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Goats' browse preference in relation to chemical composition and tannin content of Ethiopian browse

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Introduction

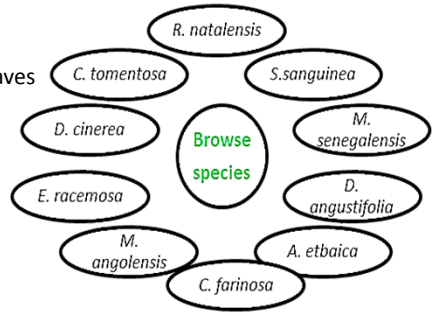
- Browse refers to trees and shrubs used as forage
- Native browse in arid & semi-arid regions contribute significantly to diets of ruminants e.g. goats
- Browse are rich in condensed tannins (CT)
- Beneficial or adverse effects of tannins exist depending on e.g. source
- Goats employ criteria to discriminate among browse species
- Association of goats' criteria with tannin and chemical composition may give better understanding of browse forage value

Objectives

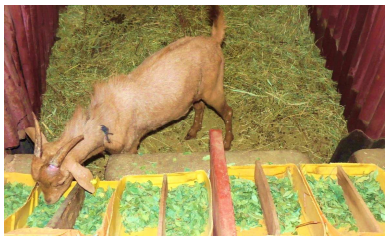
- Determine browse preference as a measure of dry matter intake (DMI)
- Compare preference when polyethylene glycol (PEG, a tannin binding agent) was included to neutralize tannin effect
- Evaluate association between browse chemical composition and tannin content with intake/preference

Methods

- Air dried browse leaves



- Cafeteria trial where the 10 browse offered at a time
- Browse sequence changed daily



Goats	Period	Dietary treatment: Grass hay	Wheat bran	Browse (30min/d)	Polyethylene glycol (PEG)
4	1	3%BW	200g	25g each	-
4	2				+

- Measurements
  Browse DMI as a measure of preference
  CT & chemical composition analysis with NIRS

Conclusion

- Goats exhibit variable degree of browse preference
- PEG resulted in increased browse intake, though browse order remain similar
- Goats with browsing experience have a preference for lower fiber browse, apparently associated with lower crude protein and high tannins

Results

Table 1 Chemical composition and condensed tannin concentration of browse

Browse spp.	DM	OM	CP	NDF	ADF	ADL	CT (ABS_{550}/g fiber)
	g/kg						
A.etbaica	919	931	117	344	264	129	30
C.farinosa	909	877	242	281	144	69	-
C.tomentosa	923	891	238	293	205	112	18
D.angustifolia	922	947	117	323	235	89	11
D.cinerea	908	928	160	471	334	159	15
E.racemosa	909	947	76	551	617	269	26
M.angolensis	910	860	270	176	117	34	2
M.senegalensis	892	929	92	478	524	240	32
R.natalensis	913	924	124	493	332	147	23
S.singueana	923	928	152	320	251	76	22

Figure. Goats' browse intake (DM) in the presence and absence of PEG

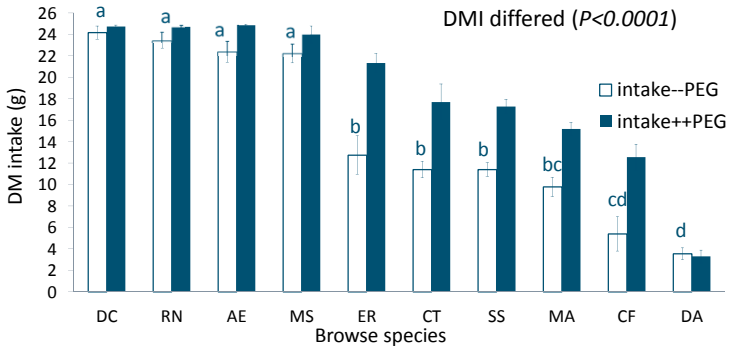


Table 2 Pearson correlation coefficients between browse composition and DMI with/without PEG

Browse composition	Intake-PEG r^2	Intake+PEG r^2	*P-value*
CP	-0.39	-0.36	<0.0001
NDF	-0.30	-0.16	<0.0001
ADF	-0.36	-0.28	<0.0001
CT	0.45	0.44	<0.0001

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