Reviewer’s report

Title: Improvements of insulin resistance in ovariectomized rats by a novel phytoestrogen from Curcuma comosa Roxb.

Version: 1 Date: 4 January 2012

Reviewer: Wipawee Winuthayanon

Reviewer’s report:

Prasannarong et al reported the applications of plant product as a preventive remedy for an ovarian hormone deprivation induced insulin resistance in ovariectomized rat model. The indigenous plant extract and its major active compound were treated in OVX rats for 12 consecutive weeks. The authors demonstrated that both the extract and the compound significantly improved the abdominal fat content, serum lipid profile, glucose tolerance and skeletal muscle glucose transport when compared to OVX control group. The experiments were well designed and the conclusions were in agreement with the results.

Minor essential revisions should be addressed as followed:

Background
1. 3rd paragraph; “CVD”, please refer to a full name before using the abbreviation at the first time, and then use the abbreviated form afterward.

Materials and methods
2. Chemicals: The City of the chemical sources should be provided in addition to the country. i.e. … (xx, Hungary), and … (xx, The Netherlands), and likewise throughout the manuscript.
3. C. comosa plant extract and compound 049 isolation: The yield of diarylheptanoid = 23.9%. Was it the yield from the crude powder or hexane extract? This information should be provided so that the readers can get the idea how many of the major active compound was contained in the crude powder (or the hexane extract), in term of the bioavailability of this compound.
4. Muscle GLUT-4 protein content: “Glucose uptake into skeletal muscle under insulin-stimulated condition is mediated by GLUT-4 protein.” There should be a reference to support this statement even if it is known information.

Results
5. Body and tissue weight and food intake
5.1) Figure 2A: Final body weight; the significant difference between each bar is difficult to visualize. Is it possible to break the Y-axis into 2 broken lines and enlarge the scale between 250 and 350?
5.2) Compound 049 did not significantly alter the body weight gain, or the food intake level when compared with OVX group, although, the compound decreased
the abdominal fat weight and increased the uterine weight. It should be mentioned in the results part.

5.3) The authors used ‘visceral fat’ in the text, but used ‘abdominal fat’ in the figure. The authors should use the similar term to keep the consistency throughout the manuscript.

6. Serum lipid profile

6.1) Figure 3B, the authors should separate the conclusion between HDL/TC and LDL/TC in the text. For HDL/TC, it is demonstrated that the extract and the compound treated groups improved the HDL/TC values when compared to SHAM group. However, the LDL/TC values between the treatment groups were not significantly different when compared to the SHAM group. It only showed the difference between the treatment groups and the OVX group (represented by the dagger signs).

6.2) In the figure 3B; the significant differences in the level of HDL/Total between C. comosa treated groups and the control groups (both SHAM and OVX) are difficult to visualize. Could the authors break Y-axis and enlarge the scale between the value of 0.2 and 0.4?

7. References: Please correct the format of the references: Title and the volume of each article should be ‘bold’.

**Level of interest:** An article of outstanding merit and interest 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.