Reviewer’s report

Title: A review of fatty acid profiles and antioxidant content in grass-fed and grain-fed beef

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Reviewer: Michael E Dikeman

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Second review of MS: 1233800112294314
"A review of fatty acid profiles and antioxidant content in grass-fed and grain-fed beef"
Cynthia A Daley, Amber Abbott, Patrick S Doyle, Glenn A Nader and Stephanie Larson
Nutrition Journal

The manuscript has been improved significantly by the authors writing a more ‘balanced’ review on the subject. There still are some editorial comments, questions, and corrections that should be considered for the final revision.

The Abstract needs to be more specific and informative. For example: the authors state that “pasture-fed beef can alter FA composition” but do not state in what way it is altered. In addition, nothing is mentioned in the Abstract that palatability can be less desirable for those accustomed to consuming grain-fed beef nor do they state that the color of fat due to higher #-carotene content can be an undesirable yellow color.

There is nothing stated in the Introduction about greater potential for lipid oxidation and off-flavors of grass-fed beef.

I.5-8, p.5 does not consider the fact that marketing opportunities for grass-fed beef are distinctly more limited than for grain-fed beef, at least in the U.S. Large U.S. processors like Tyson, Cargill, Swift, etc. discriminate against grass-fed cattle because of lower dressing percents, lower quality grades, yellow fat, less desirable lean color, etc.

The authors incorrectly use “regime” in some places.

I.6-8, p.7 Although it is true that grain-fed beef is higher in myristic acid, the 0.6% difference between Grass and Grain (in the Alfaia et al. study) would equate to .0012% difference in Myristic acid intake if a person consumed 100g of lipid (.0124 x .0976 vs .0184 x .1303). This would be absolutely meaningless from a human nutrition standpoint.

I.15-19, p.7 I have trouble with this sentence. First of all, why are 73 and 127 mg. not meaningfully different between beef and shrimp? And, how can the
consumption of any of these meats lower serum cholesterol in hyper-cholesterolemic patients? Do physicians recommend eating meat to lower cholesterol?

I.12, p.8 The authors have not yet established the benefits of CLA, so this seems presumptuous at this point.

Table 1 It seems that the total lipid values of Ponnampalam et al. could be converted to mg/g muscle and compared to those of the first two references. However, the values of lipid would then be 21.2 and 36.1 for Grass and Grain fed beef, respectively. Is 100 g tissue the same as 100 g muscle tissue?

I.12-14, p.12 This is a very strong statement and should be moderated.

I.15-21, p.14 This seems redundant from an earlier paragraph.

P. 15 and 16. The authors do not address the yellow fat that can result from beef finished on grasses high in beta carotene, which is objectionable to most consumers in the U.S.

p.17-18 Not all grasses are high in alpha tocopherol!

I.2-5, p.21 This is a complex sentence.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests: I declare that I have no competing interests.