Letter to the Editors

Recovery test results as a prerequisite for publication of gaseous exchange measurements

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In the last decade, various applications of gaseous exchange measurements have been developed for quantifying the production or consumption of particular gases. Notably, booming research into methane emissions has led to an expansion of the number of facilities in which such measurements can be performed. Recent research by Gardiner et al. (2015) has confirmed our concern that not all research groups comply with the same standards, and it is alarming to read full system recoveries of six facilities in the UK, to be varying between 59% and 115% (six facilities, 22 individual chambers measured). We are convinced that such unacceptable recoveries also occur elsewhere. From two courses on indirect calorimetry that we organised, directly following the ISEP conferences in Davis in 2013 (USA) and Krakow in 2016 (Poland) we learnt that recovery tests are not consistently performed around the world. The urge for performing such tests has also recently been emphasized by Hammond et al. (2016).

We are of the opinion that for all techniques aiming at quantification of gas exchange or production, either indirect calorimetry, methane emissions by chamber technique, ventilated hood or head box techniques, full system recovery tests of the relevant gas should be performed immediately before or following the measurements that are reported, and the results of these recovery tests for each chamber or unit are reported in the ‘Material and methods’ section of the manuscript. Currently, results of recovery tests are rarely reported. Procedures for recovery tests are fairly simple and can easily be found in references included below.

Also on behalf of:

Jan Dijkstra
Animal Nutrition Group, Wageningen University, Wageningen, The Netherlands

Chris Reynolds
School of Agriculture, Policy and Development, University of Reading, United Kingdom

Cornelia Metges/Björn Kuhla
Forschungsinstitut für die Biologie landwirtschaftlicher Nutztiere, Dummerstorf, Germany

Peter Lund/Martin Riis Weisbjerg
Department of Animal Science, Aarhus University, Tjele, Denmark

References


Reference books for Calorimetry, including detailed description of recovery tests