

Concentrations of β -glucans and mannan-oligosaccharides in corn dried distillers grains with solubles (DDGS) and its relationship to fiber components

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Typically, β -glucans (BG) and mannan oligosaccharides (MOS) can be found in the bran of cereal grains, yeast cell walls, plant cellulose, and in many types of fungi and bacteria. Furthermore, both BG and MOS are known to exhibit beneficial health properties. The objective of this study was to determine the concentrations of BG and MOS in corn dried distillers grains with solubles (DDGS) containing varying levels of ADF and NDF, and to determine if any correlation between fiber content and BG content existed. Thirty-four samples of DDGS from various dry-grind ethanol plants in the Midwest were selected based on their varying concentrations of ADF and NDF. Both ADF and NDF concentrations were previously determined using wet chemistry procedures from commercial laboratories. Samples of DDGS contained between 7.21% to 17.27% ADF, while NDF content ranged from 20.13% to 32.94%. Average concentration of ADF and NDF was 10.68% and 25.35%, respectively. Samples were prepared in duplicates, and enzymatic kits (K-YBGL 04/2008 and K-MANGL 01/05) from Megazyme (Megazyme International Ireland Limited, Bray, Ireland) were used to determine BG and MOS content. Data were analyzed utilizing the Univariate and Corr procedures of SAS. The content of BG ranged from 5.51g/100 g to 10.09 g/100g. Average BG content in DDGS samples was 7.61 g/100g. Concentration of BG and ADF were positively correlated ($P < 0.006$) with a Pearson Correlation Coefficient of 0.46. Conversely, NDF and BG were not correlated ($P > 0.5$). Unfortunately, MOS concentrations were below detectable levels. Overall, these results indicate that BG concentration in DDGS is positively correlated to the ADF fraction. Furthermore, the level of BG in DDGS is variable and relatively low compared to other feed ingredients (such as oats or barley).

Keywords: dried distillers grains with solubles, β -glucans, mannan oligosaccharides, ADF, NDF