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Abstract title: **The use of computer tomography to estimate reticulo-rumen content in Alpine goats**

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Preferred presentation: Poster

Preferred session: 05: Fitting PLF to species and animal size, possibilities for sheep, goats, poultry, horses, pigs and

Abstract text:

Estimation of reticulo-rumen content (volume and mass) is required in ruminant nutrition to determine effects of diet and environment on gut filling, nutrient turnover and to model digestive processes. Reticulo-rumen content is commonly measured via a rumen cannula. Animal scientists continuously seek to refine experimental procedures by developing less invasive techniques. The objective was to compare reticulo-rumen volume assessed by computer tomography (CT) with *post mortem* measurement of reticulo-rumen content mass in dairy goats. Twenty Alpine dairy goats (3 ± 0.6 years old; 226 ± 9 DIM) with body weight ranging from 47 to 72 kg were used. Goats were housed in a free-stall barn, had free access to hay and water, and were offered 0.75 kg/d of concentrate. Goats were anesthetized and placed in an inflatable mattress before duo CT scan (Siemens, Erlange, Germany) was performed. Between 400 to 500 images were generated per goat and analyzed semi-automatically (www.turtleseg.org). The volume of reticulo-rumen and omasum were determined separately. Each goat was slaughtered within 15 min after CT, the reticulo-rumen and omasum were weighed full and after removing the digesta, and content weights were obtained by difference. The SAS GLM procedure was used to test simple regressions between organ volume obtained with CT and digesta mass measured post mortem. Volume of reticulo-rumen and omasum determined by CT were good estimators of digesta mass measured *post mortem* [R^2 = 0.72 and 0.73, residual standard deviation (rSD) = 1.18 and 0.10 kg and residual coefficient of variation (rCV) = 11 and 22%, respectively, n = 20]. The regression was improved for omasum content when one individual with an extremely low digesta mass (22 g) was excluded (R^2 = 0.87, rSD = 0.06 kg, rCV = 12%, n = 19). The use of CT may constitute a promising non-invasive method to estimate volume and mass of reticulo-rumem digestive content in small ruminants. Further research is warranted to test the ability of this technique to discriminate dietary treatments that induce differential rumen fill.