Reviewer's report

Title: Gut microbiota, probiotics and diabetes

Version: Date: 10 February 2014

Reviewer: Jot Hui Hui Ooi

Reviewer's report:

- Major Compulsory Revisions

Although the review is entitled “gut microbiota, probiotics and diabetes”, the authors did not sufficiently provide the evidence to support the correlations between microbiota and diabetes or the mechanisms whereby the microbiota contributes to the diabetes pathogenesis. Although the authors have described the role of microbiota in regulating gut barrier and inflammation, evidence is not provided or too weak to relate these effects to diabetes. Is there a direct causal effect of increased gut permeability on diabetes pathogenesis? The bacterial changes and reduced tight junction proteins in diabetic patients could be either a cause or a consequence of diabetes.

Overall, the review is lack of organization. The writing is not cohesive within and between paragraphs. It appears to be a mere list of literature review without grouping together the ideas or the mechanisms of action. Each paragraph should also contain a conclusion sentence or authors’ point of view.

Many statements are not informative and too general such as “perturbations in the proportions of certain bacterial phyla” and “excess or shortage of specific nutrients”. Moreover, adequate evidence needs to be provided to make logical connection. For example in the section of Intestinal microbiota and type 2 diabetes, paragraph 5, the statement of “T2D is a mild-chronic inflammatory state, which could be the result of TLR activation by LPS” has no supporting ideas described in the paragraph how T2D is caused by TLR activation.

The conclusion section is lacking insight. The authors did not discuss the future prospective or limitations of applying probiotics on diabetes treatment/prevention.

This review only covers the articles published by 2012. Relevant literature published in 2013 should be updated in the review. Are there any studies that show no beneficial effect of probiotics on diabetes? A systemic review should include the contradictory findings.

- Minor Essential Revisions

Bacteria from Firmicutes phylum are not all gram positive.

Please correct some minor grammatical errors.
References need to be cited in some sentences.

- Discretionary Revisions

It may be helpful to summarize the experimental and clinical evidence of probiotic effects on T1D and T2D in a table.

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.