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Visual Scoring of Ruminant Body Condition: Trapped in Inaccuracy

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Abstract

This perspective article raises a global concern on accuracy of body condition scoring (BCS) of ruminants based on visual observations of external fat depts. Recent evidence suggests that low body condition score in a visually and apparently thin animal does not accurately indicated that the animal is truly thin. Visually think looking ruminants may have considerable amount of visceral or abdominal adipose tissues that significantly contribute to hepatic import of fats and unhealthy substrates. Body condition score as a visual indicator of external and subcutaneous ruminant adiposity cannot be relied on accurately to be utilized in effective metabolic management of high-producing dairy and beef ruminants.

Keywords: Body condition score; External fat; Visceral adipose tissue; Ruminant, Management

Pragmatic Philosophy and Innovative Discussion

Body condition scoring systems give fatness score to animals based on visual examination of fat depots in different body regions. The scale could be 1 to 5 or 1 to 10 depending on management criteria and animal type and breed. For instance, in a 5-score scale, BCS of 1 represents an overly thin or emaciated animal, and BCS of 5 describes an extremely fat or obese animal [1,2]. Apart from the fact that visual observations are prone to dramatic bias and inaccuracy depending on the perspective of different scorers, BCS does take into account only and merely the external fat and muscle tissues. Visual examination does in no circumstances take visceral or abdominal fats into consideration [3-6].

Recent studies provide compelling evidence that dairy cows with low and medium BCS may still have substantive amount of internal fats around splanchnic tissues [5,6]. This discovery suggests that cows that look normal as far as BCS is concerned (e.g., BCS of 3.5 for dry cows), could still carry a great quantity of adipose tissue in visceral sections that rapidly start to be mobilized towards liver upon parturition. Such a visceral adiposity and obesity categorizes an apparently normal dairy cow a serious case predisposed to complex disorders. The postpartum release of visceral depots introduces serious challenges to hepatic function and health [5-10]. Visceral fat stores are known to have substances that act as an alarm and induce metabolic shocks to liver and the entire animal [8]. Different adipokines and special proteins and peptides are interrelated with tissue necrosis and insulin resistance in non-ruminants [8-10]. Such inflammation messengers could lead metabolically challenged high-yielding ruminants to get trapped by different metabolic disorders such as fatty liver, ketosis, laminitis, metritis, mastitis, and weakened immunity [11].

Visceral fats are not visible in live herd animals on farm, and become evident and measurable only after slaughter. However, specific equations might be developed to predict visceral fat properties depending on several animal and management factors. Extensive large studies are required before such predictions can be developed accurately and reliably. Nevertheless, what is visible now is that visual inspection and scoring of ruminant metabolic state and body reserve condition is not an accurate indicator of the ruminant's real metabolic and health situation. Although this knowledge does not and should not undervalue the simplicity and in part practicality of BCS as a global assessment tool, complementary criteria are required to minimize major potential bias and error both locally and globally.

Implication

Based on the evidence-based philosophy elaborated on in this article, scoring of ruminant metabolic conditions based on only visual examination of external fat depots, as a practical management tool, could be neither accurate nor totally reliable. Complementary measures are needed to improve the accuracy of BCS as a pragmatic farm management implement.

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