

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

LIGNIN CONTENT IN *Brachiaria* spp. MEASURED THROUGH ADL, ABL OR NIRS

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Forage lignification is considered the main limiting factor of cell wall degradation by ruminal microorganisms, which decreases its nutritive value. Therefore, knowing lignin content is essential. However, there is no ideal method to quantify this substance. It has been reported partial solubility of lignin content during the acid detergent fiber process, particularly in grasses, so acid detergent lignin (ADL) method may underestimate lignin content. Acetyl bromide lignin (ABL) method has been receiving attention from researchers. Furthermore, Near Infrared Spectroscopy (NIRS) is increasingly sought for nutrient quantification in feedstuffs, because it is practical and leaves no chemical residues. This study aimed to compare two chemical methods of lignin quantification, develop models of multivariate calibration procedures (partial least squares - PLS) for NIRS procedure, and correlate them with *in vitro* neutral detergent fiber digestibility (IVNDFD) assays, in *Brachiaria* spp. samples. One hundred sixty-nine samples from several units of Embrapa throughout Brazil were used, under different stages of maturity and environmental conditions. It was performed ADL, ABL (this one testing two different fiber preparations: cell wall – CW, or NDF) and IVNDFD. Samples were also assessed by NIRS (ninety-nine for calibration, fifty for internal validation, and twenty for external validation). Correlations, simple regressions and Tukey tests were performed through SAS 9.4 and significance was declared at $P \leq 0.05$. Acid detergent lignin contents were lower than ABL (g kg^{-1} dry matter). There was high correlation between ABL_{CW} and ABL_{NDF} . When compared with traditional methods, NIRS showed high correlations with ABL but low with ADL. Results of ADL, ADL_{NIRS} , ABL_{CW} , $ABL_{CW-NIRS}$, ABL_{NDF} , $ABL_{NDF-NIRS}$ were negatively correlated with IVNDFD, but the first and the second had lower correlation coefficients. Near Infrared Spectroscopy demonstrated to be an efficient tool for lignin quantification in *Brachiaria* grass. Also, ABL_{CW} , $ABL_{CW-NIRS}$, ABL_{NDF} , $ABL_{NDF-NIRS}$ were better methods to quantify lignin in *Brachiaria* spp. compared to ADL, ADL_{NIRS} , with higher Pearson correlation and determination coefficients, confronted with IVNDFD.

Keywords: acetyl bromide lignin, acid detergent lignin, grass, *in vitro* neutral detergent fiber digestibility, Near Infrared Spectroscopy

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