Reviewer’s report

Title: Effects of unaltered and bioconverted mulberry leaf extracts on cellular glucose uptake and antidiabetic action in animals

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Reviewer: Shing-Hwa Liu

Reviewer's report:

In this study, the authors investigated the effects of bioconverted mulberry leaf extract (BMLE) on cellular glucose uptake and antidiabetic action in animals compared to unaltered mulberry leaf extract (MLE). The authors found that BMLE was superior to MLE in the management of type 2 diabetes, and suggested that bioconversion might be used as a tool for increasing the active ingredients in MLE.

Comments

This is an interesting study. The reviewer has some concerns as follows:

1. The method for preparation of bioconverted mulberry leaf extract (BMLE) with VIS is not clear. What is the VIS (full name)? What is its principle for bioconversion?

2. In the methods section, it mentioned that the ITT followed the same protocol as the OGTT, except for the subcutaneous administration of insulin (1 U/kg) 30 min after glucose injection. Why glucose is injected, but not oral such as OGTT?

3. This study used NA+STZ+HFD to induce obese type 2 diabetic mouse model. However, the results showed that was not a type 2 diabetic model, because the blood glucose level was higher to 400 mg/dL (Fig. 3B) and the plasma insulin level was lower than that in control mice (Fig. 5B). Therefore, the type 2 diabetic condition was exactly not to be induced successfully. It is more like type 1 diabetic state. The dosage of STZ (100 mg/kg) may be too high.

4. The results in in vitro experiments are still not convincing. The increased glucose uptake levels under insulin stimulation by tested compounds compared to insulin alone group in skeletal muscle cells or adipocytes are really limited (Fig. 1C, 2A,B). Similarly, the increased insulin secretion levels under glucose stimulation by tested compounds compared to glucose alone group in beta-cells are also really limited (Fig. 2C).

5. In Table 1, the name of compounds should be listed, but not number 1 and 2.

6. In Fig. 3 legend, the description "After checking for high blood pressure, mice were …" is not correct, which blood glucose is checked but not blood pressure.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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