

Condensed tannins from Sainfoin (*Onobrychis viciifolia*): effects on *in vitro* ruminal parameters

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There is an increasing interest in using local legumes in ruminant feeding. Sainfoin (SF) is a perennial legume extensively used in the Mediterranean area, but it presents condensed tannins (CT). The aim of this study was evaluate the effect of CT from fresh SF using polyethylene glycol (PEG), as blocking agent of CT. For that, in spring 2019, SF was cut three times a week during 4 weeks (mid to late vegetative stage), and then a composite sample per week was obtained. An *in vitro* assay to study the fermentation was carried out with an Ankom system during 72 h. Samples were incubated with buffered solution:rumen fluid (2:1 v/v). To make the SF+PEG samples, PEG-4000 was added to the buffered rumen fluid at a concentration of 2.3 g/l. Samples were incubated in triplicate and three runs were conducted. The interaction of the presence of CT and the week was not significant in any parameter studied, therefore, results are presented separately by each factor. The presence of CT decreased the potential gas production (87 vs 92 ml), the rate of gas production (0.14 vs 0.16 h⁻¹) and the methane production (62.7 vs 65.1 ml/g dry matter (DM)) (P<0.05) but did not affect *in vitro* dry matter digestibility (IVDMD). The total volatile fatty acid (VFA) production was unaffected (P>0.05) but the individual VFA proportions varied with the presence of CT (P<0.05), which increased the proportion of acetic (64.4 vs 63.1%) and decreased the proportions of propionic (16.3 vs 16.6%), butyric (11.6 vs 12.2%) and valeric acid (1.9 vs 2.1%). In addition, the presence of CT decreased the content of ammonia (393 vs 450 mg/l; P<0.01), confirmed the inhibition elicited by CT from SF in the ruminal degradation of dietary proteins. Regarding the effect of the week, methane production varied among weeks without a clear pattern, with values between 61.6 vs 66.1 ml/g DM, in week 2 and 4 (P<0.05) while the IVDMD decreased linearly (87, 84, 80 and 77% for week 1, 2, 3 and 4, respectively; P<0.001), as the maturity of SF advanced. The use of sainfoin in ruminant diets is recommend as their CT can reduce the potential gas production, methane emissions and ammonia content with similar IVDMD.