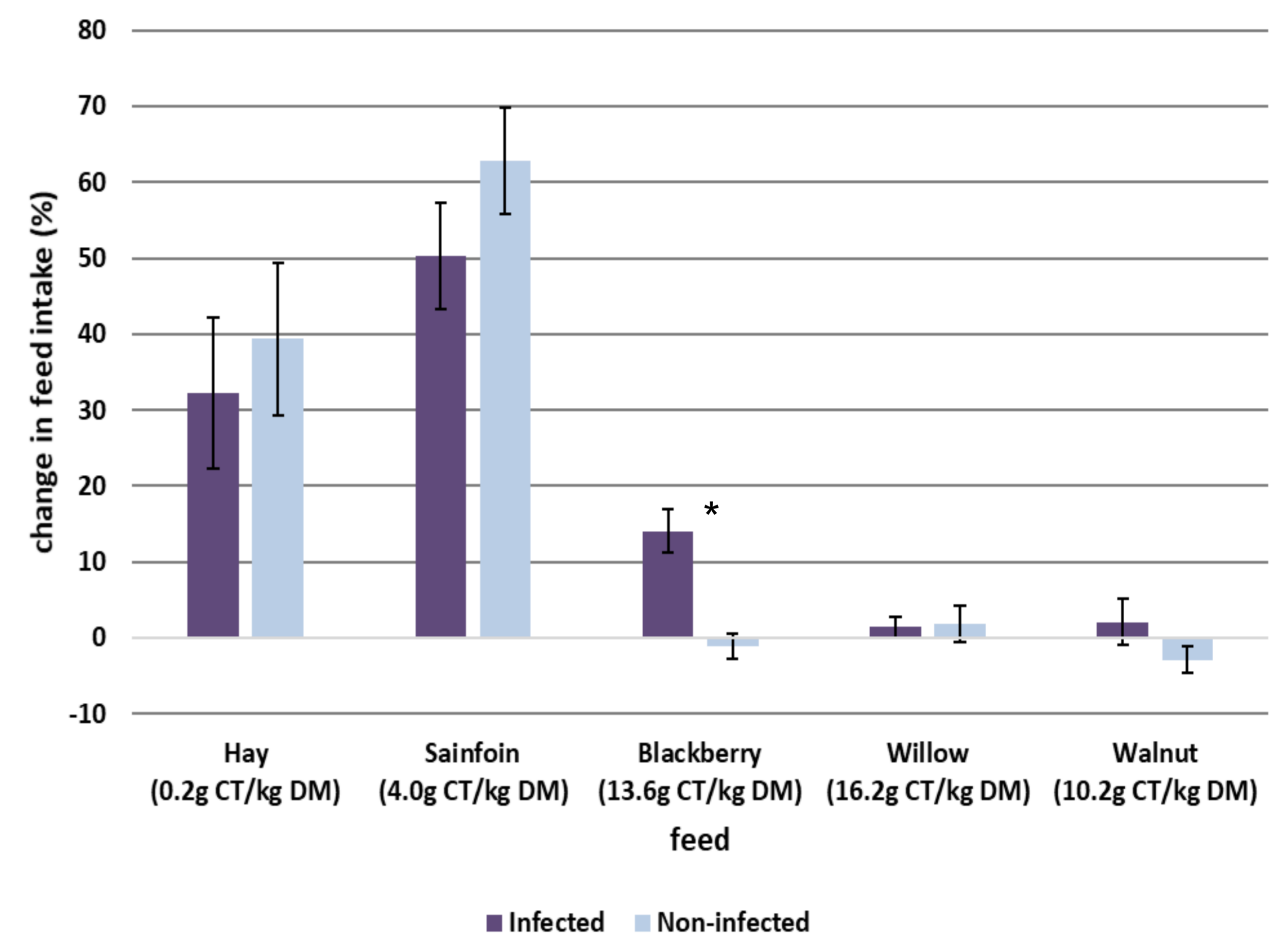


Figure 3: Proportional change (%) of intake of test feed after infection (* correlation is significant at the 0.05 level)

Conclusion

- Infected goats showed clear evidence of a shift in preference for tannin-rich blackberry pellets in a choice trial
- Willow pellets with the highest CT-concentration might be rejected due to contained salicin content (→ salicylic acid)
- Infection with GIN larvae does not result in a significant increase of ingested test feed compared with non-infected animals to compensate detrimental effects of parasite burden

Outlook

- The proven shift in preferences for tanniferous blackberry pellets might be an evidence for a self-medicative behavior
- Further analyses of blood parameter, feces and the gastrointestinal tract will indicate to what extent the ingested condensed tannins reduced the parasite burden
- Examination of saliva of the infected and non-infected animals could help to explain the shift in preferences due to possible changes in saliva composition

