Reviewer's report

Title: Protein-bound polysaccharide from Phellinus linteus inhibits tumor growth, invasion, and angiogenesis of SW480 human colon cancer cells by modulating Wnt/beta-catenin signaling

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Reviewer: Dan Sliva

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Major Compulsory Revisions

The present manuscript describes novel molecular mechanisms responsible for the anticancer activities of polysaccharides from the medicinal mushroom Phellinus linteus (PL). The authors demonstrate that PL inhibits proliferation, migration and invasion of colon cancer cells in vitro and in vivo. In addition, PL inhibits angiogenesis in vitro and in vivo. Importantly some of the biological activities (e.g. inhibition of proliferation via down-regulation of cyclin D1) of PL are mediated through b-catenin. Although some of these effects of PL were previously described in different cancer cell lines by others, the elucidation of the effect of PL on b-catenin signaling and the suppression of colon tumors and inhibition of angiogenesis in vivo is novel.

Specific comments:

1. The title “Protein-bound polysaccharide from Phellinus linteus inhibits tumor growth, invasion, and angiogenesis of SW480 human colon cancer cells by modulating Wnt/#-catenin signaling.” is not correct. Characterization of “protein-bound polysaccharide” is missing – what is the exact chemical composition of PL from Hankook sin Yak Pharm (page 5, 2nd line from top)? What compound(s) are responsible for the biological activity of PL? If this extract is characterized it is fine but the reference must be provided.

2. Figure 1: a) quantification of Fig. 1B is missing - in addition, how many times was this experiment repeated? b) TCF/LEF reporter activity (Fig. 1D) – this experiments must be performed also with mutated TCF/LEF reporter gene construct – to show the specificity; the normalization of luciferase activity to the amount of cellular proteins is not correct – an additional reporter gene assay is more suitable.

3. Figure 2: a) Fig 2A, 2B what is the real amount of invaded/migrated cells, is the incubation time for invasion and invasion the same? b) Fig. 2C – how many times was this experiment repeated (?) ; statistical analysis is missing.

4. Figure 5C, 5D – how many samples were analyzed, the staining should be quantified and statistical analysis performed (minimally for IHC).

Level of interest: An article of importance 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.