

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## EFFECTS OF EXOGENOUS AMYLASE ON RUMINAL DIGESTION KINETICS OF CORN AND SORGHUM GRAIN

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Our aim was to evaluate the effect of exogenous amylase on *in vitro* ruminal digestion kinetics and dry matter digestibility of sorghum and two corn hybrids of different grain vitreousness. Dent (AG1051 with 884.3 of dry matter (DM); 105.4 of crude protein (CP); 649 starch; 591 of vitreousness g.kg<sup>-1</sup> in DM basis) and flint corn grains (1N1932 with 887.4 of DM; 103.7 of CP; 623 of starch and 739 g.kg<sup>-1</sup> of vitreousness g.kg<sup>-1</sup> in DM basis) and a sorghum grain (BRS332- 889.1 of DM; 132.5 of CP; 671 g.kg<sup>-1</sup> of starch g.kg<sup>-1</sup> in DM basis) were evaluated (bath culture, 48 hours of incubation). Ruminal fluid was collected from two rumen-fistulated non-lactating adult cows fed diets composed of 53:47 forage:concentrate ratio (180 g.kg<sup>-1</sup> CP and 300 g.kg<sup>-1</sup> neutral detergent fiber (NDF), and mineral premix containing the treatments: control or additive diet with 0.7 g.kg<sup>-1</sup> of DM of exogenous amylase (RONOZYME® RUMISTAR™ - DSM Produtos Nutricionais Brasil SA, São Paulo, SP, Brazil). Animals were pre-adapted to diets for 14 days before the incubation started. The data of *in vitro* dry matter digestibility (IVDMD) were adjusted using the Marquardt algorithm. Digestion parameters were obtained by unicompartimental logistic model. Statistical significance was considered when P<.05. Cumulative gas production increased with addition of exogenous amylase (P = .01) to all grains evaluated, and the response was greater in AG1051 (237.9 vs. 213.3 mL) than in 1N1932 (230.7 vs. 222.1 mL) and sorghum grain (217.2 vs. 214.9 mL). Amylase did not increase IVDMD (g.kg<sup>-1</sup>) (P = .31), but, corn grains presented higher IVDMD than sorghum grain (508.3; 616.0 and 624.0 g.kg<sup>-1</sup> to BRS332, AG1051 and 1N1932, respectively). Lag time did not change by exogenous amylase or hybrid (P>.50). Exogenous amylase increased (P<.01) the maximum gas production potential to hybrid AG1051 (226.3 vs. 281.2 mL) and 1N1932 (232.3 vs. 257.5 mL) related to control diet. Although exogenous amylase did not increase IVDMD it improved fermentation kinetics of corn and sorghum grains with an increase on *in vitro* gas production.

**Keywords:** digestibility, enzyme, gas production, incubation, ruminal fluid

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