Intake and digestibility of four rations with different fibre levels in alpacas (*Vicugna pacos*)

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Abstract

In Peru there are about 4.500.000 camelids, which are raised in an extensive system, where the diet is based on the intake of highly fibrous natural grasses. The aim of this study was to evaluate the effect of different dietary fibre levels on intake and apparent nutrient digestibility of nutrients in alpacas, and to estimate the digestibility of organic matter (OMD) from the content of crude protein (CP) in faeces. The study was carried out with twelve alpacas (36.7 ± 6.4 kg body weight - BW), which were offered 4 treatments with different neutral detergent fiber content (NDF. T1: 40.3%; T2: 62.1%; T3: 67.8%; T4: 71.6%) under a switch back design. Dry matter intake (DMI) was higher for T1 ($612\,\mathrm{g\,d^{-1}}$) while T4 consumed less ($470\,\mathrm{g\,d^{-1}}$; $P \leq 0.05$), when correcting DMI for BW and metabolic weight (MW) was equal between treatments ($P \geq 0.05$). The NDF intake was similar between treatments when related to BW or MW (on average 1% BW and $23.2\,\mathrm{g\,kg^{-1}}$ BW$^{0.75}$; $P \geq 0.05$). Water intake (L day^{-1}) was higher in T1 compared to the other treatments, with values ranging from $1.8\,\mathrm{L\,day^{-1}}$ (T1) to $1.4\,\mathrm{L\,day^{-1}}$ (T4), respectively ($P \leq 0.05$). Digestibility of dry matter, organic matter and crude protein was higher in T1 than in the other treatments, with average values ranging from 65% for T1 to 48% for T4 ($P \leq 0.05$). The NDF digestibility was similar among treatments ($P \geq 0.05$). The regression equation generated to predict OM digestibility (y) was as follows: y = 0.07635-(-0.33866*exp (-(-0.51457) $\times$ faecal CP (g kg^{-1} OM)/100)). Further studies will indicate whether faecal nitrogen can be used to estimate digestibility and hence diet quality in South American camelids.

Keywords: Digestibility, faecal nitrogen, nutrient intake, South American camelids

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