The Binding of Dietary Protein by Sorghum Tannins in the Digestive Tract of Pigs

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Date: 1984

Abstract

The effects of reconstitution of sorghums on dry matter, energy, protein and amino acid digestibility's, and the nature of protein binding by sorghum tannins during digestion were investigated. Grains from a high and a low tannin sorghum were reconstituted by adding 30% (wt/wt) distilled water to the grain and stored at 25 Â°Cfor 20 days with an acetic-propionic acid mixture added to deter fungal growth. Another lot of grain from the same sources was untreated and used as control. The sorghum grains were then incorporated at an 85% level in diets for a digestibility trial with pigs annulated at the terminal ileum. The digestibilities of dry matter, protein and amino acids at the terminal ileum were lower than the corresponding values mea sured over the total digestive tract. Reconstitution improved the digestibility of dry matter, energy, protein and amino acids in the high but not low tannin sorghum diets. The improvement in digestibility of individual amino acids ranged from 7.5 to 23.5%. The tannin-associated proteins were more hydrophobic than the dietary protein. The results suggest that hydrophobic bonding is important in the formation of tannin-protein complexes in the digestive tract of pigs.