Reviewer’s report

Title: Effects of two Lactobacillus strains on lipid metabolism and intestinal microflora of rats on a high-cholesterol diet

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Reviewer: Alejandra de Moreno de LeBlanc

Reviewer’s report:

Ning Xie and colleagues reported the hypocholesterolemic effect of two lactic acid bacteria (L. plantarum 9-41-A and L. fermentum M1-16. They used a hipercholesterolemic rat model and evaluated changes of body weight, lipid metabolism and intestinal microbiota in animals fed with a high-cholesterol diet.

There are abundant typographical and grammatical errors throughout the text, which must be carefully corrected. Please clarify what means “normal saline”, is ClNa solution (85%)?

Although the study is interesting, there is no new information about the mechanisms of hypocholesterolemic effect of LAB, compared to previous works of other groups.

Some controversial data is that HDL-C did not appear to be affected by LAB supplementation compared to the data obtained by other authors; however it is interesting that the TCH/HDL-C and TG/HDL-C ratios were reduced in the rats fed with LAB but the authors only say that further studies are necessary to confirm this observation but they did not suggest any studies. This could be interesting to improve the manuscript.

Another finding is that the authors observed a significant weight loss in the rats supplemented with L. plantarum 9-41-A and they wrote that decreased liver weight and adipose tissue weight contributed to this result. My question is if the authors worked with these same LAB in rata fed a convention diet in order to know if any effect in the body weight or in the other parameters studied here could be modified in normal animals (without hypecholesterolemic diet)?

The study of the intestinal microbiota is important and as the authors wrote, changes in the intestinal microbiota by probiotic administration may improve health and prevent certain diseases. In page 17, lines 5 to 7, I suggest the sentence be changed because according to probiotic definition, the LAB used in the study did not benefit the proliferation of probiotics; they induced the proliferation of bacteria that are considered beneficial such as lactobacillus and bifidobacterium.

In the conclusion it is possible to observe that both strains had an hypocholesterolemic effect in the animal model used in this study, but there are many results where L. plantarum 9-41-A had a significant reduction of the
parameters assayed compared not only to the model group but also with the other test group. This strain was selected by the authors as a potential therapeutic agent in controlling hyperlipemia. Can the authors suggest with the studied performed in the present work any mechanism by which one of the strains had the best effect? One of the aims was to explore the possible mechanisms by which these strains might exert their hypocholesterol effects, and according to the results, both strains may able to improve intestinal microbial balance, and potentially improving intestinal transit time. In my opinion, this observation can improve the discussion of the manuscript and the final conclusion.

**Level of interest:** An article of limited interest

**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 declare that I have no competing interests