Characterization of the fecal microbiome of sheep after administration of *Tanacetum vulgare L.* extract.

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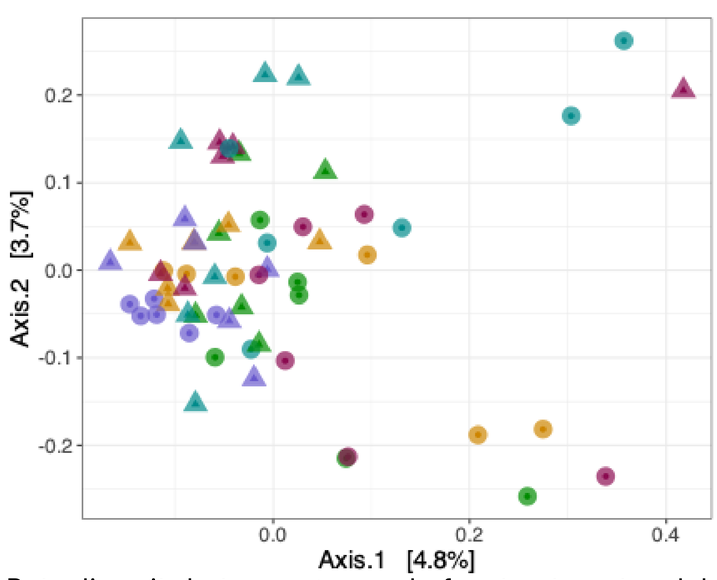
Introduction: *Tanacetum vulgare* extract has shown some antiparasitic effects, but its potential effects on the gastrointestinal microbiome (GIM) need further clarification.

Aims: To determine the effect of *Tanacetum vulgare* extract on the sheep GIM.

From Tansy plant to Tansy extract and its incorporation in intraruminal bolus

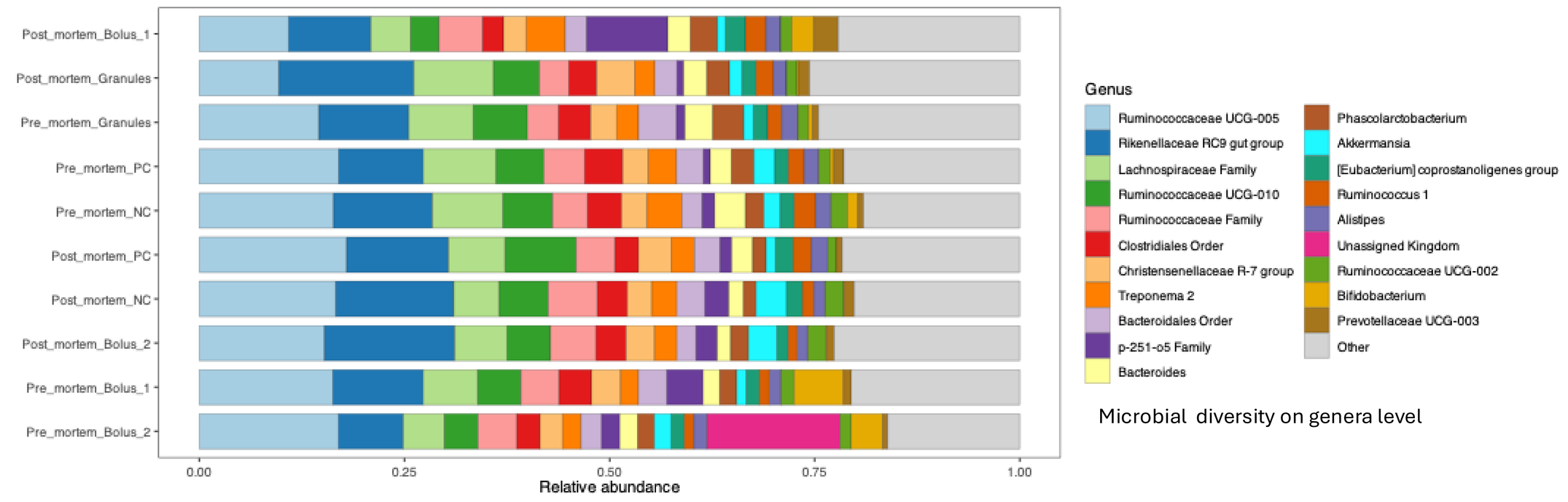
Materials and Methods: Thirty Latvian Dark-Headed sheep (4-5 months old) were randomly assigned to groups A to E in a controlled experiment. On day 0, groups A and B received 3D-printed intraruminal boluses of tansy extract in different concentrations, group C received tansy granules for 40 days. Group D served as a negative control, group E as a positive control treated with levamisole (5 mg/kg). Fecal samples were collected before treatment and on day 56, then frozen and sent for DNA isolation, microbiome profiling by targeting bacterial 16S rDNA using next-generation sequencing (NGS).

Example from sheep groups during study



Beta diversity between groups, before treatment and day 56 after it

Results: The ten most frequently detected genera were *Ruminococcaceae* UCG-005, *Rikenellaceae* RC9 gut group, *Lachnospiraceae* Family, *Ruminococcaceae* UCG-010, *Ruminococcaceae* Family, *Clostridiales* Order, *Christensenellaceae* R-7 group, *Treponema* 2, *Bacteroidales* Order, p-251-o5 Family, *Bacteroides*. There were no difference between the groups in the beta diversity score before the study, ($p<0,05$). At the end of the study, differences were observed between groups C and A ($p=0.015$), E and A, B, C, D ($p=0.001$). Differences before and at the end of the study were observed for group A ($p=0.011$) and E ($p=0.004$).



Microbial diversity on genera level

Conclusion: The GIM is modulated using tannin-containing preparations. Further studies using larger numbers of animals should be conducted.

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