Reviewer's report

Title: The added nutritional value of grass-fed beef.

Version: 1 Date: 31 August 2009

Reviewer: Enrique Pavan

Reviewer's report:

General comments: Nowadays more and more consumers have an increasing concern about the impact that the food they consume have on their health. In this sense, there is a general belief among consumers that beef has more negative than positive effects to their health, mainly as a consequence of it relatively high content of saturated fatty acids. The present manuscript makes a good review of the literature and puts together data that show that a different product could be obtained through animal nutrition management that could have a positive impact on consumers’ health. Thus, the manuscript is addressing an important and timely issue.

The manuscript is well reasoned, relatively balanced and with an acceptable standard of writing. It objectively reviews data available in the literature.

Minor essential revisions:

1. Page 7 (line 1) delete “:” and add “(“ before IMF.
2. Page 7 (line 2-3): May need to be re-worded. The neutral lipid portion is the main lipid component of inter and intramuscular fats, though these adipose tissues also contain polar lipids. Neutral lipids should not be use as a synonym of inter or intramuscular fat.
3. Page 7 (line 5-7). The neutral lipids in Table 1 refer only to the neutral lipid fraction of the intramuscular fat. It thus not include intermuscular fat as could be assume from statement on Page 7 (line 2-3).
4. Page 12 (Line 17-18). I’m not sure if precursor availability could explain the differences in CLA content between grain and grass-finished meat products as mention in the manuscript. LA and ALA are both precursor of CLA; grains are rich in LA, whereas grasses in ALA. In addition, beef CLA or TVA content was not or was only marginally increased when a CLA precursor was added to a grain diet (Andrae et al., J. Anim. Sci. 2000. 78:2257; Madron et al., J. Anim. Sci. 2002. 80:1135; Beaulieu et al., J. Anim. Sci. 2002.; Gillis,et al., J. Anim. Sci. 2004. 82:1419). I would suggest to remove that precursor availability would could help to explain the observed differences.
5. Page 13 (Line20-21). According to what is mention in Page 12 (line 13-18) and in comment 4, this statement would only be valid for grass-fed animals. Increasing LA or ALA in grain diets would not have a significant effect on lipid CLA content. Grass-fed ruminant produce 2 to 3 times more CLA than ruminants fed on confinement on concentrate-only diets, because they have a high level of
the precursors in the diet (could be as high as in a grain diet) and the ruminal 
environment generated by the diet favors the biohydrogenation pathway toward 
CLA c9t11 and TVA.

6. Table 1. Should have a footnote to facilitate interpretation of the visual score.
7. Table 2, Table 3 correct titles. The titles mention that FA composition is 
expressed as mg/g fatty acid or as a % of total lipid but then in the body of table 
they are express as % of total intramuscular fat, mg/100 g tissue, among others 
ways.
8. Table 2, Table 3, Table 4, Table 5 and Table 6. Mention in a footnote the 
P-value used in the studies to considerer that the means were statistically 
different.
9. Table 3. Add the meaning of “na” as is in Table 2.
10. Table 4 and 5. Contents of #-carotene and #-tocopherol are always express 
in ug/g tissue. Could be better to put the units in the heading of the Tables as “# 
carotene, ug/g tissue” or “#-tocopherol, ug/g tissue” instead of repeating them 
after each number.
11. Table 6. Add in the title “and Superoxidase Dismutase activity”. No units are 
reported in this table.

Discretional revision:

12. I would suggest to place the section “Maintaining the favorable lipid profile” 
before “Health benefits of Vitamin E/…”. It could be worthy to also mention in this 
section (Maintaining the favorable lipid profile) that LA and ALA content in 
forages also varies between type of forages (Legumes vs grasses, temperate vs 
subtropical forages) and throughout the year.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a 
statistician.

**Declaration of competing interests:**

I declare that I have no competing interests