Reviewer's report

Title: Water soluble extract of Phellinus linteus modulates experimental atopic dermatitis

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Reviewer: Naoki Inagaki

Reviewer's report:

Authors examined the effects of water soluble fraction of P. linteus extract on allergic dermatitis in mice and reported its potent inhibitory effect. Reported data seem to be clear, but some revisions should be considered.

[major]

(1) The title suggests that the main subject of this manuscript is in vivo examination on mouse dermatitis model. The impression is not the case.

(2) Human B cell line and mouse B cells were used for examining IgE production. Why were human B cells employed? It seems to be inconsistent. Why was IgE production induced by LPS and IL-4? Antigen-induced IgE production using mouse B cells should be examined.

(3) Dermatitis was induced by repeated exposure to DNCB and mite antigen. Why was so complex model employed? What was the merit of the model? Characteristics of the dermatitis model as an atopic dermatitis model have to be mentioned. Has antibody production against dinitrophenyl residue evaluated?

(4) Chemokine and cytokine production was investigated using cells from ear tissues. Why were the cells stimulated with PMA and ionomycin? Antigen-induced chemokine and cytokine production should be examined.

(5) P. linteus is well known to exhibit anti-cancer effects through immuno-potentiating effects. Present results, however, seem to be immuno-suppressing nature. The relationship should be discussed.

[minor]

(6) P. linteus extract was used in experiment shown in figure 1B. However, there is no description on the preparing method and yield.

(7) Origin and characteristics of human B cell line U266B1 should be shown. Do the cells secrete IgE constantly?

(8) Were P. linteus fractions other than water soluble fraction ineffective for the dermatitis?

(9) Water soluble fraction of P. linteus was examined by topical application. Why was such route selected?

(10) Ceramide was used as a reference drug. Why was ceramide selected? The mechanism for its effectiveness should be mentioned.

(11) Introductory descriptions in result section can be deleted.
(12) There is no figure 3E.
(13) Student’s t-test does not seem to be appropriate for evaluating present results. It should be considered.
(14) In figure 1, spontaneous IgE production should be shown. In the legend for figure 1, explanation for asterisks is missing.
(15) In relation to the in vivo experiments, mouse B cells should be employed for experiments on IgE production. Why were mouse B cells used only for dose-response study shown in figure 2c?
(16) Supplemental figure 1 can be added to figure 4. Figure 5 should be replaced with supplemental figure 2.
(17) There are some errors and inappropriate descriptions in the text.

Level of interest: An article of limited interest

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

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

'I declare that I have no competing interests'