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Condensed tannins reduce browsing and increase grazing time of free-ranging goats in semi-arid savannas

Ntuthuko R. Mkhizea,[b,*] Ignas M.A. Heitkönig[a] Peter F. Scogings[c] Luthando E. Dziba[d] Herbert H.T. Prinsa,[c] Willem F. de Boer[a]

[a] Resource Ecology Group, Wageningen University, Droevendaalsesteeg 3a, 6708 PB Wageningen, The Netherlands
[b] Agricultural Research Council, Animal Production Institute, P/Bag X02, Irene 0062, South Africa
[c] School of Life Sciences, University of Kwazulu-Natal, Westville Campus, Private Bag X54001, Durban 4000, South Africa
[d] Council for Scientific and Industrial Research, Natural Resources and the Environment, PO Box 395, Pretoria 0001, South Africa

Abstract

Tannin concentrations fluctuate spatially and temporally within and among plant species, with con-sequences for forage quality of herbivores. The extent to which these fluctuations influence foraging activities of goats is not fully understood. While accounting for the effects of the time of the day and season, we tested the hypothesis that goats exposed to high levels of condensed tannins (i) spend less of their foraging time browsing, (ii) spend more time grazing, and (iii) reduce their total foraging time, especially during the dry season when grasses dry out and deciduous trees lose leaves. We orally dosed 15 goats with (i) 20g of condensed tannins extract dissolved in 50 ml of water (high tannin exposure), another 15 goats (ii) with 20g of polyethylene glycol dissolved in 50 ml of water, which neutralizes the effects of tannins (low tannin exposure), and the last group of 15 goats (iii) with 50 ml of water (control). We recorded the time spent on grazing, browsing and these two activities together (i.e., foraging)for 30 days in the dry and wet season. As expected, dosing goats with condensed tannins reduced their browsing time and increased the time spent grazing. Goats dosed with polyethylene glycol increased their browsing time and lowered their time spent grazing. Animals dosed with polyethylene glycol for-aged for longer than other treatment groups in the dry season, whereas the goats dosed with condensed tannins increased their foraging time in the wet season. Overall, all treatment groups spent a similar amount of time foraging, indicating an instinctive drive by goats to maintain high total foraging time while avoiding over ingestion of tannin-rich forages. We concluded that tannins do not suppress total foraging time for free-ranging goats. Instead, they increase the amount of time animals spend on grazing on herbaceous plants and decrease the amount of time animals spend browsing on woody plants .Comparing time spent on different foraging activities by goats is a first step towards understanding how goats utilize feed resources and how tannins influence resource utilization patterns.