Reviewer's report

Title: Impact of a probiotic fermented milk in the gut ecosystem and in the systemic immunity using a non-sever protein-energy-malnutrition model in mice

Version: 1 Date: 26 December 2010

Reviewer: Federico Lara-Villoslada

Reviewer's report:

Dear Editor,

First of all, I would like to apologize for the delay in sending my report. The manuscript by Maldonado Galdeano et al. deals with an interesting topic as is the effects of probiotics on immunity and the intestinal recovery after a malnutrition period.

The work done by the authors is very width containing up to three experiments in the present manuscript, which it is really valuable but it also makes more difficult the understanding of the work and the interpretation of the results.

I think that the manuscript is suitable for publication, although I would suggest some changes to make it easier to understand and to help the reader to focus on the most important information.

I would suggest the following minor essential revisions:

1. Abstract: the three different experiments should be included, I mean, the general recovery experiment, the OVA assay and also the Salmonella experiment. In addition the results should be described with more specific details rather than with general terms such as 'function of certain immune cells', systemic immune response' or innate immune response'. Finally, the item conclusions contains results rather than conclusions and I would suggest to include one or two conclusions of the work.

2. Methodology:
   - the number of mice used for each experiment should be clearly stated in each item and not only in the section of 'statistical analysis'.
   - the design of the OVA experiment is not very well described and the objective of giving the supplement diets prior and after the injection is not well justified.

3. Results:
   - as a consequence of the huge work done by the authors there are a lot of results and they are poorly described in the text. For example, a complicated figure such as figure 4 is only accompanied with a paragraph in the text (lines 294-298). I would suggest one of two, simplify the figures or explain teh results more in detail.
- Line 313: is too speculative since there are not statistically significant differences.
- Figure 2C: the number of lactobacilli is significantly higher in the malnourished mice. This result should be mentioned and discussed.

4. Discussion:
- the results from the different experiments are discussed individually and they are not connected throughout the discussion. In my opinion the discussion would be richer if the results from the different experiments were connected with each other. It does not mean to make the discussion longer, since I think that there are paragraphs that could be deleted or resumed, such as lines 392-403.

Finally I have found some typographical errors:
- Line 35: 'nutrient' should be changed by 'nutrients'
- Line 46: 'know' should be changed by 'known'
- Line 56: 'evaluate' should be changed by 'to evaluate'
- Line 108: 'isolates' should be changed by 'isolated'
- Line 205: 'pot' should be changed by 'post'
- Line 245: 'in same' should be changed by 'in the same'
- Line 323: an space between 5 and days is lacking.
- Line 338: 'of' should be changed by 'from'
- Line 427: 'high even' should be changed by 'even high'

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

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I work for a company that could be competitor of the company supporting the present work, but I declare that this has not influenced my review.