



Effects of different purified condensed tannins from tropical shrub legume species on ruminal fermentation *in vitro*

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Background

- Many tropical shrub legumes contain condensed tannins.
- Condensed tannins may vary in their chemical characteristics depending on species, accession and cultivation site.
- Different condensed tannins may affect ruminal fermentation in contrasting ways.
- This experiment was conducted to assess the effect of extracted condensed tannins from three widely used shrub legume species on ruminal fermentation *in vitro*.

Materials and Methods

Experimental treatments

- Basal substrate: mixture of a tropical grass (*Brachiaria humidicola*) and a tropical herbaceous non-tanniferous legume (*Vigna unguiculata*; 2:1 on dry matter [DM] basis).
- Incubated alone or with the addition of purified tannins.
- Tannin levels: 25, 50, 75 and 100 mg/g dry matter.

Tannins

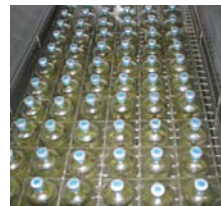
- Tannins were extracted from: *Leucaena leucocephala* 734, *Flemingia macrophylla* 17403, *Calliandra calothyrsus* 22310 and *C. calothyrsus* 22316.
- Extraction was performed with an aqueous solution of acetone (700 ml/l), formic acid (5 ml/l) and ascorbic acid (5 g/l).
- Tannins were purified on a Sephadex LH-20 gel column.

In vitro technique

- Gas transducer technique.
- Triplicate samples of test mixtures incubated for 144 h.
- Solid fermentation residues analysed for DM and crude protein (CP) content and fermentation fluid for total volatile fatty acids.

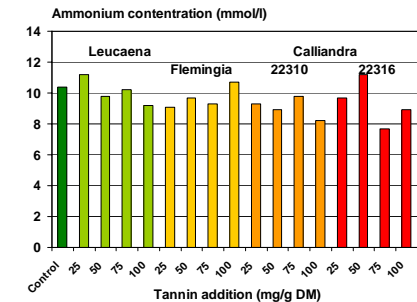
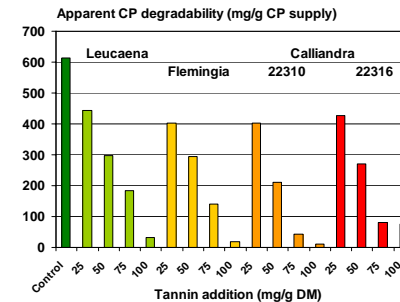
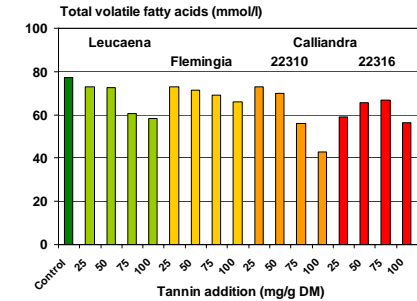
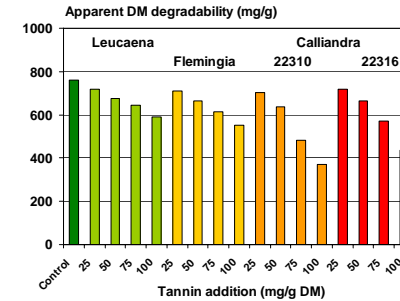


Tannins were extracted from leaves of different tropical shrub legumes.



In vitro assessment of ruminal fermentation using the gas transducer technique.

Results



Conclusions

- There exist differences in the effects of condensed tannins from different legume species on ruminal fermentation.
- Tannins from *Leucaena* and *Flemingia* were less effective in decreasing ruminal nutrient degradation than both *Calliandra* accessions.
- Condensed tannins of the two accessions of *Calliandra* differed in their effects, indicating that there exist within-species variation.

A joint project with:

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