

The Effect of Hay Steaming on Forage Quality and Intake by Horses

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Heaves is a common equine disease and current management strategies to reduce mold inhalation include soaking or wetting hay prior to feeding. In Europe, hay steaming is commonly used to treat forage prior to feeding horses diagnosed with heaves. Although hay steaming is gaining popularity in the U.S., little is known about its impact on forage quality or palatability. Therefore, the objectives of this study were to determine the effect of steaming on forage quality and horse intake. Two alfalfa-orchardgrass hays were tested: a moderately moldy hay (MM) and a lower mold hay (LM). While nutrient composition was similar, the mold content differed (MM: 373,000 cfu/g; LM: 120,500 cfu/g; $P=0.0003$). Six mature horses were used in a 10 day cross-over design. Three horses were assigned to each hay type, and treatments were switched on day 6. Each day, one bale of each hay was steamed for 90 minutes using a commercial hay steamer. Two flakes of steamed and two flakes of unsteamed hay (MM or LM) were weighed and offered simultaneously to each horse in individual hay nets. Hay nets were located on opposite walls of the stall, and location of the steamed and unsteamed hay was switched daily. The amount of hay offered was in excess of *ad libitum* intake. Horses were allowed access to hay for 2 hours starting at 15:00 hour, then orts were collected and DMI calculated. For each hay, paired t-tests were used to compare steamed and unsteamed hay nutrient content and DMI. Prior to steaming, the DM of both hays was similar (90%); steaming significantly reduced DM to 81 and 77% for MM and LM, respectively. In both MM and LM, steaming reduced phosphorous content ($P \leq 0.007$). Steaming reduced water soluble carbohydrates by 13% ($P = 0.001$) and ethanol soluble carbohydrates by 27% ($P = 0.003$) for MM, but had no effect on LM ($P > 0.05$). Similarly, steaming reduced mold levels in MM by 85% ($P = 0.009$), but did not have a significant affect in LM hay ($P > 0.05$). No other forage quality components were affected by steaming. DMI of MM was not affected by steaming ($P > 0.05$); intake averaged 1.34 kg of unsteamed and 1.21 kg of steamed hay. Intake of LM was affected by steaming; horses ingested 0.64 kg of unsteamed and 2.02 kg of steamed hay ($P < 0.0001$). In moderately moldy hay, steaming reduced mold levels, but did not improve intake. However, for hay with low mold levels, steaming appeared to increase the palatability of the hay, while exerting no effects on forage quality.