

**CHEMICAL AND TANNIN COMPOSITION OF BROWSABLE SPECIES USED AS
RUMINANT FEED SUPPLEMENTS IN THE VHEMBE DISTRICT OF SOUTH
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BY

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ABSTRACT

The chemical and tannin composition of *Acacia nilotica*, *Dichrostachy cinerea* and *Ziziphus mucronata* from high, medium and low rainfall areas were studied. Dry matter and ash, crude protein content, natural detergent fibre and acid detergent fibre were determined. The macro elements were then determined by flame or hydride generation technique and micro using Metrohm Ion Chromatography. The condensed tannins were determined using n-butanol-HCL colorimetric method. The data were analyzed by analysis of variance for a 3 x 3 factorial in a completely randomised design using the General Linear Model (GLM) procedure of SPSS version 19. Averaged overall zones, *D. cinerea* had a higher ash content than the other two species. *Z. mucronata* had the highest CP content followed by *D. cinerea* and *A. nilotica*. *D. cinerea* had the highest NDF level followed by *A. nilotica* and then by *Z. mucronata*. Trees that grew in the medium rainfall zone had the highest CP level (153 g/kg DM) followed by those that grew in the low rainfall zone whilst those that grew in the high rainfall zone had the lowest CP content (101 g/kg DM). *A. nilotica* and *D. cinerea* did not differ in ADF and phosphorus but had higher levels than *Z. mucronata* ($P < 0.01$). *A. nilotica* had a high chlorine content (130 g/kg DM) than the other tree ($P < 0.01$). In addition the high and low rainfall trees had a high fluorine levels than the medium rainfall trees. *Z. mucronata* trees that grew in low rainfall areas had the highest total tannin content of 382 g/kg Mimosa tannin equivalent. The findings of this study showed that the three forage legumes species are high in condensed tannins but they are of good nutritive value and have potential for integration into ruminant livestock production in Limpopo Province of South Africa.

Keywords: Crude protein, Anti-nutritional, Minerals, Forage legumes, Agro-ecological