MEAT SCIENCE

AUTHOR INFORMATION PACK

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DESCRIPTION

Meat Science has been the leading journal in its field now for more than 40 years.

The qualities of **meat** – its **composition**, **nutritional value**, wholesomeness and **consumer** acceptability – are largely determined by the events and conditions encountered by the embryo, the live animal and the postmortem musculature. The control of these qualities, and their further enhancement, are thus dependent on a fuller understanding of the commodity at all stages of its existence – from the initial conception, growth and development of the organism to the time of slaughter and to the ultimate **processing**, preparation, distribution, cooking and consumption of its meat.

It is the purpose of *Meat Science* to provide an appropriate medium for the dissemination of interdisciplinary and international knowledge on all the factors which influence the **properties** of meat. The journal is predominantly concerned with the flesh of **mammals**; however, contributions on poultry will only be considered, if they demonstrate that they would increase the overall understanding of the relationship between the nature of muscle and the quality of the meat which muscles become *post mortem*. Papers on large birds (e.g. emus, ostriches) and wild capture mammals and crocodiles will be considered.

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AUDIENCE

Meat scientists, food technologists, food manufacturers, agricultural chemists and research workers.

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Her research is focused on the quality and sensory characteristics of meat and meat products. More specifically, she conducts research in aroma generation and stability in meat products including the development of new strategies and ingredients to enhance dry cured flavor. Currently, She is focused on the production of aromas from fermentation processes using alternative sources with potential use in meat analogues.
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Meat Science, Animal Science, Pre-slaughter handling, Venison, Reindeer

GUIDE FOR AUTHORS

INTRODUCTION

The qualities of meat - its composition, nutritional value, wholesomeness and consumer acceptability - are largely determined by the events and conditions encountered by the embryo, the live animal and the postmortem musculature. The control of these qualities, and their further enhancement, are thus dependent on a fuller understanding of the commodity at all stages of its existence – from the initial conception, growth and development of the organism to the time of slaughter and to the ultimate processing, preparation, distribution, cooking and consumption of its meat.

It is the purpose of *Meat Science* to provide an appropriate medium for the dissemination of interdisciplinary and international knowledge on all the factors which influence the properties of meat. The journal is predominantly concerned with the flesh of mammals; however, contributions on poultry meat may be published, especially if these have relevance to our overall understanding of the relationship between the nature of muscle and the quality of the meat which muscles become post mortem.

Types of paper

Research papers reporting original work; reviews by authorities on specific topics in the field of muscle/meat; short communications; reviews of books, conferences and meetings; letters to the editor arising from aspects of published papers. In general papers should not exceed 8000 words inclusive of tables and illustrations.

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Fatty acids- guidelines for fatty acid analyses and reporting can be found here: https://doi.org/10.1016/j.meatsci.2018.04.015

Statistical Analysis

Prior to conducting an experiment, due consideration needs to be given to the design of the experiment. This is so that after analysis of the data, some confidence can be given to the conclusions. For example if a study is designed to compare different breeds of cattle it is important that the animals selected are representative of the breed, not from a small number of sires and that individual animals sampled in the study can be linked back to their sire. If this condition isn't applied then the results may well reflect sire effects more than breed effects and the difference impossible to determine.

Another common problem in meat and food science is the lack of replication and also confounding. This is illustrated with two examples below taken from submitted papers:

Example 1
A total of thirty crossbred male lambs, single born in June were used in an experiment to compare three production systems (12 lambs allocated per system) and the subsequent effects not only on growth and carcase traits, but also meat quality traits. Lambs of the three production systems were weighed fortnightly. When a 35kg live weight target was achieved the lambs weighing >35kg were transported to an abattoir. Lambs were slaughtered after an overnight lairage without feed, but free access to water.

There are a number of issues with the design.

No mention was included in the paper as to whether the 36 lambs used in the study (a) were randomly selected from a population; or (b) were randomly assigned to the three treatment groups. It was assumed by the reviewer that they were randomly selected and assigned. The animals within each group were run together, but separately from the other two groups. Hence there is no replication of treatment group. Each lamb in a treatment group in the study is subjected to a specific production system and this may not be representative of other lambs grown under that specific treatment at a different establishment. Thus treatment group is not replicated which is necessary to assess the variability of a particular production system under different conditions. The other major issue with the design is that, at fortnightly intervals, lambs were weighed and lambs exceeding 35 kg were slaughtered. Hence not only were the treatment groups not replicated, they were also confounded with slaughter age/day and for meat quality traits like pH and colour it meant slaughter day effects could arise. With such small numbers per treatment group slaughter day could not be effectively accounted for in the analysis.

Example 2

Hams were produced with five decreasing levels of phosphate in combination with 5 increasing levels of thyme. All formulations were applied to a **single batch** of pig meat. Each formulation produced one mixture which was vacuum stuffed into plastic casings to produce four ham 'replicates'. These were cooked in a water bath.

This method produced pseudo replicates (Hurlbert 1984, 2009; Maindonald 1992). The cooked hams are subsamples of the pig mixtures of each formulation. The ham to ham (sub-sample) variability does not represent the mixture to mixture (treatment) variability. To get the correct measure of variability to compare treatments the mixing process for each formulation would need to be replicated. The hams produced from each mixing of the formulation would give true replication of that formulation.

Relevant references:

Granato, D., Calado, V., & Jarvis, B. (2013). Observations on the use of statistical methods in Food Science and Technology. Food Research International, 55, 137-145. http://www.sciencedirect.com/science/article/pii/S0963996913005723

Hill, T. & Lewicki, P. (2007). STATISTICS: Methods and Applications. StatSoft, Tulsa, OK.

Hassleer & Thadewald (2003) - The Statistician 52(3) 367-379 for detail on multivariate linear modelling. Some other papers to consider in this area - Starkey, C.P., et al. (2017).The relationship between shear force, compression, collagen characteristics, desmin degradation and sarcomere length in lamb biceps femoris. Meat Science, 126, 18-21 and Starkey, C.P., et al. (2015). Explaining the variation in lamb longissimus shear force (tenderness) across and within ageing periods using protein degradation, sarcomere length and collagen characteristics. Meat Science,105, 32-37.

Experimental
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