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In vitro and in field evaluation of the efficacy of bioactive fodder and products containing condensed tannins on gastrointestinal nematodes of goats

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Introduction In recent years, the use of alternative control methods against gastrointestinal nematodes (GINs) in dairy goat breeding, such as the integration of the diet with bioactive fodder containing condensed tannins (CT), is becoming increasingly important [1].

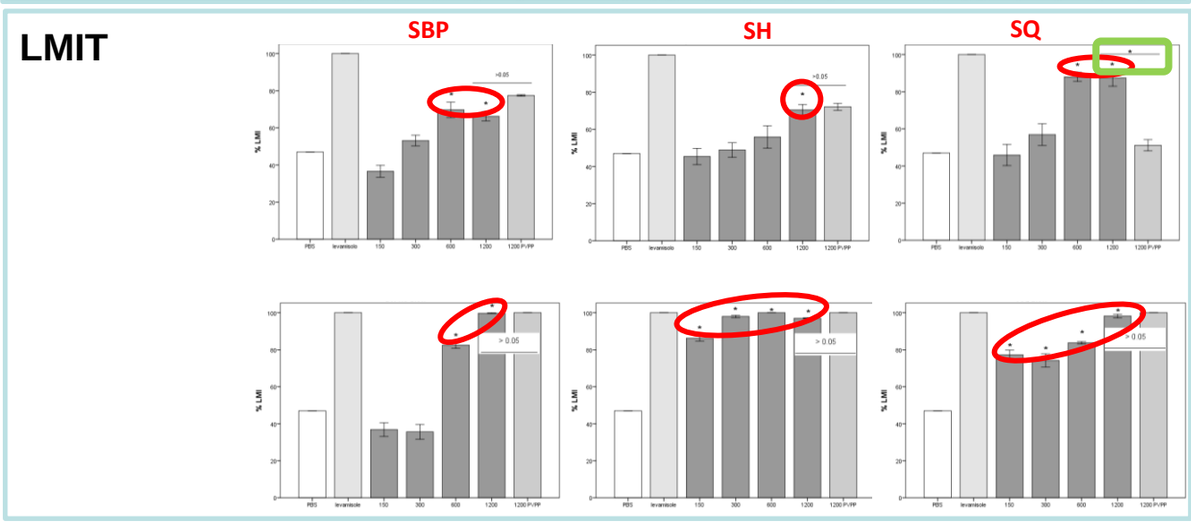
AIM Evaluation of the *in vitro* and *in field* anthelmintic efficacy of CT contained in commercial products (Silvafeed®ByPro, SBP and Silvafeed®Quebracho, SQ) and in sainfoin hay (SH).

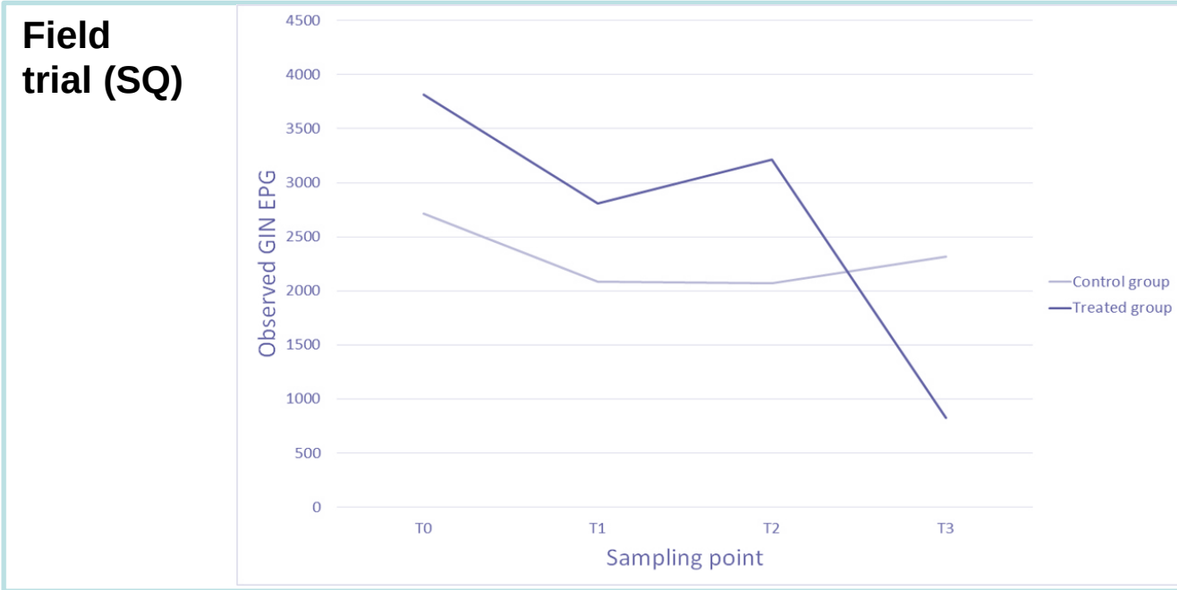
Material and Methods

- ✓ **CT extraction**: i) acetone/water ➔solely CT; ii) ethanol ➔ CT & other compounds (e.g., flavonoids) & **determination of CT concentration**: acetone-HCl-butanol method [2];
- ✓ **Eggs Hatch Essay** (EHA) and **Larval Migration Inhibition Test** (LMIT) [3];
- ✓ **Statistical analysis**: one-way analysis of variance (ANOVA)
- ✓ three-weeks **in field trials**, integrating the diet of goats from three dairy farms with SBP, SQ, and SH supplemented with SQ, respectively. Weekly collection of individual fecal samples, analyzed with FLOTAC technique for the fecal-egg-count-reduction-test (FECRT) [4].

Results and Discussion

- ✓ **EHA**: SBP-water-extract was effective at higher concentration than SQ and SH
- ✓ **LMIT**: SBP- and SQ-water-extracts showed effect at lower concentration than SH. For both tests, ethanol-extracts showed anthelmintic effect at lower concentration than the water-extracts. Data on PVPP indicated that only for SQ-water-extract the inhibiting effect on the migration of the L3 was entirely attributable to CT.
- ✓ **field trials**: only the SQ-treated-group showed a statistically significant difference compared to SQ-control-group at the end of the trial (mean FECR: 77.4%).





The integration of CT-rich fodder into the diet may be considered for the control of GIN in goats. Further research perspectives include the CT characterization, and longer in field tests with the administration of supplements in the feed.

[1] Hervé et al., 2010. Trends Parasitol 26:376–381. [2] Grabber et al., 2013. J Agric Food Chem, 61:2669−2678. [3] Demeler et al., 2012. Parasitol Int 61(4):614-618). [4] Cringoli et al., 2010. Nat Protoc 5(3):503-15.

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